

# Draft Environmental Impact Report FNC Farming Subdivision

November 2024

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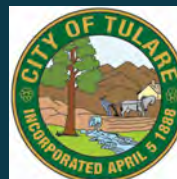


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## **TABLE OF CONTENTS**

<b>1</b>	<b>Executive Summary.....</b>	<b>1-1</b>
1.1	Introduction.....	1-1
1.2	Project Location.....	1-2
1.3	Project Description.....	1-2
1.4	Project Objectives.....	1-3
1.5	Discretionary Actions.....	1-3
1.6	Summary of Impacts.....	1-4
1.7	Alternatives to the Project.....	1-22
1.8	Areas of Controversy/Issues to be Resolved.....	1-23
1.9	Draft EIR and Public Review .....	1-26
<b>2</b>	<b>Introduction.....</b>	<b>2-1</b>
2.1	Purpose of the California Environmental Quality Act (CEQA) Process .....	2-1
2.2	Legal Authority and Lead Agency .....	2-2
2.3	Responsible and Trustee Agencies.....	2-3
2.4	Summary of Project Analyzed in this Environmental Impact Report.....	2-3
	2.4.1 Requested Approvals.....	2-3
	2.4.2 Project of Statewide, Regional, or Area-Wide Environmental Significance.....	2-5
2.5	Scope of this Environmental Impact Report .....	2-5
2.6	Organization of this Environmental Impact Report .....	2-5
2.7	Documents Incorporated by Reference.....	2-7
2.8	Documents Prepared for the Project .....	2-8
<b>3</b>	<b>Project Description.....</b>	<b>3-1</b>
3.1	Project Overview and Environmental Setting.....	3-1
3.2	Project Objectives.....	3-3
3.3	Project Components .....	3-3
	3.3.1 Land Uses .....	3-4
	3.3.2 Access and Circulation .....	3-6
	3.3.3 Construction and Phasing .....	3-7
3.4	Annexation of Project Site.....	3-7
3.5	Permits and Approvals.....	3-8
3.6	Cumulative Projects .....	3-8
<b>4</b>	<b>Environmental Analysis.....</b>	<b>4-1</b>
4.1	Introduction.....	4-1
	4.1.1 Organization of Section 4.....	4-2
	4.1.2 Scope of the Analysis.....	4-3
	4.1.3 Cumulative Analysis .....	4-4
	4.1.4 Terminology Used in the EIR.....	4-4
4.2	Agriculture and Forest Resources .....	4-6
	4.2.1 Existing Conditions .....	4-6



4.2.2	Regulatory Setting .....	4-9
4.2.3	Thresholds and Methodology .....	4-13
4.2.4	Impacts Analysis .....	4-13
4.2.5	Mitigation Measures.....	4-15
4.2.6	Level of Significance After Mitigation .....	4-16
4.3	Transportation .....	4-2
4.3.1	Existing Conditions .....	4-2
4.3.2	Regulatory Setting .....	4-4
4.3.3	Thresholds and Methodology .....	4-9
4.3.4	Impacts Analysis .....	4-10
4.3.5	Mitigation Measures.....	4-16
4.3.6	Level of Significance After Mitigation .....	4-17
4.4	Air Quality.....	4-17
4.4.1	Existing Conditions .....	4-17
4.4.2	Regulatory Setting .....	4-24
4.4.3	Thresholds and Methodology .....	4-27
4.4.4	Impacts Analysis .....	4-29
4.4.5	Mitigation Measures.....	4-34
4.4.6	Level of Significance After Mitigation .....	4-34
4.5	Greenhouse Gas Emissions .....	4-35
4.5.1	Existing Conditions .....	4-35
4.5.2	Regulatory Setting .....	4-39
4.5.3	Thresholds and Methodology .....	4-45
4.5.4	Impacts Analysis .....	4-46
4.5.5	Mitigation Measures.....	4-50
4.5.6	Level of Significance After Mitigation .....	4-50
<b>5</b>	<b>Cumulative Effects.....</b>	<b>5-1</b>
5.1	Methodology .....	5-1
5.1.1	Cumulative Impact Analysis .....	5-3
5.1.1.1	Agriculture & Forestry Resources.....	5-5
5.1.1.2	Transportation.....	5-5
5.1.1.3	Air Quality.....	5-6
5.1.1.4	Greenhouse Gas Emissions.....	5-8
<b>6</b>	<b>Alternatives .....</b>	<b>6-1</b>
6.1	Introduction .....	6-1
6.2	Project Objectives.....	6-2
6.3	Alternatives Considered and Rejected .....	6-3
6.3.1	Alternative Sites.....	6-3
6.4	Alternatives Analyzed .....	6-4
6.4.1	Alternative 1: No Project/No Development .....	6-5
6.4.2	Alternative 2: Reduced Development .....	6-6
6.4.3	Alternative 3: Increased Density Alternative.....	6-7

6.5	Summary Matrix.....	6-9
6.6	Environmentally Superior Alternative .....	6-10
<b>7</b>	<b>Other CEQA Considerations .....</b>	<b>7-1</b>
7.1	Significant Environmental Effects.....	7-1
7.2	Significant and Unavoidable Environmental Impacts .....	7-1
7.3	Significant Irreversible Environmental Impacts.....	7-2
7.4	Growth-Inducing Impacts .....	7-4
7.4.1	Economic Effects .....	7-6
<b>8</b>	<b>References .....</b>	<b>8-1</b>
<b>9</b>	<b>List of Preparers .....</b>	<b>9-1</b>

### List of Figures

Figure 1-1.	Project Vicinity Map.....	1-27
Figure 2-1.	The CEQA Process Flow Chart .....	2-9
Figure 3-1.	Site Plan.....	3-11
Figure 3-2.	Cross-Sections and Building Footprints .....	3-12
Figure 3-3.	Regional Map.....	3-13
Figure 3-4.	Vicinity Map .....	3-14
Figure 3-5.	General Plan Land Use Map .....	3-15
Figure 3-6.	Zoning Map .....	3-16
Figure 3-7.	Cumulative Projects Map .....	3-17
Figure 4-1.	Important Farmlands Map .....	4-17
Figure 4-2.	Intersections Map .....	4-13
Figure 5-1.	Cumulative Projects Map.....	5-9

### List of tables

Table 1-1.	Summary of Project impacts.....	1-4
Table 1-2.	Summary of Initial Study/Notice of Preparation Comments .....	1-23
Table 3-1.	FNC Farming Subdivision Proposed Land Use and Zoning Summary .....	3-4
Table 3-2.	Cumulative Projects.....	3-9
Table 4-1.	Top 10 Commodities for Tulare County 2021 .....	4-6
Table 4-2.	Tulare County Summary and Change by Land Use Category.....	4-8
Table 4-3.	Potential Intersection Improvements.....	4-14
Table 4-4.	Phase I Project Trip Generation.....	4-15
Table 4-5.	Phase II Project Trip Generation .....	4-15
Table 4-6.	Phase III Project Trip Generation .....	4-15
Table 4-7.	San Joaquin Valley Attainment.....	4-19
Table 4-8.	Nearest Air Monitoring Station Data .....	4-21
Table 4-9.	California and National Ambient Air Quality Standards .....	4-21
Table 4-10.	Thresholds of Significance for Criteria Pollutants .....	4-27

Table 4-11. Projected Construction Emissions Compared to SJVAPCD Thresholds .....	4-30
Table 4-12. Projected Operational Emissions Compared to SJVAPCD Thresholds .....	4-31
Table 4-13. HRA Results Compared to SJVAPCD Thresholds of Significance .....	4-33
Table 4-14. Greenhouse Gases .....	4-37
Table 4-15. International Greenhouse Gas Regulations .....	4-39
Table 4-16. Federal Greenhouse Gas Regulations .....	4-40
Table 4-17. State Greenhouse Gas Regulations .....	4-41
Table 4-18. Regional Greenhouse Gas Regulations .....	4-44
Table 4-19. Consistency Analysis with the City of Tulare Climate Action Plan.....	4-48
Table 5-1. Cumulative Project List .....	5-2
Table 6-1. Alternatives Summary Matrix .....	6-9

## **Appendices**

### Appendix A1: Notice of Preparation and Scoping Comment Letters

#### Appendix A2: Initial Study

- Attachment A1: CalEEMod Results
- Attachment B: Biological Resources Assessment
- Attachment C: Cultural Resources Assessment
- Attachment D: Energy Calculations
- Attachment E: Traffic Study
- Attachment F: Water Supply Assessment

### Appendix B: Mitigation Monitoring and Reporting Program

### Appendix C: Health Risk Assessment



**City of Tulare**  
411 East Kern Ave  
Tulare, CA 93274

## **1 Executive Summary**

### ***Project Title: FNC Farming Subdivision***

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#### **1.1 Introduction**

This Environmental Impact Report (EIR) has been prepared in accordance with the California Environmental Quality Act (CEQA) to evaluate the potential environmental effects associated with the implementation of the FNC Farming Subdivision (Project). Pursuant to Title 14, Section 15000 et seq. of the California Code of Regulations (CEQA Guidelines), and the rules, regulations, and procedures for implementing CEQA as adopted by the City of Tulare (City), this document is a focused, project-level EIR. Consistent with CEQA Guidelines Section 15161, this EIR focuses on specific areas of potential environmental impact while screening out others based on the conclusions of the Initial Study (IS). Areas found to result in either less than significant (LTS) impacts or less than significant impacts with mitigation (LTS w/ MM) in the IS were not carried forward for detailed analysis, in accordance with CEQA Guidelines Section 15063(c)(3). The full IS can be found in Appendix A2. As the lead agency, the City must complete this environmental review to determine whether the Project could potentially result in significant adverse environmental effects. A detailed description of the Project is provided in Section 3, Project Description. CEQA Guidelines Section 15002 outlines the basic purposes of CEQA, which include:

- Informing governmental decision-makers and the public about the potential significant environmental effects of proposed government actions (including the discretionary approval of development projects);
- Identifying ways environmental damage can be avoided or significantly reduced; and
- Preventing significant, avoidable environmental damage by requiring feasible project changes through alternatives or mitigation measures.

If a project is approved involving significant environmental effects, the lead agency must also disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose. This Executive Summary summarizes the requirements of the CEQA Guidelines; provides an overview of the project, considered alternatives; states the purpose of this EIR; and summarizes the impacts of the project and the feasible mitigation measures; and states the controversy and issues to be resolved. This summary does not contain the extensive background and analysis found throughout the individual chapters within the EIR. Therefore, the reader should review the entire document to fully understand the Project and its environmental impact.

## **1.2 Project Location**

The Project site is currently located within the western portion of unincorporated Tulare County (County) but would be annexed to the City of Tulare (City) as part of the Project. The Project site is comprised of four separate parcels and includes Assessor's Parcel Numbers [APNs] 172-010-021, 172-010-022, and 184-020-010. The site is located on the southeast corner of Prosperity Avenue and Morrison Street. The site is west of Road 126, east of Morrison Street, and south of Prosperity Avenue. The site is approximately 2.87 miles Northeast of Tulare's central downtown area. The site was previously used for irrigated row crops until recently. The site is primarily bare ground with some weeds occupying the site, as well as an on-site irrigation pond with associated equipment. Some parts of the property to the west, east and south contain potted blueberries. The Project site is currently within the County's Exclusive Agricultural Zone – 20 Acre Minimum and 40 Acre Minimum (AE-20, AE-40). The 140.32-acre Project site would be annexed into the City, and the site will be pre-zoned for Single Family Residential (R-1-5, R-1-6). In addition to pre-zoning prior to annexation, a General Plan Amendment would be required to change the land use of the site from Rural Residential (0-2 D.U./acre) and Residential Estate (2.1-3 D.U./acre) to Low-Density Residential (3.1-7 D.U./acre) and Rural Residential (0-2 D.U./acre).

## **1.3 Project Description**

### **Project Summary**

The proposed Project consists of residential development on approximately 140.32 acres of active agricultural land in Tulare County, CA (see Figure ES-1, Vicinity Map). Once developed, the proposed Project site would include approximately 546 total units of low-density residential (127.03 acres), a central park (5.47 acres), and a rural residential zone that will remain undeveloped (7.8 acres). The community park would act as a recreational area for residents and provide stormwater detention. Class I Bike Paths will be constructed along roadways throughout the site and would connect to the park and the residences. An underground irrigation canal currently passes through the property from the east to the west, but flow through the channel would not be changed as a result of the Project. As noted above, the Project proposes to annex into the City the 140.32-acre Project site. The intent of the annexation is to provide additional housing as the population of Tulare grows in accordance with the City of Tulare General Plan.

### **Project Construction**

Construction of the proposed Project, if approved, would be completed in five phases. Development is anticipated to be constructed over the course of up to 10 years. Utilities such



as water, electricity, and gas required for the Project would tie into the existing infrastructure near the Project site within the road rights-of-way. Perimeter improvements such as the installation of curbs, gutters, sidewalks on adjacent roads, and transit stops would be completed as required by the City's development standards.

## **1.4 Project Objectives**

Section 15124(b) of the CEQA Guidelines requires that an EIR include a statement of the project objectives that "include the underlying purpose of the project and may discuss the project benefits." The following objectives have been identified for the Project:

- 1)** Provide more housing opportunities consistent with the goals and policies outlined in the City's current Housing Element, which includes providing a mix of land uses and increasing available pedestrian and bicycle facilities while minimizing environmental effects.
- 2)** Provide development that is functionally compatible with existing residential neighborhoods while enhancing the City's ability to provide fiscally positive development.
- 3)** Amend the City's jurisdictional boundary in accordance with the Tulare County Local Agency Formation Commission's (LAFCO) goal to encourage logical and orderly development that promotes the efficient extension of municipal services.
- 4)** Create a new community that can serve existing Tulare residents and accommodate future population growth.

## **1.5 Discretionary Actions**

The following discretionary approvals are required from the City of Tulare for the proposed Project:

- General Plan Land Use Amendment for Lot Sizes and Dwelling Unit Densities
- Zone Amendment Application
- Tulare County Local Agency Formation Commission Annexation
- Tentative Subdivision Map
- San Joaquin Valley Air Pollution Control District (SJVAPCD). The proposed Project is within the jurisdiction of the SJVAPCD and will be required to comply with Rule VIII, 3135, 4101, and 9510. 3-5 FNC Farming Subdivision DRAFT Initial Study April 2024
- Central Valley Regional Water Quality Control Board, SWPPP. The proposed Project site is within the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB). The Central Valley RWQCB will require a Storm Water Pollution Prevention Plan (SWPPP) to prevent impacts related to stormwater because of Project construction.

## 1.6 Summary of Impacts

Table 1-1, Summary of Impacts, presents a summary of the Project's significant environmental impacts, mitigation measures, and the level of significance after the implementation of the mitigation measures.

Table 1-1. Summary of Project impacts

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance after Mitigation
<b>Aesthetics</b>			
Have a substantial adverse effect on a scenic vista.	Less than significant	No mitigation would be required.	Less than significant
b) Substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.	No impact	No mitigation would be required.	No impact
c) In non-urbanized areas, would the project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality.	No impact	No mitigation would be required.	No impact
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.	Less than significant	No mitigation would be required.	Less than significant
Cumulative Impacts	Less than cumulatively considerable	No mitigation would be required.	
<b>Agriculture and Forestry Resources</b>			
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Agency, to nonagricultural use.	Potentially significant	<p><b>Mitigation Measure AG-1:</b> Prior to issuance of a grading or building permit, whichever occurs first, the Project proponent shall provide written evidence of completion of one or more of the following measures, consistent with Tulare General Plan Policy COS-P3.12 to mitigate the loss of agricultural land at a ratio of 1:1 for net acreage before conversion:</p> <ul style="list-style-type: none"> <li>Funding and/or purchasing agricultural conservation easements</li> </ul>	Significant and unavoidable

		<p>which shall be managed and maintained by an appropriate entity;</p> <ul style="list-style-type: none"> <li>• Purchasing credits from an established agricultural farmland mitigation bank;</li> <li>• Contributing agricultural land or equivalent funding to an organization that provides for the preservation of farmland in California; or</li> <li>• Participating in any agricultural land mitigation program adopted by Tulare County provides equal or more effective mitigation than the measures listed above.</li> </ul> <p>The net acreage calculation used to determine mitigation lands shall exclude the existing roads and areas already developed with structures on the project site. A site plan shall be submitted to the City of Tulare Community Development Department to substantiate the net acreage calculation, along with written evidence of compliance.</p> <p>Mitigation land shall meet the definition of Prime Farmland and be of similar agricultural quality or higher, as established by the Department of Conservation. Completion of the selected measure or a combination of selected mitigation measures can occur on qualifying land within the southern San Joaquin Valley (Kings, Tulare, or Kern County) that is located outside of a City's UDB and shall be approved by the City of Tulare Community Development Department Director.</p>	
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract.	Less than significant	No mitigation would be required.	Less than significant
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland ((as defined by the Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by the Government Code section 51104 (g))	No impact	No mitigation would be required.	No impact
d) Result in the loss of forest land or conversion of forest land to non-forest use.	No impact	No mitigation would be required.	No impact

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use.	Potentially significant	<b>Mitigation Measure AG-1</b> (see above)	Significant and unavoidable
Cumulative Impacts	Potentially significant	<b>Mitigation Measure AG-1</b> (see above)	Cumulatively Significant and Unavoidable
<b>Air Quality</b>			
a) Conflict with or obstruct implementation of the applicable air quality plan?	Less than significant	No mitigation would be required.	Less than significant
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard	Less than significant	No mitigation would be required.	Less than significant
c) Expose sensitive receptors to substantial pollutant concentrations	Potentially Significant	<b>Mitigation Measure HRA-1</b>	Less than significant
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people	Less than significant	No mitigation would be required.	Less than significant
Cumulative Impacts	Less than cumulatively considerable	No mitigation would be required.	Less than cumulatively considerable
<b>Biological Resources</b>			
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service	Less than significant with mitigation	<p><b>BIO-1 Swainson's Hawk Nesting Habitat:</b> If construction, grading, or Project-related improvements are to commence between March 1 and September 15, a focused survey for Swainson's hawk nests on the site and within ¼ mile of the site shall be conducted by a qualified biologist no later than 30 days prior to the start of construction work (including clearing and grubbing). If active nests are found, the CDFW shall be contacted to determine appropriate protective measures, and these measures shall be implemented prior to the start of any ground-disturbing activities. If no active nests are found during the focused survey, no further mitigation will be required.</p> <p><b>BIO-1a Nesting Bird, Roosting Bat, Burrowing Owl Survey, San Joaquin kit fox den survey:</b> If Project-related activities are scheduled</p>	Less than significant

		<p>between February 1 to August 31 (the typical nesting season), a focused survey for nests shall be conducted by a Designated Biologist within fourteen (14) calendar days prior to the beginning of Project-related activities. The Designated Biologist shall survey: a minimum radius of 500-feet for migratory birds around the Project Area, and for sign of roosting bats, active burrowing owl burrows or active San Joaquin kit fox dens. If no active nests, roosts, burrows, or dens are found, Project activities may proceed as scheduled.</p> <p><b>BIO-1b Active Nests or Roosts or Burrows or Dens:</b> If an active nest, roost or burrow or den is located, then active nests, roosts or burrows or dens should be avoided, and a no-disturbance or destruction buffer shall be determined and established by a Designated Biologist. The buffer shall be kept in place until after the breeding nesting season or the Designated Biologist confirms the young have fledged, are foraging independently, and the nest or burrow is no longer active for the season. The extent of these buffers shall be determined by the Designated Biologist and will depend on the species present, the level of noise or construction disturbance, line of sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. If an occupied burrowing owl burrow is located the Biologist will consult with CDFW to install one-way doors over the burrow for an individual or an appropriate buffer distance for a nesting pair. If an active San Joaquin kit fox den is located, then consultation with the USFWS would be required in order to document this federally listed species presence in the Project Area.</p> <p><b>BIO-1c Project Delay:</b> If a lapse in Project-related work of thirty (30) calendar days or longer occurs, the Designated Biologist shall complete another focused survey before Project work can be reinitiated.</p>	
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or	Less than significant	No mitigation would be required.	Less than significant



by the California Department of Fish and Game or U.S. Fish and Wildlife Service.			
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal wetlands and drainages, etc.) through direct removal, filling, hydrological interruption, or other means.	No impact	No mitigation would be required.	No impact
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.	Less than significant	No mitigation would be required.	Less than significant
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	No impact	No mitigation would be required.	No impact
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan	No impact	No mitigation would be required.	No impact
Cumulative	Less than cumulatively considerable	No mitigation would be required.	Less than cumulatively considerable

#### Cultural and Tribal Cultural Resources

a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5.	Less than significant with mitigation	<b>Mitigation Measure CUL-1:</b> If previously unknown resources are encountered before or during grading activities, construction shall stop in the immediate vicinity of the find and a qualified historical resources specialist shall be consulted to determine whether the resource requires further study. The qualified historical resources specialist shall make recommendations to the City on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with Section 15064.5 of the CEQA Guidelines and the City's Historic Preservation Ordinance. If the resources are determined to be unique historical resources as defined under Section 15064.5 of the CEQA Guidelines, measures shall be identified by the monitor and recommended to the Lead Agency. Appropriate measures for significant	Less than significant
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		<p>resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these resources. Any historical artifacts recovered as a result of mitigation shall be provided to a City-approved institution or person who is capable of providing long-term preservation to allow future scientific study.</p> <p><b><u>Mitigation Measure CUL-2:</u></b> In the event that human remains are unearthed during excavation and grading activities of any future development Project, all activity shall cease immediately. Pursuant to Health and Safety Code (HSC) Section 7050.5, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98(a). If the remains are determined to be of Native American descent, the coroner shall within 24 hours notify the Native American Heritage Commission (NAHC). The NAHC shall then contact the most likely descendent of the deceased Native American, who shall then serve as the consultant on how to proceed with the remains. Pursuant to PRC Section 5097.98(b), upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment.</p>	
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5.	Less than significant with mitigation	<b><u>Mitigation Measures CUL-1 &amp; CUL-2</u></b> (see above)	Less than significant
c) Disturb any human remains, including those interred outside of dedicated cemeteries.	Less than significant with mitigation	<b><u>Mitigation Measure CUL-2</u></b>	Less than significant

<b>Tribal Cultural Resources</b>			
a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:			
i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?	Less than significant with mitigation	<b>Mitigation Measures CUL-1 &amp; CUL-2</b> (see above)	Less than significant
ii. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	Less than significant with mitigation	<b>Mitigation Measures CUL-1 &amp; CUL-2</b> (see above)	Less than significant
Cumulative Impacts	Less than cumulatively considerable	No mitigation would be required.	Less than cumulatively considerable
<b>Energy</b>			
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation	Less than significant	No mitigation would be required.	Less than significant
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.	No impact	No mitigation would be required.	No impact
Cumulative Impacts	Less than cumulatively considerable	No mitigation would be required.	Less than cumulatively considerable
<b>Geology and Soils</b>			
a) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:			

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?	No impact	No mitigation would be required.	No impact
ii. Strong seismic ground shaking?	No impact	No mitigation would be required.	No impact
iii. Seismic related ground failure including liquefaction?	No impact	No mitigation would be required.	No impact
iv. Landslides?	No impact	No mitigation would be required.	No impact
b) Result in substantial soil erosion or the loss of topsoil	Less than significant	No mitigation would be required.	Less than significant
c) Located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse	No impact	No mitigation would be required.	No impact
d) Located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property	No impact	No mitigation would be required.	No impact
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.	No impact	No mitigation would be required.	No impact
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	Less than significant with mitigation	<b>Mitigation Measure CUL-1:</b> If previously unknown resources are encountered before or during grading activities, construction shall stop in the immediate vicinity of the find and a qualified historical resources specialist shall be consulted to determine whether the resource requires further study. The qualified historical resources specialist shall make recommendations to the City on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with Section 15064.5 of the CEQA Guidelines and the City's Historic Preservation Ordinance. If the resources are determined to be unique historical resources as defined under Section 15064.5 of the CEQA Guidelines, measures shall be identified by the	Less than significant

		<p>monitor and recommended to the Lead Agency. Appropriate measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these resources. Any historical artifacts recovered as a result of mitigation shall be provided to a City-approved institution or person who is capable of providing long-term preservation to allow future scientific study.</p> <p><b><u>Mitigation Measure CUL-2:</u></b> In the event that human remains are unearthed during excavation and grading activities of any future development Project, all activity shall cease immediately. Pursuant to Health and Safety Code (HSC) Section 7050.5, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98(a). If the remains are determined to be of Native American descent, the coroner shall within 24 hours notify the Native American Heritage Commission (NAHC). The NAHC shall then contact the most likely descendent of the deceased Native American, who shall then serve as the consultant on how to proceed with the remains. Pursuant to PRC Section 5097.98(b), upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity 3-75 FNC Farming Subdivision DRAFT Initial Study April 2024 until the landowner has discussed and conferred with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment.</p>	
Cumulative Impacts	Less than cumulatively considerable	No mitigation would be required.	Less than cumulatively considerable



<b>Greenhouse Gas Emissions</b>			
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	Less than significant	No mitigation would be required.	Less than significant
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	Less than significant	No mitigation would be required.	Less than significant
Cumulative Impacts	Less than cumulatively considerable	No mitigation would be required.	Less than cumulatively considerable
<b>Hazards and Hazardous Materials</b>			
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	Less than significant	No mitigation would be required.	Less than significant
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	Less than significant	No mitigation would be required.	Less than significant
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.	No impact	No mitigation would be required.	No impact
d) Located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.	No impact	No mitigation would be required.	No impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	Less than significant	No mitigation would be required.	Less than significant
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	No impact	No mitigation would be required.	No impact
g) Expose people or structures, either directly or indirectly, to a significant risk	No impact	No mitigation would be required.	No impact

of loss, injury, or death involving wildland fires.			
Cumulative Impacts	Less than cumulatively considerable	No mitigation would be required.	Less than cumulatively considerable.
<b>Hydrology and Water Quality</b>			
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality	Less than significant with mitigation	<p><b>Mitigation Measure HYD-1:</b> Prior to the issuance of any construction/grading permit and/or the commencement of any clearing, grading, or excavation, the Applicant shall submit a Notice of Intent (NOI) for discharge from the Project site to the California SWRCB Storm Water Permit Unit.</p> <ul style="list-style-type: none"> <li>• Prior to issuing of grading permits for Phase 1 the Applicant shall submit a copy of the NOI to the City.</li> <li>• The City shall review noticing documentation prior to approval of the grading permit. City monitoring staff will inspect the site during construction for compliance.</li> </ul> <p><b>Mitigation Measure HYD-2:</b> The Applicant shall require the building contractor to prepare and submit a Storm Water Pollution Prevention Plan (SWPPP) to the City 45 days prior to the start of work for approval. The contractor is responsible for understanding the State General Permit and instituting the SWPPP during construction. A SWPPP for site construction shall be developed prior to the initiation of grading and implemented for all construction activity on the Project site in excess of one (1) acre, or where the area of disturbance is less than one acre but is part of the Project's plan of development that in total disturbs one or more acres. The SWPPP shall identify potential pollutant sources that may affect the quality of discharges to storm water and shall include specific BMPs to control the discharge of material from the site. The following BMP methods shall include, but would not be limited to:</p> <ul style="list-style-type: none"> <li>• Dust control measures will be implemented to ensure success of all onsite activities to control fugitive dust;</li> <li>• A routine monitoring plan will be implemented to ensure success of all onsite erosion and sedimentation control measures;</li> </ul>	Less than significant

		<ul style="list-style-type: none"> <li>Provisional detention basins, straw bales, erosion control blankets, mulching, silt fencing, sand bagging, and soil stabilizers will be used;</li> <li>Soil stockpiles and graded slopes will be covered after two weeks of inactivity and 24 hours prior to and during extreme weather conditions; and</li> <li>BMPs will be strictly followed to prevent spills and discharges of pollutants onsite, such as material storage, trash disposal, construction entrances, etc.</li> </ul>	
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.	Less than significant	No mitigation would be required.	Less than significant
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on- or off-site.			
i. Result in substantial erosion or siltation on or off site	Less than significant with mitigation	<p><b><u>Mitigation Measures HYD-1 &amp; HYD-2</u></b> (see above)</p> <p><b><u>Mitigation Measure HYD-3:</u></b> A Development Maintenance Manual for the Project shall include comprehensive procedures for maintenance and operations of any stormwater facilities to ensure long-term operation and maintenance of post-construction stormwater controls. The maintenance manual requires that stormwater BMP devices be inspected, cleaned, and maintained in accordance with the manufacturer's maintenance conditions. The manual shall require that devices be cleaned prior to the onset of the rainy season (i.e., mid-October) and immediately after the end of the rainy season (i.e., mid-May). The manual also requires that all devices be checked after major storm events. The Development Maintenance Manual shall include the following:</p> <ul style="list-style-type: none"> <li>Runoff shall be directed away from trash and loading dock areas;</li> <li>Bins shall be lined or otherwise constructed to reduce leaking of liquid wastes;</li> <li>Trash and loading dock areas shall be screened or walled to minimize offsite transport of trash; and</li> </ul>	Less than significant

		<ul style="list-style-type: none"> <li>Impervious berms, trench catch basin, drop inlets, or overflow containment structures nearby docks and trash areas shall be installed to minimize the potential for leaks, spills or wash down water to enter the drainage system.</li> </ul>	
ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site	Less than significant with mitigation	<b>Mitigation Measure HYD-2</b> (see above)	Less than significant
iii. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows.	Less than significant with mitigation	<b>Mitigation Measures HYD-1, 2 &amp; 3</b> (see above)	Less than significant
d) In flood hazard, tsunami, or seiche zones, would the project risk release of pollutants due to project inundation?	No Impact	No mitigation would be required.	No impact
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.	No impact	No mitigation would be required.	No impact
Cumulative Impacts	Less than cumulatively considerable	No mitigation would be required.	Less than cumulatively considerable
<b>Land Use and Planning</b>			
a) Physically divide an established community	No impact	No mitigation would be required.	No impact
b) Conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.	No impact	No mitigation would be required.	No impact
Cumulative Impacts	Less than cumulatively considerable	No mitigation would be required.	Less than cumulatively considerable
<b>Mineral Resources</b>			
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.	No impact	No mitigation would be required.	No impact
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan	No impact.	No mitigation would be required.	No impact

Cumulative Impacts	Less than cumulatively considerable	No mitigation would be required.	Less than cumulatively considerable
<b>Noise</b>			
a) Result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	Less than significant	No mitigation would be required.	Less than significant
b) Result in generation of excessive groundborne vibration or groundborne noise levels.	Less than significant	No mitigation would be required.	Less than significant
c) For a project located within the vicinity of a private airstrip or an airport land use plan, or where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels.	Less than significant	No mitigation would be required.	Less than significant
Cumulative Impacts	Less than cumulatively considerable	No mitigation would be required.	Less than cumulatively considerable
<b>Population and Housing</b>			
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)	No impact	No mitigation would be required.	No impact
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.	No impact	No mitigation would be required.	No impact
Cumulative Impacts	Less than cumulatively considerable	No mitigation would be required.	Less than cumulatively considerable
<b>Public Services</b>			
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:			
a. Fire protection	Less than significant	No mitigation would be required.	Less than significant
b. Police protection	Less than significant	No mitigation would be required.	Less than significant



c. Schools	Less than significant	No mitigation would be required.	Less than significant
d. Parks	Less than significant	No mitigation would be required.	Less than significant
e. Other public facilities	Less than significant	No mitigation would be required.	Less than significant
Cumulative Impacts	Less than cumulatively considerable	No mitigation would be required.	Less than cumulatively considerable
<b>Recreation</b>			
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.	Less than significant	No mitigation would be required.	Less than significant
b) Include recreational facilities or requires the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.	Less than significant	No mitigation would be required.	Less than significant
Cumulative Impacts	Less than cumulatively considerable	No mitigation would be required.	Less than cumulatively considerable
<b>Transportation</b>			
a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.	Potentially significant	<p><b>Mitigation Measure TRT-1:</b> The following improvements shall be implemented as part of the Project's off-site transportation mitigation. These improvements are necessary to ensure that intersections continue to operate at an acceptable Level of Service (LOS) in compliance with the City of Tulare's General Plan and minimize congestion as the Project is developed:</p> <ol style="list-style-type: none"> <li>1. <b>Mooney Blvd &amp; Cartmill Ave:</b> Add a northbound through lane (NBT) and a southbound through lane (SBT).</li> <li>2. <b>Mooney Blvd &amp; Prosperity Ave:</b> Add a northbound through lane (NBT), northbound left-turn lane (NBL), southbound through lane (SBT), southbound left-turn lane (SBL), eastbound through lane (EBT), eastbound left-turn lane (EBL), westbound through lane (WBT), and westbound left-turn lane (WBL).</li> <li>3. <b>Morrison St &amp; Prosperity Ave:</b> Install a traffic signal, eastbound right-turn</li> </ol>	Less than significant with Mitigation

		<p>lane (EBR) and westbound left-turn lane (WBL) as part of Phase 1 opening day improvements.</p> <ul style="list-style-type: none"> <li>A focused traffic study shall be completed prior to Phases 2 and 3 to determine whether warrants for traffic signal construction are projected to be met by the completion of each phase. If the traffic signal warrants will be met, a traffic signal or roundabout will be required as an opening day improvement for that phase.</li> </ul> <p>4. <b>Mooney Blvd &amp; Seminole Ave:</b> Install a traffic signal.</p> <ul style="list-style-type: none"> <li>A focused traffic study shall be completed prior to Phases 2 and 3 to determine whether warrants for traffic signal construction will be met. If so, a traffic signal and median island modifications will be part of opening day requirements for Phases 2 and 3.</li> </ul> <p>5. <b>Morrison St &amp; Tulare Ave:</b> Add an eastbound right-turn lane (EBR).</p> <p>6. <b>Prosperity Ave &amp; Oakmore St:</b> This intersection shall incorporate an eastbound right-turn lane (EBR), eastbound left-turn lane (EBL) and a westbound left-turn lane (WBL) by opening day of Phase 3.</p> <ul style="list-style-type: none"> <li>A focused traffic study shall be completed prior to Phase 3 to determine if warrants for traffic signal construction will be met. If so, a traffic signal or roundabout will be required by opening day of Phase 3.</li> </ul> <p>All traffic improvements shall be subject to Caltrans design and permitting requirements, including completion of an Intersection Control Evaluation per Caltrans guidelines, with completion of the improvements recommended therein required as an opening day improvement.</p>	
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b).	Less than significant	No mitigation measures would be required.	Less than significant

c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	No impact	No mitigation measures would be required.	No impact
d) Result in inadequate emergency access.	Less than significant	No mitigation measures would be required.	Less than significant
Cumulative Impacts	Potentially Significant	No mitigation measures would be required.	Less than significant
<b>Utilities and Service Systems</b>			
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects	Less than significant	No mitigation would be required	Less than significant
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years	Less than significant	No mitigation would be required.	Less than significant
c) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments	Less than significant	No mitigation would be required.	Less than significant
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.	No impact	No mitigation would be required.	No impact
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste.	No impact	No mitigation would be required.	No impact
Cumulative Impacts	Less than cumulatively considerable	No mitigation would be required.	Less than cumulatively considerable
<b>Wildfire</b>			
a) Would the project substantially impair an adopted emergency response plan or emergency evacuation plan?	No impact	No mitigation would be required.	No impact
b) Due to slope, prevailing winds, and other factors, would the project exacerbate wildfire risks, and thereby expose project occupants to, pollutant	No impact	No mitigation would be required.	No impact

concentrations from a wildfire or the uncontrolled spread of a wildfire?			
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.	Less than significant	No mitigation would be required.	Less than significant
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.	No impact	No mitigation would be required.	No impact
Cumulative Impacts	Less than cumulatively considerable	No mitigation would be required.	Less than cumulatively considerable

### Significant and Unavoidable Impacts

As identified in Table 1-1, the Project would result in significant and unavoidable impacts with regard to:

#### Agricultural Resources

- The conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Agency, to non-agricultural use.
- Involve other changes in the existing environment which, due to their location or nature, could result in the conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use.
- Cumulative effect on agriculture resources

These impacts are discussed in further detail below:

#### Agriculture and Forestry Resources

Implementation of the proposed Project would result in the conversion of approximately 140.32 acres of active agricultural land into a residential development. More specifically, the entire 140.32-acres of land within the Project site are designated as Prime Farmland. The Project site has been actively farmed for the past 10 years and has developed an on-site irrigation water supply that is dependable. In addition, the site is currently within the County's Exclusive Agricultural Zone – 20 and 40 Acre Minimum (AE-20 & AE-40).

While the project site lands designated as “Prime Farmland” only represent a fraction of a percent of the 366,136 acres of Prime Farmland within Tulare County, the direct loss of the 140.32 acres of farmland is considered significant, even with implementation of Mitigation Measure (MM) AG-1. The project proponent would be required to mitigate the loss of agricultural land at a ratio of 1:1 through implementation of a conservation easements per MM-AG-1. Even with implementation of MM-AG-1, the conversion of 140.32 acres of agricultural lands designated as Prime Farmland as part of the proposed Project would result in *significant and unavoidable* project level and cumulative level *impacts* to agricultural resources.

## 1.7 Alternatives to the Project

Section 15126.6(a) of the CEQA Guidelines states that an EIR shall describe “a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project,” as well as provide an evaluation of “the comparative merits of the alternatives.” Under CEQA Guidelines Section 15126.6(a), an EIR does not need to consider alternatives that are not feasible, nor does it need to address every conceivable alternative to the project. The range of alternatives “is governed by the ‘rule of reason’ that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice” (14 CCR 15126.6[f]).

Alternative 1: No Project/No Development Alternative. This alternative assumes no development would occur, and the site would remain under the jurisdiction of Tulare County and in its current undeveloped condition, no land would be annexed.

Alternative 2: Reduced Development Alternative. This alternative assumes the construction of the site for residential development, but on a reduced scale.

Alternative 3: Increased Density Alternative. This alternative modifies the Project to include only medium to high-density housing units such as townhouses and apartment buildings while keeping the community park the same size but reducing the overall acreage of development.

### Environmentally Superior Alternative

Section 15126(e)(2) of the State CEQA Guidelines requires an EIR to identify an “environmentally superior alternative.” If the No Project/No Development Alternative is the environmentally superior alternative, the EIR must also identify an environmentally superior alternative from among the other Project alternatives.

Each of the three Project alternatives considered herein would lessen at least one environmental impact relative to the Project. As previously addressed, if the No Project/No

Development Alternative is the environmentally superior alternative, which is the case in this analysis—the EIR must also identify another environmentally superior alternative among the remaining alternatives.

Based on a comparison of Alternative 2 and Alternative 3, all environmental impacts associated with both alternatives would be similar, but Alternative 3 meets more of the Project objectives by providing the same amount of housing on less land. Alternative 3 would have a greater reduction to the significant and unavoidable impacts related to agricultural resources, while still meeting all Project objectives. Transportation impacts would remain the same between Alternative 2 and 3. Overall, based on these findings, Alternative 3 would be considered the environmentally superior alternative.

## 1.8 Areas of Controversy/Issues to be Resolved

The scope of this EIR includes the environmental impacts identified as potentially significant in the Initial Study/Notice of Preparation (IS/NOP) that was available for public review from August 22nd, 2024, through September 24<sup>th</sup>, 2024; comments received during a public scoping meeting held on September 11th, 2024, at Tulare Public Library Olympic Room; and agency written comment received in response to the NOP.

A summary of these written comment letters is provided in Table 1-2. The written comments and the NOP are included as Appendix A1 of this EIR.

*Table 1-2. Summary of Initial Study/Notice of Preparation Comments*

Commenter	Date	Summary of Environmental Issues Raised	EIR Chapter/Section Where Comment is Addressed
<b>State Agency</b>			
Native American Heritage Commission (NAHC)	August 29 <sup>th</sup> 2024	The NAHC recommends consulting with California Native American tribes that are traditionally and culturally affiliated with the project area as early as possible to avoid inadvertent discoveries of Native American human remains and protect tribal cultural resources. This would involve contacting the NAHC for a Sacred Lands File Search and a Native American Tribal Consultation List. The NAHC also suggests conducting an archaeological records search through the California Historical Research Information System (CHRIS) to assess if the area has been previously surveyed and	Appendix A2 – Initial Study  Cultural Resources (pp. 56-66)  Tribal Cultural Resources (pp. 138-148)  Appendix A2 (Appendix C of the Initial Study) – Cultural Resources Assessment, prepared by SOAR Environmental Consulting

		<p>whether cultural resources are present. All findings should be summarized in a Cultural Resources Assessment.</p> <p>If tribal cultural resources are discovered during project activities, culturally affiliated Native American monitors and certified archaeologists should be involved in all ground-disturbing activities to ensure proper handling and treatment of these resources.</p>	
San Joaquin Valley Air Pollution Control District (SJVAPCD)	October 10 <sup>th</sup> , 2022	<p>The SJVAPCD recommends that the project:</p> <p><b>Air Emissions:</b> Compare project-related emissions against the District's significance thresholds and analyze both construction and operational emissions separately. Use CalEEMod to quantify air emissions and ensure all potential health risks to sensitive receptors are assessed using a Health Risk Assessment (HRA) if necessary.</p> <p><b>Mitigation Measures:</b> Incorporate design features to reduce air quality impacts, such as using cleaner construction equipment, reducing vehicle miles traveled (VMT), and promoting energy-efficient designs. Additionally, consider vegetative barriers and urban greening to reduce air pollution exposure for nearby sensitive receptors.</p> <p><b>Compliance with District Rules:</b> Ensure compliance with District rules such as Rule 9510 (Indirect Source Review) to mitigate NOx and PM emissions, Rule 8021 (Dust Control) for construction activities, and Rule 4601 (Architectural Coatings) to limit VOC emissions.</p> <p>The District also recommends consulting their <i>Guidance for Assessing and Mitigating Air Quality Impacts</i> (2015) requirements to ensure compliance with relevant air quality standards.</p>	<p>Section 4.4, Air Quality</p> <p>Appendix C – Health Risk Assessment (HRA), prepared by Core Environmental Consulting</p>

California Department of Fish and Wildlife (CDFW)	September 24 <sup>th</sup> , 2024	CDFW recommends conducting pre-construction surveys for Swainson's hawk, tricolored blackbird, and burrowing owl by a qualified biologist to assess the presence of suitable habitat and nesting activity. If active nests or the presence of these species are identified, mitigation measures such as no-disturbance buffers (250 feet for non-raptors and 500 feet for raptors) and continuous nest monitoring should be implemented. If take cannot be avoided, consultation with CDFW for incidental take permits may be necessary.	Appendix A2 – Initial Study  Biological Resources Section (pp. 39-55)  Appendix A2 (Appendix B of the Initial Study) – Biological Resources Assessment, prepared by SOAR Environmental Consulting
<b>Individuals</b>			
Bill Lemstra	September 11 <sup>th</sup> , 2024	Property owner to the south of the proposed Project raised concerns pertaining to existing farm practices, including the spraying of pesticides on orchards.	Section 4.2, Agriculture and Forest Resources  Appendix A2 – Initial Study, Agriculture and Forest Resources (pp. 20-28)
Kary Mancebo-Ingram	September 11 <sup>th</sup> , 2024	Environmental concerns included traffic speeds on the roads surrounding the Project, the City of Tulare Right-to-Farm Ordinance for nearby properties, and potential impacts to local wildlife (foxes, coyotes, hawks).	Section 4.3, Transportation  Appendix A2 – Initial Study – Agriculture and Forest Resources (pp. 20-28) – Biological Resources (pp. 39-55) – Appendix B of the Initial Study, Biological Resources Assessment (BRA)

### Issues to be Resolved by the Lead Agency

Section 15123(b)(3) of the CEQA Guidelines requires that an EIR contain a discussion of issues to be resolved. With respect to the proposed project, the key issues to be resolved include decisions by the City, as the lead agency, as to the following:

- Whether this environmental document adequately describes the environmental impacts of the Project.
- Whether the recommended mitigation measures should be modified and/or adopted.



- Whether there are other mitigation measures or alternatives that should be considered for the Project besides those identified in the Draft EIR.

## **1.9 Draft EIR and Public Review**

This Draft EIR is being circulated for public review and comment for a period of 45 days. During this period, the general public, organizations, and agencies can submit comments to the lead agency on the Draft EIR's accuracy and completeness. Release of the Draft EIR marks the beginning of a 45-day public review period pursuant to CEQA Guidelines Section 15105. The public can review the Draft EIR at the City's website. All comments or questions regarding the Draft EIR should be addressed to:

Steven Sopp, Principal Planner  
City of Tulare – Planning Department  
411 East Kern Ave  
Tulare, CA 93274  
(559) 684-4216  
ssop@tulare.ca.gov

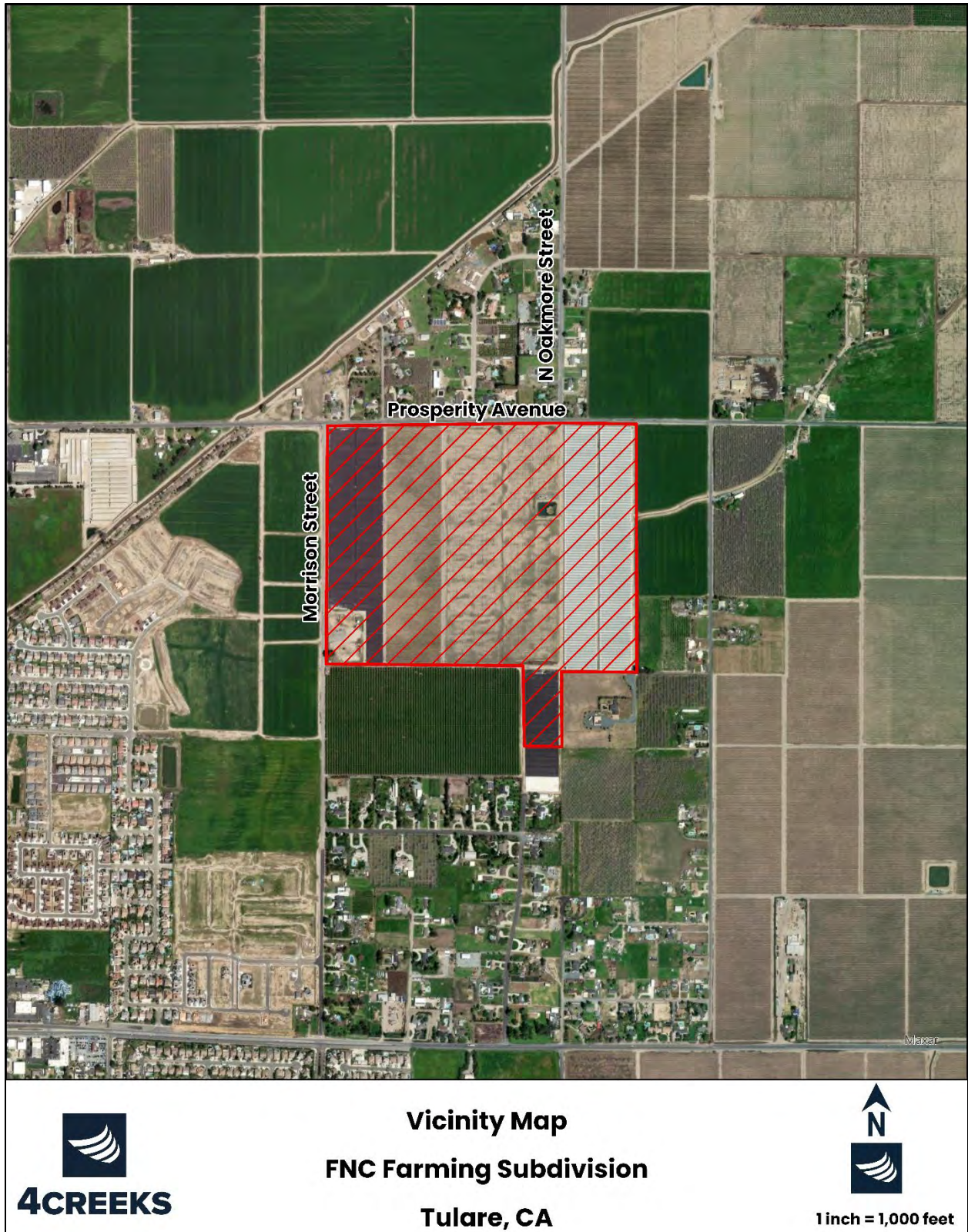


Figure 1-1. Project Vicinity Map



**City of Tulare**  
411 East Kern Ave  
Tulare, CA 93274

## **2 Introduction**

### ***Project Title: FNC Farming Subdivision***

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#### **2.1 Purpose of the California Environmental Quality Act (CEQA) Process**

This environmental impact report (EIR) was prepared in accordance with the California Environmental Quality Act (CEQA) to evaluate the potential environmental effects associated with implementation of the FNC Farming Subdivision Project (Project). It was prepared in accordance with Title 14, Section 15000 et seq. of the California Code of Regulations (CEQA Guidelines), and the rules, regulations, and procedures for implementing CEQA as adopted by the City of Tulare (City). Consistent with CEQA Guidelines Section 15161, this document is a project-level EIR and evaluates the potential environmental impacts associated with a specific project. As the lead agency for the Project, the City must complete an environmental review to determine if the Project could potentially result in significant adverse environmental effects. A detailed description of the Project is provided in Section 3, Project Description.

CEQA Guidelines Section 15002 states that the basic purposes of CEQA are to:

- Inform governmental decision makers and the public about the potential significant environmental effects of proposed government actions (including the discretionary approval of development projects);
- Identify the ways that environmental damage can be avoided or significantly reduced; and;
- Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.

If a project is approved involving significant environmental effects, the lead agency must also disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose.

This EIR provides project-level analysis of the potential environmental effects related to implementation of the Project. The level of impact analysis in this EIR corresponds to the degree of specificity deemed appropriate in accordance with CEQA Guidelines Section 15146. This EIR addresses the potentially significant environmental impacts that could occur as a result of construction and operation of the Project. This document also identifies appropriate and

feasible mitigation measures, where necessary, and includes Project alternatives that could be adopted to reduce or avoid potential significant environmental effects.

This EIR is an informational document for public agencies and members of the public, allowing informed decisions to be made regarding the purpose, objectives, and components of the Project. This EIR is the primary reference document for the formulation and implementation of a mitigation monitoring and reporting program for the Project, in compliance with California Public Resources Code (PRC), Section 21081.6.

## **2.2 Legal Authority and Lead Agency**

This EIR was prepared in accordance with all criteria, standards, and procedures of CEQA (PRC Section 21000 et seq.) and the CEQA Guidelines (14 CCR 15000 et seq.).

Pursuant to CEQA Section 21067 and CEQA Guidelines Article 4 and Section 15367, the City is the lead agency under whose authority this EIR has been prepared. “Lead agency” refers to the public agency that has the principal responsibility for carrying out or approving a project. Serving as the lead agency and before taking action to approve the Project, the City has the obligation to (1) ensure that this EIR was completed in accordance with CEQA; (2) review and consider the information contained in this EIR as part of its decision-making process; (3) make a statement that this EIR reflects the City’s independent judgment; (4) ensure that all significant impacts on the environment are eliminated or substantially lessened, where feasible; and, if necessary (5) make written findings for each unavoidable significant environmental effect stating the reasons why mitigation measures or Project alternatives identified in this EIR are infeasible and citing the specific benefits of the Project that outweigh its unavoidable adverse effects (14 CCR 15090–15093).

Pursuant to CEQA Guidelines Sections 15040 through 15043, and upon completion of the CEQA review process, the City will have the legal authority to do any of the following:

- Approve the Project;
- Require feasible changes in any or all activities involved in the Project to substantially lessen or avoid significant effects on the environment;
- Disapprove the Project, if necessary, to avoid one or more significant effects on the environment that would occur if the Project was approved as proposed; or
- Approve the Project even though the Project will cause a significant effect on the environment if the City makes a fully informed and publicly disclosed decision that (1) there is no feasible way to lessen the effect or avoid the significant effect, and (2) expected benefits from the Project will outweigh significant environmental impacts of the Project.

This EIR fulfills the CEQA environmental review requirements for the proposed zone amendment (pre-zoning for anticipated annexation), General Plan Amendment, and annexation of the property from the County of Tulare to the City of Tulare, and all other governmental discretionary and ministerial actions related to the Project. Upon completion of the annexation of the Project site into City limits, a parcel map detailing site development per the approved land use and zoning designations would be submitted to the City for review and approval prior to the start of construction.

This EIR is an informational document intended for use by City decision makers, trustee, and responsible agencies, and members of the general public in evaluating the physical environmental impacts of the Project. This EIR is the primary reference document for the formulation and implementation of a mitigation monitoring and reporting program for the Project, in compliance with PRC Section 21081.6. Environmental impacts cannot always be mitigated to a level considered less than significant. In accordance with Section 15093(b) of the CEQA Guidelines, if a lead agency approves a project that has significant impacts that are not substantially mitigated (i.e., significant unavoidable impacts), the agency shall state in writing the specific reasons for approving the Project, based on the final CEQA documents and any other information in the public record. This is defined in Section 15093 of the CEQA Guidelines as “a statement of overriding considerations.”

## **2.3 Responsible and Trustee Agencies**

PRC Section 21104 requires that all EIRs be reviewed by state responsible and trustee agencies (see also 14 CCR 15082 and 15086[a]). As defined by CEQA Guidelines Section 15381, “the term ‘Responsible Agency’ includes all public agencies other than the Lead Agency which have discretionary approval power over the project.” A trustee agency is defined in CEQA Guidelines Section 15386 as “a state agency having jurisdiction by law over natural resources affected by a project which are held in trust for the people of the State of California.” For this Project, the California Department of Fish and Wildlife is a trustee agency, because the Project has the potential to impact plant and wildlife species that are managed and protected by the state.

## **2.4 Summary of Project Analyzed in this Environmental Impact Report**

### **2.4.1 Requested Approvals**

The following discretionary and ministerial actions under the jurisdiction of the City would be required. This EIR covers all state and local government, and quasi-government approvals that may be needed to implement the Project, whether or not they are explicitly listed in this section or elsewhere in this EIR (14 CCR 15124[d]). Details regarding each of these approvals are provided in Section 3, Project Description.



## Discretionary Approvals

### Planning Commission

- **Project Review.** A review by the Planning Commission is held in order to review the Project, including all requested entitlements. Such a review will yield a recommendation to the City Council.
- **Recommendation Certification of EIR.** The Planning Commission will review the EIR and make a recommendation to the City Council to either certify or reject this EIR, along with the CEQA Findings and Mitigation Monitoring and Reporting Program (MMRP).

### City Council

Discretionary actions for this Project would include approval of a zone amendment (pre-zoning for anticipated annexation), General Plan Amendment, recommendation for the annexation from the County of Tulare to the City of Tulare, and approval of a tentative subdivision map.

- **Zone Amendment.** Project implementation would require approval of a zone amendment from Exclusive Agricultural Zone - 40 Acre Minimum (AE-40) and Exclusive Agricultural Zone - 20 Acre Minimum (AE-20) to that proposed by the Project.
- **General Plan Amendment.** Project implementation would require approval of General Plan Amendment to modify the site's land use designation to that proposed by the Project.
- **Annexation Application.** Project implementation would include the annexation of the site from the County of Tulare to the City of Tulare.
- **Tentative Subdivision Map.** The proposed Project requires the approval of a Tentative Subdivision Map.
- **Certification of EIR.** Certify or reject this EIR, along with the CEQA Findings and the MMRP.

### Tulare County Local Agency Formation Commission (LAFCO)

- **Annexation into the City of Tulare.** The Project site would be annexed to the City of Tulare upon approval of LAFCO.

## **Ministerial Approvals**

### City of Tulare Subsequent Implementing Approvals:

- Upon completion of the annexation of the Project site into City limits, a parcel map detailing site development per the approved land use and zoning designations would be submitted to the City for review and approval prior to the start of construction.
- Approvals for water and sewer infrastructure
- Approvals for surrounding roadway and perimeter improvements such as sidewalks, curbs, and gutters
- Issue grading permits
- Issue building permits

### **2.4.2 Project of Statewide, Regional, or Area-Wide Environmental Significance**

CEQA Guidelines Section 15206 identifies the types of projects considered to be of statewide, regional, or area-wide significance. When a project is classified, its EIR must be submitted to the State Clearinghouse of the Governor's Office of Planning and Research, and the appropriate metropolitan area council of governments. This Project meets the following criteria of a project of statewide, regional, or area-wide significance:

- The Project has the potential for causing significant environmental effects extending beyond the City of Tulare due to it being a residential development containing more than 500 dwelling units.

## **2.5 Scope of this Environmental Impact Report**

The purpose of this Environmental Impact Report (EIR) is to evaluate the potential environmental impacts associated with the implementation of the Project. The City concluded that the Project could potentially have direct or indirect adverse effects on the environment. Following the Initial Study (IS), the City determined that an EIR was necessary to address the environmental topics where the Project could result in potentially significant impacts. Accordingly, this focused EIR discusses only those areas identified in the IS as having potentially significant impacts. Environmental areas that were determined to have no impact or less than significant impacts, either with or without mitigation, were screened out from further detailed analysis in this EIR, as outlined in Appendix A2.

## **2.6 Organization of this Environmental Impact Report**

This EIR contains all of the information required to be included in an EIR, as specified by the CEQA Statutes and Guidelines (PRC Section 21000 et seq.; 14 CCR 15000 et seq.). CEQA requires

that an EIR contain, at a minimum, specified content. The following provides a quick reference in locating the CEQA-required sections within this document:

- **Section 1: Executive Summary.** The Executive Summary provides a summary of the Project and Project alternatives, including a summary of the Project and cumulative impacts, recommended mitigation measures, and the level of significance after mitigation for each environmental issue that is the focus of this EIR.
- **Section 2: Introduction.** The Introduction provides an overview of the Project and the CEQA process, and describes the purpose, scope, and components of this EIR.
- **Section 3: Project Description.** The Project Description provides a detailed description of the Project, including the location and Project characteristics. The intended uses of this EIR, Project background, Project objectives, and required Project approvals are also addressed.
- **Section 4: Environmental Analysis.** The Environmental Setting, Analysis and Mitigation Measures chapter analyzes the environmental impacts of the Project in light of the Project's specific environmental setting. Impacts are organized into major environmental topic areas. Each topic area includes a description of the environmental setting, regulatory setting, significance criteria, individual and cumulative impacts, mitigation measures, and level of significance after mitigation. The following specific environmental areas are addressed in Section 4:
  - Section 4.1 – Introduction
  - Section 4.2 – Agriculture and Forest Resources
  - Section 4.3 – Transportation
  - Section 4.4 – Air Quality
  - Section 4.5 – Greenhouse Gas Emissions
- **Section 5: Cumulative Effects.** The Cumulative Effects chapter explains the methodology of the cumulative analyses and presents the potential cumulative effects of the FNC Farming Subdivision Project.
- **Section 6: Alternatives.** The Alternatives chapter presents the impact analysis for the No Project Alternative and two project alternatives. This chapter also describes the alternatives that were considered but eliminated from further consideration.
- **Section 7: Other CEQA Considerations.** The CEQA Considerations chapter provides a summary of significant environmental impacts, including unavoidable, irreversible, and growth-inducing impacts.
- **Section 8: References.** List of outside sources and supporting information used during preparation of the environmental impact report.



- **Section 9: List of Preparers.** The List of Preparers chapter provides a list of the organizations, persons consulted, and various individuals who contributed to the preparation of this EIR. This section also includes a list of the lead agency personnel and technical consultants used to prepare this EIR.
- **Technical Appendices.** The technical appendices contain the NOP (including public comments), Initial Study, and technical studies prepared to support the analyses and conclusions in this EIR.

The Final EIR will be prepared after the public review period for this EIR has been completed. The Final EIR will include comments and recommendations received on the EIR during the public review period; a list of persons, organizations, and public agencies commenting on the EIR; written responses to significant environmental issues identified in the comments received; and any other relevant information added by the City.

## 2.7 Documents Incorporated by Reference

Pursuant to CEQA Guidelines Section 15150, this EIR has referenced several technical studies, analyses, and previously certified environmental documents. Information from these documents, incorporated by reference, is briefly summarized in the appropriate chapters and sections. The documents that were used to prepare this EIR include the following:

- City of Tulare General Plan
- City of Tulare Municipal Code
- Tulare County General Plan

These reference documents, in accordance with CEQA Guidelines Section 15150(b), are available for review at the following locations:

### City of Tulare General Plan

<https://www.tulare.ca.gov/home/showpublisheddocument/2393/635907185852000000>

### City of Tulare Municipal Code (Code of Ordinances)

[https://codelibrary.amlegal.com/codes/tulare/latest/tulare\\_ca/0-0-0-24582](https://codelibrary.amlegal.com/codes/tulare/latest/tulare_ca/0-0-0-24582)

### County of Tulare General Plan

<https://generalplan.co.tulare.ca.us/documents/GP/001Adopted%20Tulare%20County%20General%20Plan%20Materials/000General%20Plan%202030%20Part%20I%20and%20Part%20II/GENERAL%20PLAN%202012.pdf>

## **2.8 Documents Prepared for the Project**

The following technical studies and analyses were prepared for the Project and Project site and are incorporated into the technical appendices of this EIR:

- Appendix A1 – NOP/Scoping Comments
- Appendix A2 –Initial Study (Attachments A-F Included)
- Appendix B – Mitigation Monitoring and Reporting Program (MMRP)
- Appendix C – Health Risk Assessment (HRA)

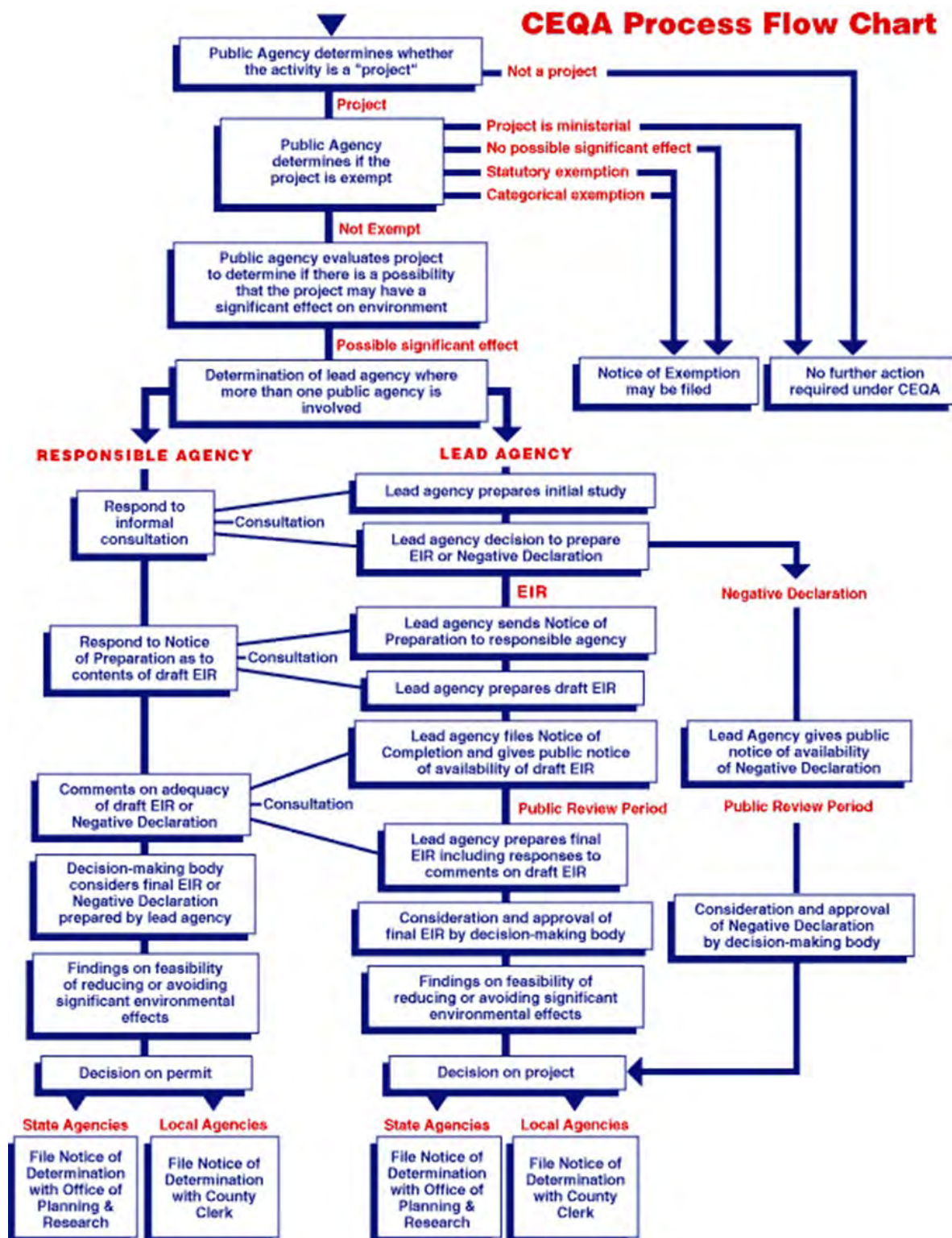


Figure 2-1. The CEQA Process Flow Chart



**City of Tulare**  
411 East Kern Ave  
Tulare, CA 93274

### **3 Project Description**

***Project title: FNC Farming Subdivision***

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As required by Section 15124 of the California Environmental Quality Act (CEQA) Guidelines, this chapter describes the FNC Farming Subdivision (Project or proposed Project). This section includes a statement of Project objectives, a general description of the Project's technical, economic, and environmental characteristics, and a summary of the discretionary actions required to approve the Project.

#### **3.1 Project Overview and Environmental Setting**

##### **Project Overview**

The Project proposes low-density residential development on approximately 140.32 gross acres within unincorporated Tulare County. The site is, however, within the City of Tulare Urban Development Boundary and is planned for Rural Residential (0-2 D.U./acre) and Residential Estate (2.1-3 D.U./acre) land uses according to the City of Tulare General Plan. The Project includes the construction of 546 residential units, a 5.47-acre central park and a 7.8-acre Rural Residential zone on parcels 172-010-021, 172-010-022 and 184-020-010. Of the 546 residential units, 238 units are planned for a 5,000 S.F. lot size minimum, and 308 units are planned for 6,600 S.F. lot size minimum. The 5.47-acre central park will provide park/recreational space for residents as well as provide stormwater detention. Additionally, Class I Bike Paths will be implemented throughout the Project area.

The Project proposes annexing the approximately 140.32-acre Project site into the City of Tulare. Approximately 7.8-acres of the site will not be included in Project construction, and no change in land use is proposed. The current land use designation of this 7.8-acre zone is Rural Residential (0-2 D.U./acre). The Project plans to pre-zone the site from its County zoning of Exclusive Agriculture 20 & 40 Acre Minimum (AE-20, AE-40) to a Single-Family Residential (R-1-5 & R-1-6) district with minimum lot sizes of 5,000, and 6,000 feet (R-1-5, R-1-6). The Project also plans for a General Plan Amendment to change the site's land use from Rural Residential (0-2 D.U./acre) and Residential Estate (2.1-3 D.U./acre) to Low-Density Residential (3.1-7 D.U./acre). The planned homes will abide by all zoning law requirements including lot size, frontage, and front/side yard setbacks. The proposed Single-Family Residential zones (R-1-5, R-1-6) require a minimum setback of 20 feet for front yards, and 5 feet for side and rear yards. The Project is planning for setbacks of 20 feet and 5 feet, respectively. The site plan for the proposed Project

is shown in Figure 3-1. The Discretionary actions required for this Project would include approval of a zone amendment (pre-zoning for anticipated annexation), General Plan Amendment, approval of a Tentative Subdivision Map, and annexation of the property from the County of Tulare to the City of Tulare.

## **Regional Setting**

The City and County of Tulare are located in the San Joaquin Valley, as part of the larger California Central Valley. The California Central Valley is one of the most important agricultural regions in the United States. The City of Tulare is located in the western portion of Tulare County and is about 60 miles northwest of the City of Bakersfield, and 45 miles southeast of the City of Fresno (Figure 3-3). Although Tulare and the surrounding region is known for agricultural production, Tulare is a growing city with an increasing population, which has furthered the development of regional shopping centers, employment centers, and a local college (College of Sequoias Campus). Highway 99 is the central highway near Tulare, and it runs north-south through the City, and is approximately 1.8 miles west of the Project site. Another major highway is State Route 137, which is approximately 0.45 miles from the southernmost boundary of the Project site. The City also contains a central downtown area, a major regional shopping center (Tulare Outlet Center), a mix of housing types, and a large dairy manufacturing industry.

## **Project Setting**

The Project site is located in the eastern portion of the City's Urban Development Boundary, and it currently exists outside of city limits (Figure 3-4). The proposed Project site is located on the southeast corner of Prosperity Avenue and Morrison Street within the City of Tulare Planning Area of Tulare County. The site is west of Road 126, east of Morrison Street, and south of Prosperity Avenue. The site is approximately 2.87 miles Northeast of Tulare's central downtown area. The Project involves construction on approximately 140.32 gross acres and the site is comprised of three parcels, which includes Assessor's Parcel Numbers [APNs] 172-010-021, 184-020-010, and 172-010-022.

The site is currently vacant following the removal of the row crops that once occupied the site, and only a small portion is used for agricultural purposes. Parts of the property, particularly to the west, east and south contain potted blueberries. The site also contains an on-site irrigation water supply, which includes a 0.5-acre pump station pond. The entire site is designated as Prime Farmland according to the California Department of Conservation's (DOC) Farmland Mapping and Mitigation Program (FMMP). The Project site is currently designated as Residential Estate (2.1-3 D.U./acre) and Rural Residential (0-2 D.U./acre) by the City of Tulare General Plan. The site is zoned Exclusive Agriculture, 20-Acres (AE-20) and Exclusive Agriculture, 40-Acres (AE-40) by Tulare County but is within the City's Urban Development Boundary (UDB) and is planned for annexation and residential uses by the City of Tulare.

## Surrounding Land Uses

Figures 3-5 and 3-6 detail the Project's existing land use designation and zoning as well as the land uses surrounding the Project site. Specific land uses located within the immediate vicinity include the following:

- **North:** Rural Residential (City of Tulare General Plan, City of Tulare Urban Development Boundary), currently Single-Family Housing.
- **South:** Rural Residential (City of Tulare General Plan, City of Tulare Urban Development Boundary) currently agricultural use.
- **East:** Exclusive Agriculture – AE-40 (Tulare County General Plan) currently agricultural use.
- **West:** Low and Medium-Density Residential (City of Tulare General Plan, City of Tulare Urban Development Boundary) currently agricultural use.

## 3.2 Project Objectives

Section 15124(b) of the CEQA Guidelines requires that an EIR include a statement of Project objectives that "include(s) the underlying purpose of the project and may discuss the project benefits".

The following objectives have been outlined for the Project:

- 5) Provide more housing opportunities consistent with the goals and policies outlined in the City's current Housing Element, which includes providing a mix of land uses and increasing available pedestrian and bicycle facilities while minimizing environmental effects.
- 6) Provide development that is functionally compatible with existing residential neighborhoods while enhancing the City's ability to provide fiscally positive development.
- 7) Amend the City's jurisdictional boundary in accordance with the Tulare County Local Agency Formation Commission's (LAFCO) goal to encourage logical and orderly development that promotes the efficient extension of municipal services.
- 8) Create a new community that can serve existing Tulare residents and accommodate future population growth.

## 3.3 Project Components

The proposed Project includes 546 total low-density residential units and a 5.47-acre community park/stormwater detention basin. These land uses have been summarized in Table 3-1, below.

Table 3-1. FNC Farming Subdivision Proposed Land Use and Zoning Summary

Land Use	Total Land Use Acreage	Total Units	Density (DU/Acre)	Zoning
<b>Residential Development</b>				
Low-Density Residential	127.03	546	4.3	R-1-5 (Single Family 5,000 SF Min. Lot Size); R-1-6 (Single Family 6,000 SF Min. Lot Size)
Rural Residential	7.8	No Development Proposed	0-2	RA; Rural Residential
<b>Other Development</b>				
Parks and Recreation	5.47			PL; Public Lands
<b>Total</b>	140.32			

**Source:** Figure 3-1, Site Plan

The Project would result in onsite and offsite infrastructure improvements including new and relocated utilities, new residential streets, improvements of North Oakmore Street, Morrison Street and Prosperity Avenue, and the continuation of North Oakmore Street into the proposed Project area. The Project would require no demolition of any anchored structure, but there are approximately 33.9 acres of agricultural high tunnels that will be removed prior to construction. The construction of the Project will be in three phases. The Project will require annexation into the City of Tulare; however, it is within the Tulare UDB and borders existing and planned single-family homes within City Limits.

### 3.3.1 Land Uses

#### Urban Development Boundary & Sphere of Influence

A Sphere of Influence (SOI) is the probable extent of a City's boundary and service area. An Urban Development Boundary (UDB) is the boundary established by a local government for land use assumptions on a 20-year development horizon. The City of Tulare UDB is shown in the City's General Plan Land Use Map (Figure 2-2, City of Tulare General Plan). The SOI is a tool used by LAFCO to encourage the orderly formation and growth of local government agencies, preserve open space and agricultural lands, discourage urban sprawl, and encourage the efficient provision of public services. California State Law requires LAFCO to update information about municipal services prior to adopting Sphere of Influence changes or updates (Government Code Section 56430).

## **Low Density Residential**

Development of low density residential is planned for approximately 127.03 acres and would include approximately 546 single family residential lots ranging from 5,000 to 6,600 square feet per parcel. The main access points to this development would be from Oakmore Street, Prosperity Avenue, and Morrison Street. The low-density residential portion of the Project will include a park area for stormwater detention as well as Class I bike/pedestrian paths for use by residents along Oakmore Street, Monarch Dunes Avenue (future local street), and Castle Rock Avenue (future local street) (See Figure 3-1).

## **Parks and Recreation**

The parks and recreation land uses include the 5.47-acre community park, which would be located near the core of the Project site (See Figure 3-1). The park will provide recreational space for residents and will also provide stormwater detention services. Additionally, the park will be connected to the Class I Bike Path and sidewalk network, which connects the residential areas to the park and neighborhood commercial center. All developed areas would be landscaped and would provide green space throughout the entire site.

## **Utilities and Planned Infrastructure Improvements**

### **Water System**

The proposed Project would involve the construction of water distribution infrastructure (e.g., pipes, valves, meters) to provide domestic water and irrigation water for the new residences and facilities within the Project site. According to the City of Tulare's Water System Master Plan (2009), the nearest water line is at the intersection of Prosperity Avenue and Mooney Boulevard, approximately 0.56 miles west of the Project site. The Master Plan also indicates that water pipelines and a Groundwater Supply Well are planned to extend onto the Project site. Other than the lateral connections from the Project site to existing water mains, the Project is not expected to require the construction or expansion of off-site infrastructure beyond what has planned in the City of Tulare Water System Master Plan.

### **Wastewater System**

The Project would require the construction of new wastewater infrastructure within the Project site to serve the residences and commercial buildings associated with the proposed Project. According to the City of Tulare Sewer System Master Plan (2009), there is no existing wastewater infrastructure on the Project site. Construction associated with wastewater infrastructure would include trenching for miscellaneous utility lines and connections to existing public infrastructure, installation of wastewater infrastructure would be limited to on-



site wastewater distribution, and off-site work associated with connections to domestic wastewater mains located on Mooney Boulevard.

### Storm Drainage

Project construction would involve the construction of new stormwater management infrastructure, which would include drainage collection systems as well as a stormwater detention basin. All stormwater produced from Project operations will be directed to the existing storm drainage system within the City as well as to a 2.64-acre stormwater retention pond that is planned within the 5.47-acre on-site park. During construction, a temporary stormwater basin will be utilized. The stormwater detention basin would provide an outlet for stormwater during Project operation and would minimize the amount of stormwater discharged off-site. Therefore, the Project does not propose the expansion of off-site stormwater facilities or the relocation of new off-site facilities. The stormwater facilities will be constructed in compliance with all local regulatory requirements.

### Regulated Public Utilities

Connections upgrades required for the proposed Project would include electric power and telecommunication facilities. Electrical utilities will be provided by Southern California Edison (SCE), which would be part of a dry utility package which would be installed on site and along nearby roadways to provide service to the Project. Connections to dry utilities will be limited to the Project site and will not extend off-site. The Project does not include natural gas as a fuel source, so all in-home appliances will be electric-powered. There is existing overhead electrical infrastructure along East Prosperity Avenue and North Oakmore Street. There is currently no available natural gas infrastructure within the Project site. Connection to existing utilities would require limited construction, which would be temporary, limited to overhead electrical line connections and trenching for underground utilities.

#### **3.3.2 Access and Circulation**

Access to the Project site would be available via Prosperity Avenue, Oakmore Street and Morrison Street. Internal circulation would consist of Oakmore Street, which will be extended as part of Project construction. Castlerock Avenue and Monarch Dunes Avenue are new local roads that will be dedicated as part of the proposed Project. All new roads, sidewalks, curbs, and gutters will be designed in accordance with the City's Engineering Standards and to the conditions established during Site Plan Review. In addition, a Class I Bike Path will be constructed along Monarch Dunes Avenue (future), Castlerock Avenue (future), and Oakmore Street, which would connect all parts of the Project site.

### **3.3.3 Construction and Phasing**

Construction of the Project will occur in three phases and is anticipated to be completed over the course of up to 10 years. The first phase will focus on constructing the proposed buried utilities and extending new roads, involving minor grading and trenching, installation of utility lines, backfilling, and paving. Existing water and sewer lines are located to the south of the site. Completing these road extensions first will ensure that construction-related trips can utilize the new extension of Oakmore Street to access home sites. Once the road and utility work is complete, the homes will be constructed in three phases, with construction of all 546 homes expected to be completed by the end of 2035.

The Project will include both onsite and offsite infrastructure improvements, such as new and relocated utilities. Water and electricity will tie into existing infrastructure near the site and will be built within the public right-of-way. Water and sewer services will be provided by the City of Tulare once new lines are installed on the Project site. In addition to utility improvements, the Project proposes enhancements to the surrounding streets. Oakmore Street will be widened to a 128-foot right-of-way (ROW) and will include new sidewalks, landscaping, and a Class I Bike Trail. Morrison Street will also be improved with new sidewalks, a Class I Bike Trail, landscaping, and roadway upgrades. Castlerock Avenue, a new roadway with a 68-foot ROW, will feature a Class I Bike Path, sidewalks, and landscaping, connecting the eastern and western portions of the residential development. Monarch Dunes Avenue, another new local roadway, will have a 68-foot ROW and include landscaping, sidewalks, and a Class I Bike Trail. All local roads in the Project area will provide a 6.0-foot section for on-street parking.

Furthermore, the Project will include intersection improvements at Prosperity Avenue and Morrison Street, Prosperity Avenue and Oakmore Street, and Seminole and Mooney Boulevard, as required by engineering conditions of approval. These intersection improvements are integral to the Project and will be addressed in future phases of development to ensure adequate traffic flow and safety as the Project area builds out.

### **3.4 Annexation of Project Site**

The entire Project is located within the jurisdiction of Tulare County but is within the City of Tulare's Urban Development Boundary (UDB). According to the City of Tulare's 2013 Final Municipal Service Review, California State Law requires LAFCO to conduct periodic reviews and updates of SOI of each city and district within Tulare County (Government Code Section 56425(e)). As part of the Project, the 140.32-acre site would be annexed to the City of Tulare upon approval of LAFCO. Although the entire site has been acquired for the development of residential land use, a small portion will remain undeveloped and comply with its existing General Plan land use and zoning designation established by the City. This 7.8-acre portion on the south side of the Project site will remain a Rural Residential Zone (0-2 D.U./acre).

### 3.5 Permits and Approvals

The following discretionary approvals are required from the City of Tulare for the proposed Project:

- General Plan Land Use Amendment for Lot Sizes and Dwelling Unit Densities
- Zone Amendment Application
- Tulare County Local Agency Formation Commission Annexation
- Tentative Subdivision Map
- San Joaquin Valley Air Pollution Control District (SJVAPCD). The proposed Project is within the jurisdiction of the SJVAPCD and will be required to comply with Rule VIII, 3135, 4101, and 9510.
- Central Valley Regional Water Quality Control Board, SWPPP. The proposed Project site is within the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB). The Central Valley RWQCB will require a Storm Water Pollution Prevention Plan (SWPPP) to prevent impacts related to stormwater because of Project construction.

The following ministerial approvals are required from the City of Tulare for the proposed Project:

- City of Tulare Grading, Building, and Encroachment Permits
- Roadway Dedication of Morrison Street, Oakmore Street, Castle Rock Avenue, and Monarch Dunes Avenue

### 3.6 Cumulative Projects

In many cases, the impact of an individual project may not be significant, but its cumulative impact may be significant when combined with impacts from other related projects. California Environmental Quality Act (CEQA) Guidelines Section 15355 defines cumulative impacts as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.” CEQA Guidelines Section 15130(b) states that “the discussion [of cumulative impacts] need not provide as great detail as is provided for the effects attributable to the project alone.” Section 15130(b) further states that a cumulative impacts discussion “should be guided by standards of practicality and reasonableness.”

Cumulative impacts can also occur from the interactive effects of a single project. For example, the combination of noise and dust generated during construction activities can be additive and can have a greater impact than either noise or dust alone. However, substantial cumulative impacts more often result from the combined effect of past, present, and future projects located in proximity to a proposed project. Thus, it is important for a cumulative

impacts analysis to be viewed over time and in conjunction with other related past, present, and reasonably foreseeable future projects, the impacts of which might compound or interrelate with those of the project under review.

As provided by CEQA Guidelines Section 15130(b), the following elements are necessary to an adequate discussion of cumulative impacts:

- Either: (A) a list of past, present, and reasonably anticipated future projects producing related or cumulative impacts, including those projects outside the control of the agency; or (B) a summary of projections contained in an adopted general plan or related planning document that is designed to evaluate regional or area wide conditions. Any such planning document shall be referenced and made available to the public at a location specified by the lead agency.
- A summary of the expected environmental effects to be produced by those projects with specific reference to additional information stating where that information is available.
- A reasonable analysis of the cumulative impacts of the relevant projects. An EIR shall examine reasonable options for mitigating or avoiding any significant cumulative effects of the proposed projects.

For the analysis of cumulative impacts associated with the Project, a cumulative project list was developed through consultation with the City and County, as well as research and the understanding of other past, present, or reasonably foreseeable projects that would be included within a list of cumulative projects. Table 3-2 provides a list of these cumulative projects and their associated land use. Cumulative project locations are shown in Figure 3-7, Cumulative Projects Map.

*Table 3-2. Cumulative Projects*

<b>Project Name</b>	<b>Project Description</b>	<b>Project Location</b>	<b>Status</b>
KCOK Subdivision	267 units of low-density residential development	Southwest corner of Prosperity Avenue & Morrison Street	Early phases built; construction of subsequent phases is ongoing
KCOK Phases 5 & 9 Subdivision	88 units of low-density residential development, elementary school and a park	Northwest corner of Seminole Avenue & Morrison Street	Entitlement applications have been approved
Farrar Estates	360 units of low-density residential development on a total of 76.5 acres	Northwest corner of Morrison Street & East Tulare Avenue (State Hwy 137)	First phase construction complete; 2 <sup>nd</sup> phase beginning
Fulton Estates	185 units of single-family residential development, commercial center	Southwest corner of Tulare Avenue & Oakmore Street	Construction of phase 1 has been initiated

Lago Subdivision	121 units of low-density residential development on 14.06 acres	Southwest corner of Cartmill Avenue and Mooney Boulevard	Entitlement applications have been approved
Derrel's Mini Storage Expansion	64,100 sq. ft. of mini-storage space and 132,020 sq. ft. of covered RV storage	East side of Mooney Blvd., south of Prosperity Avenue	Entitlement applications have been approved
Mooney Storage	84,400 sq. ft. of mini storage space	East side of Mooney Blvd., north of Tulare Avenue	Entitlement applications have been approved

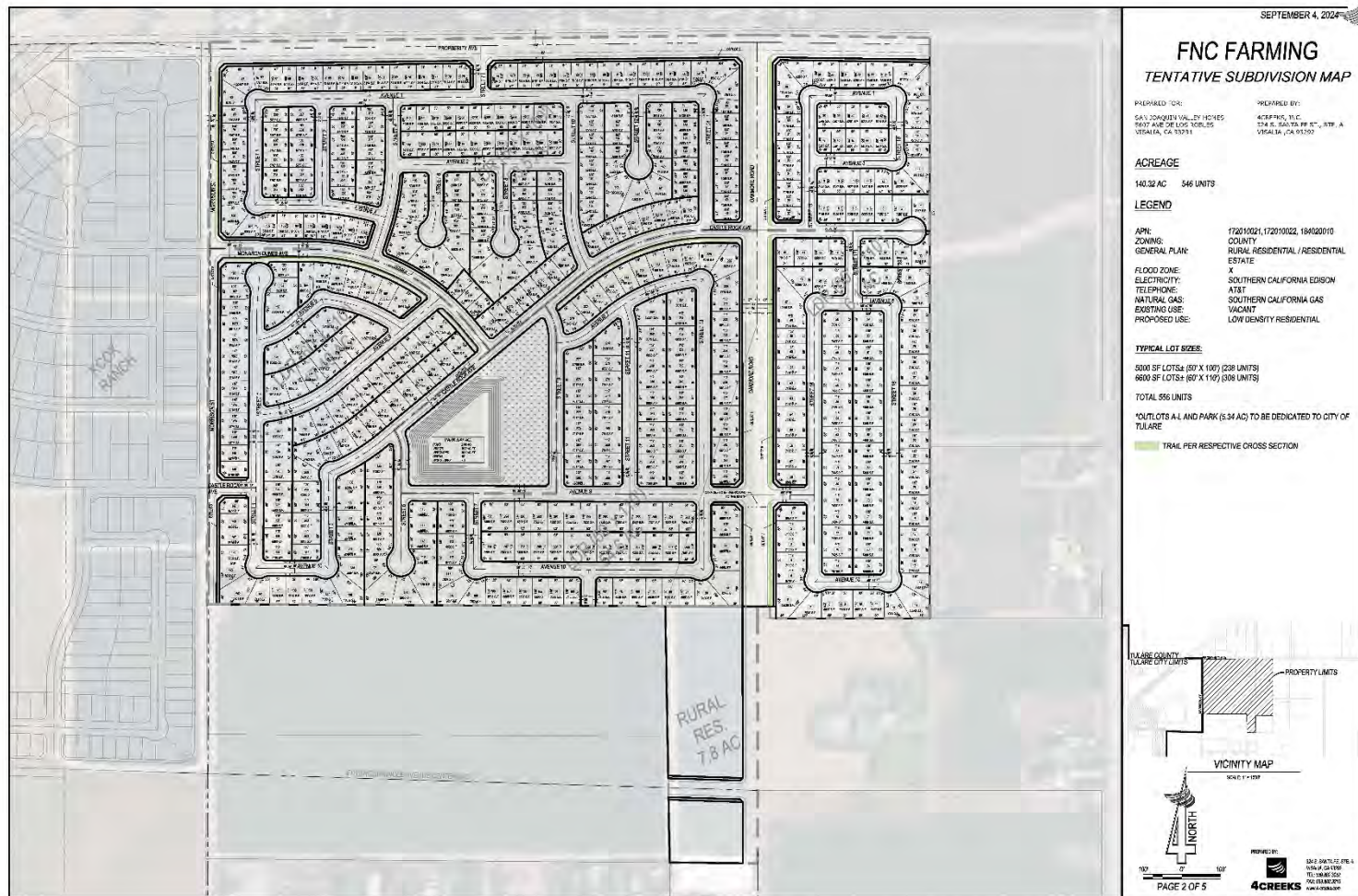


Figure 3-1. Site Plan

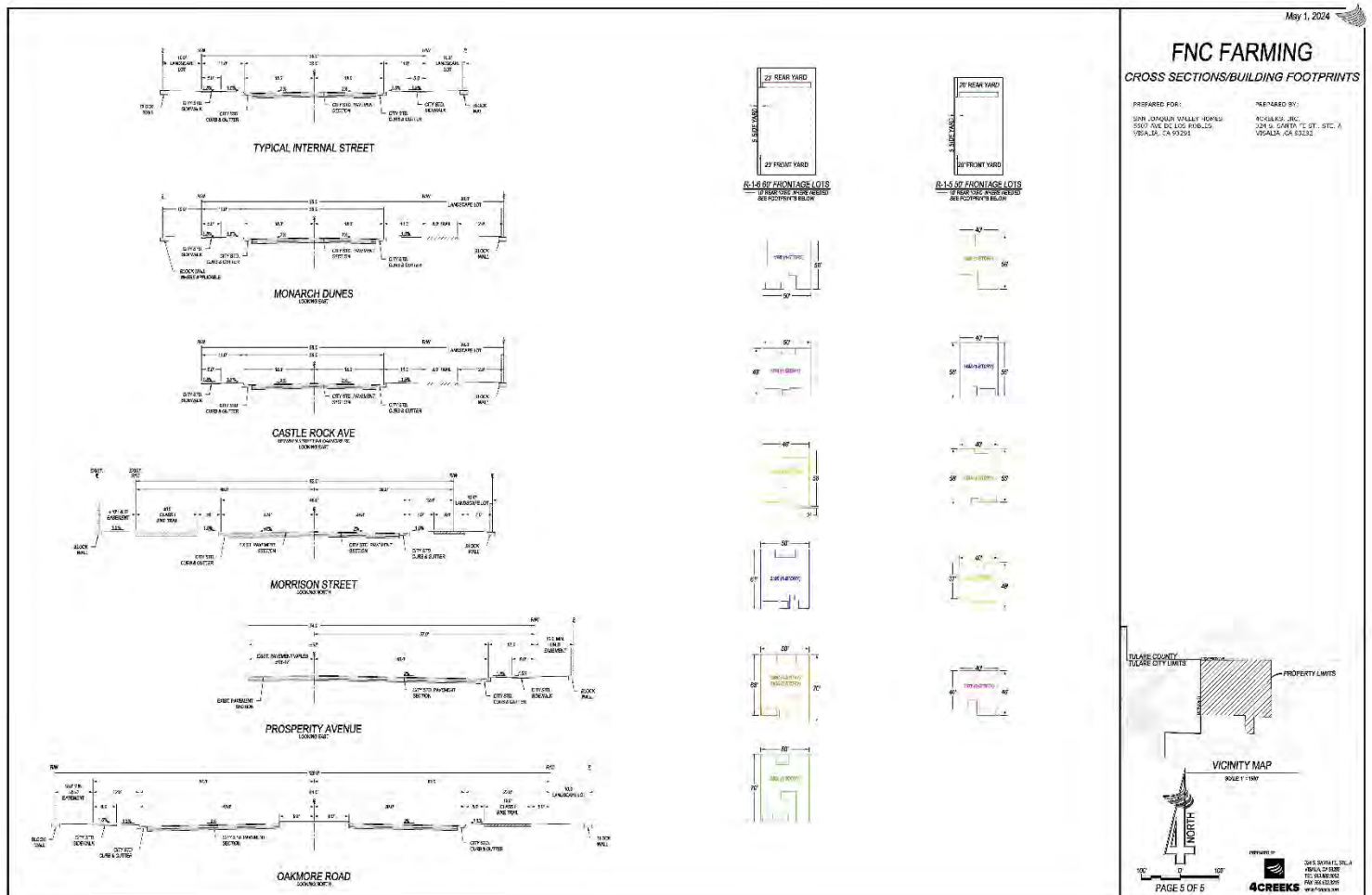


Figure 3-2. Cross-Sections and Building Footprints





Figure 3-3. Regional Map



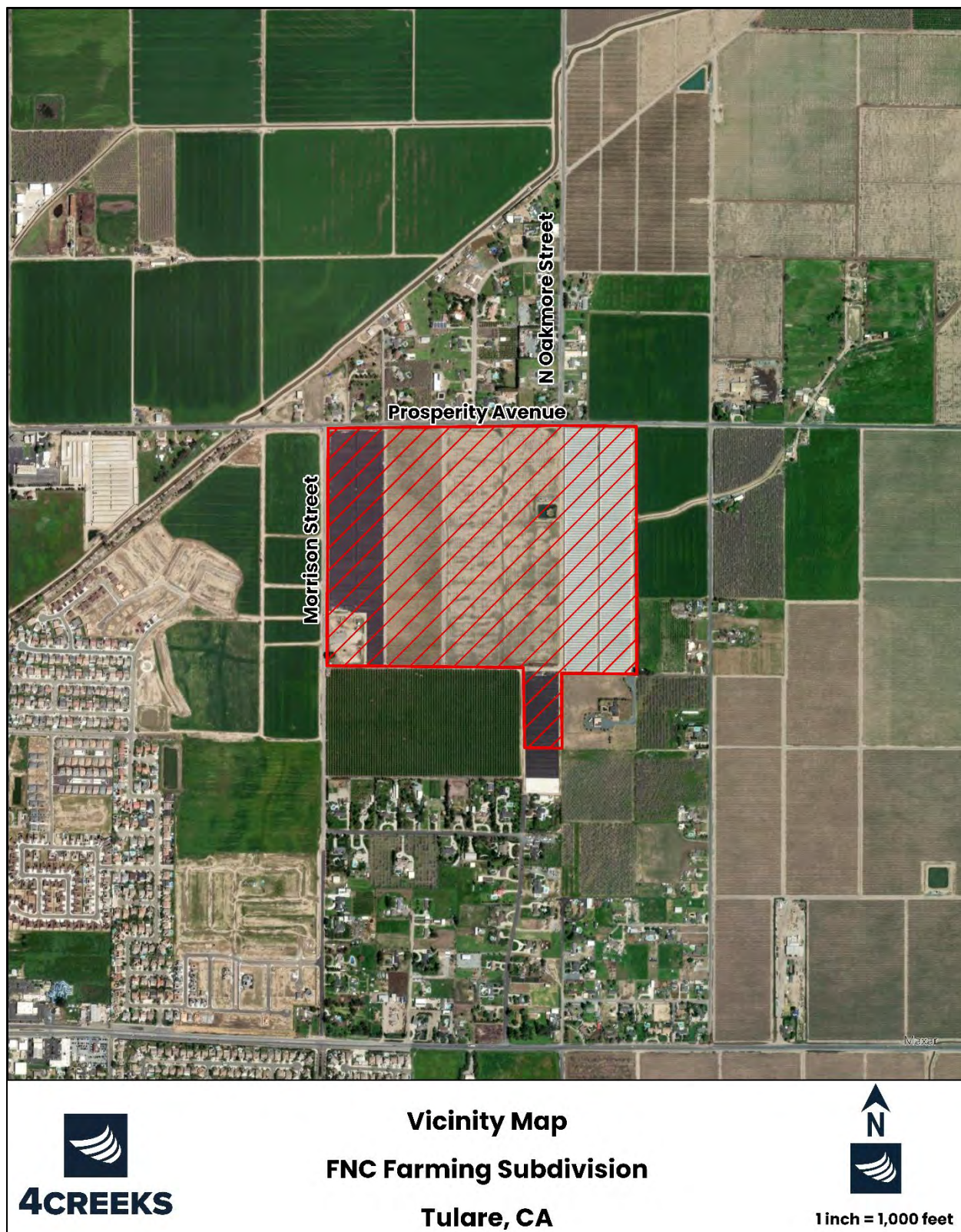


Figure 3-4. Vicinity Map



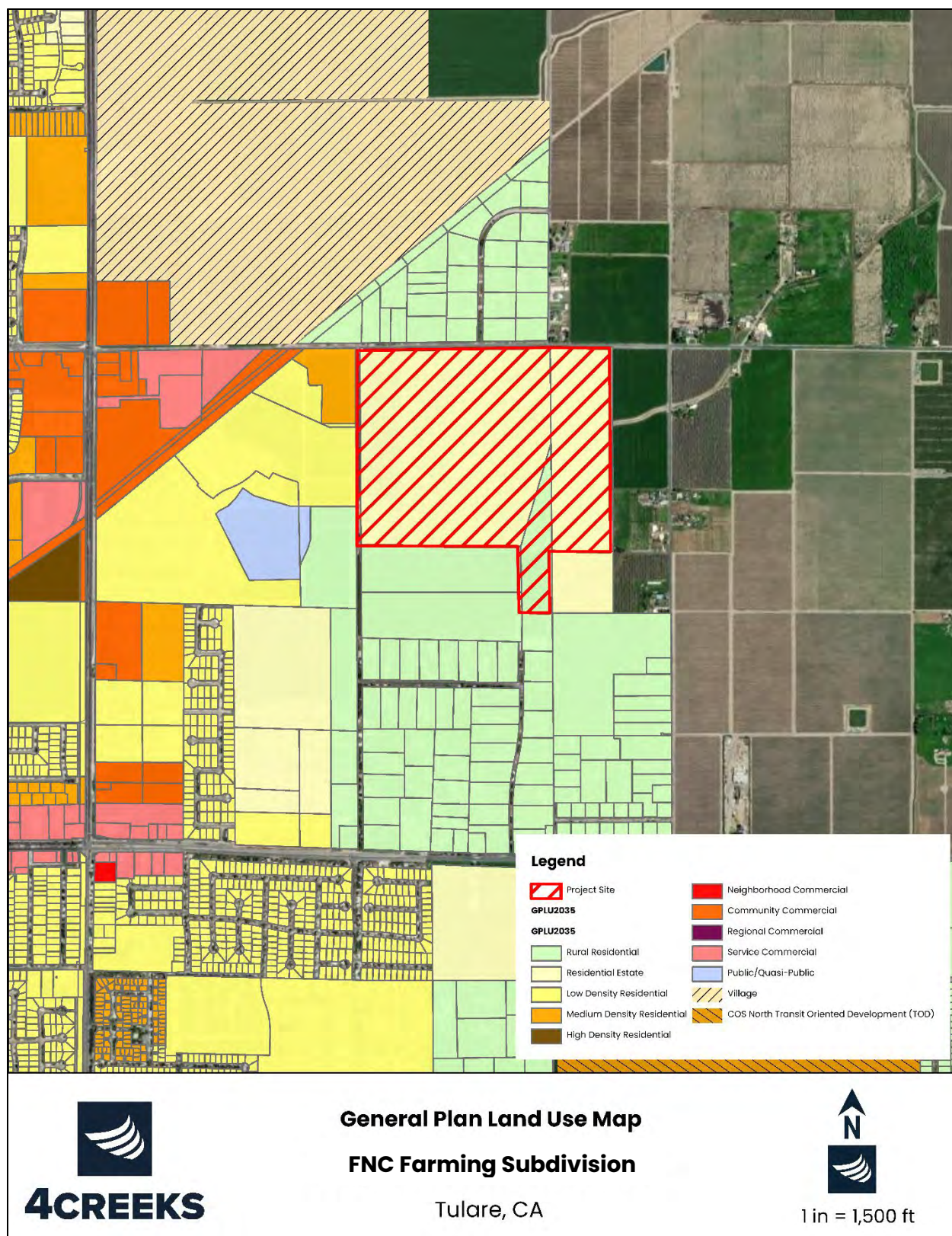


Figure 3-5. General Plan Land Use Map

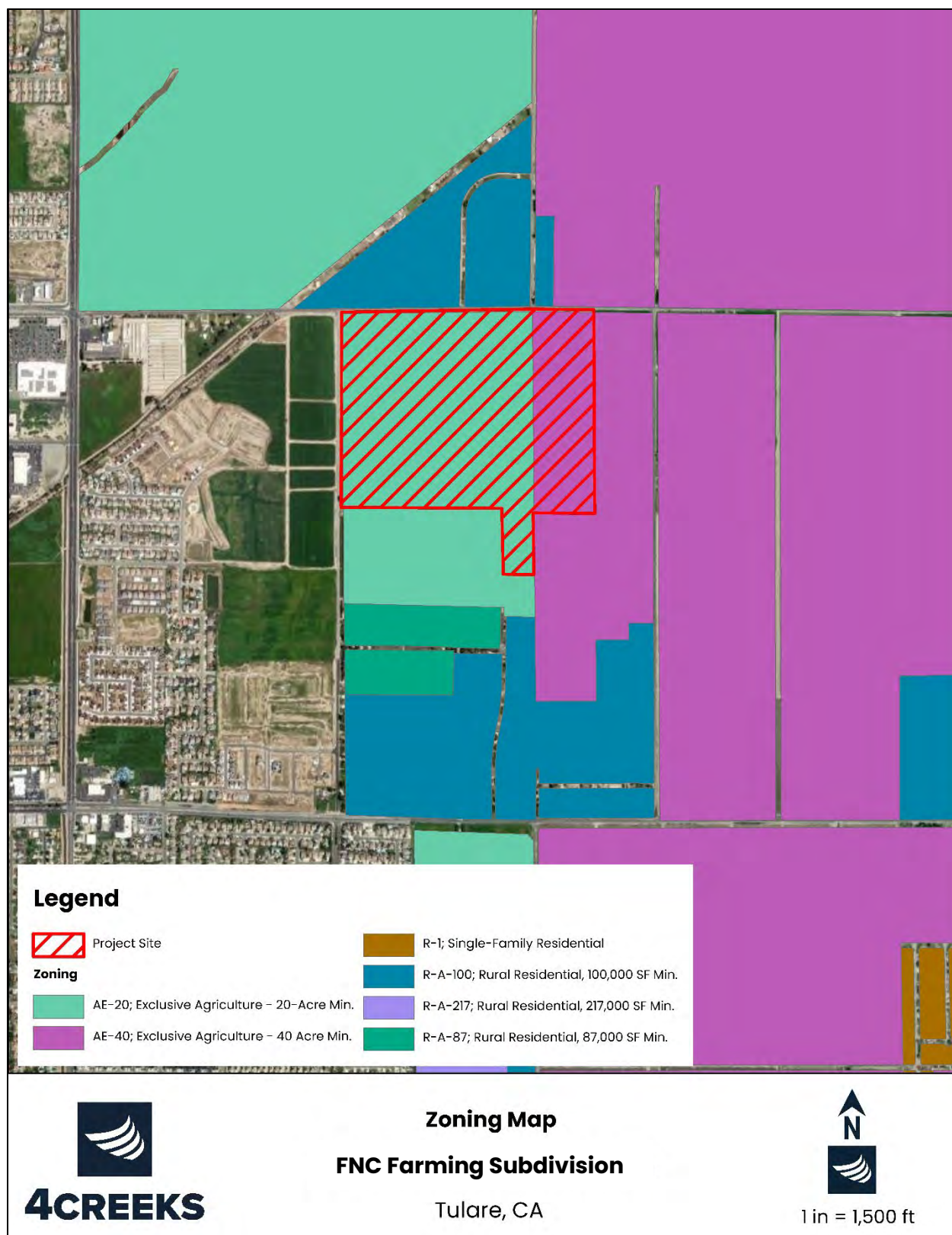


Figure 3-6. Zoning Map



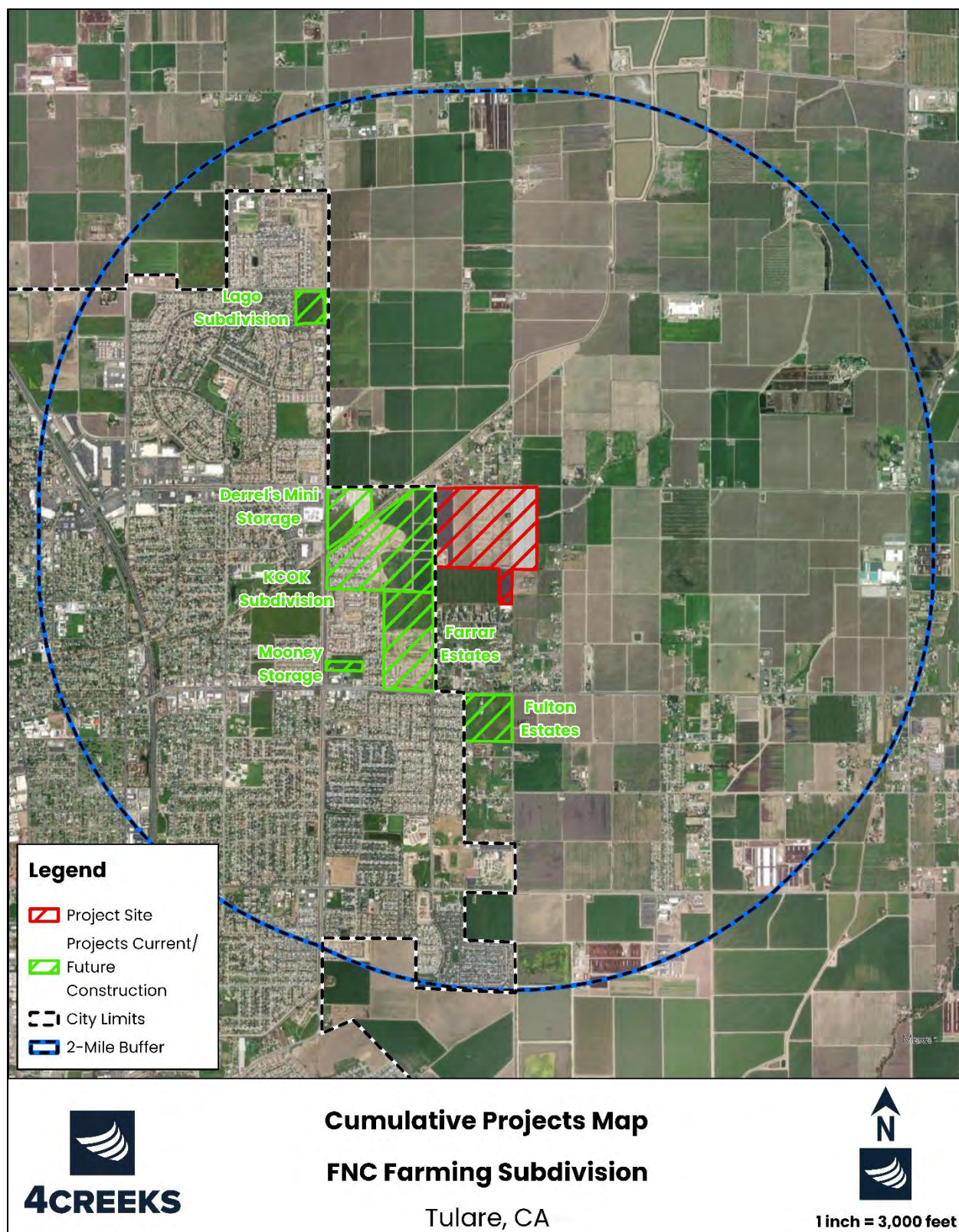


Figure 3-7. Cumulative Projects Map



**City of Tulare**  
411 East Kern Ave  
Tulare, CA 93274

## **4 Environmental Analysis**

### ***Project Title: FNC Farming Subdivision***

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#### **4.1 Introduction**

Section 4 presents the analysis of the potential direct and indirect environmental impacts of the proposed Project. The purpose of this environmental impact report (EIR) is to evaluate the potential environmental effects of the FNC Farming Subdivision (Project). CEQA requires that an EIR address all potentially significant environmental effects resulting from the implementation of a Project. The issue areas that contain potentially significant environmental effects include Agricultural Resources, Transportation, Air Quality and Greenhouse Gas Emissions. More specifically, the Project may cause significant impacts due to the conversion of agricultural land to non-agricultural uses, conflicts with the City's General Plan policies, air quality impacts to sensitive receptors, and potentially significant impacts from greenhouse gas emissions.

For all remaining environmental resource areas, this EIR has determined that the impacts of the proposed Project would not be significant. Appendix A2, Initial Study, provides a summary and explanation of the conclusions for each of these resource areas (as allowable under CEQA Guidelines Section 15128). CEQA Guidelines Section 15128 also requires that an EIR briefly explain the reasons why certain effects associated with a Project have been determined not to be significant, and therefore not discussed in detail in the EIR. As presented in Appendix A2, Initial Study, the proposed Project would result in no impact, less than significant impacts, or less than significant impacts with mitigation to the following resources:

- Aesthetics
- Biological Resources
- Cultural Resources
- Energy
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing

- Public Services
- Recreation
- Tribal Cultural Resources
- Utilities
- Wildfire

Presented in Appendix A2 are descriptions of each of these resources and an explanation of why the proposed Project would not result in significant impacts.

### Technical Appendices

A number of technical studies were prepared for the proposed Project and are included in the technical appendices. Appendix A1 contains the Notice of Preparation and all Scoping Comments from the Public Noticing period. Appendix A2 contains the Initial Study, which contains the CalEEMod output summary, Biological Resources Evaluation, Cultural Resources Evaluation, Energy Calculations, Traffic Study, and the Water Supply Assessment. The authors of each technical study are included in the appendices of the Initial Study as well. Appendix B contains the Mitigation Monitoring and Reporting Program (MMRP) for the Project, and Appendix C contains the Health Risk Assessment (HRA) prepared by Core Environmental Consulting.

### Environmental Setting

According to subdivision (a) of Section 15125 of the California Environmental Quality Act (CEQA) Guidelines, an EIR must include a description of the existing physical environmental conditions in the vicinity of the Project as they exist at the time when the Notice of Preparation (NOP) is published. This “environmental setting” will normally constitute the “baseline condition” against which Project-related impacts are compared. The CEQA Guidelines recognize that the data for establishing an environmental baseline cannot be rigid. Because physical environmental conditions may vary over a range of time, the use of environmental baselines that differ from the date of the NOP is reasonable and appropriate in certain circumstances when doing so results in a more accurate or conservative environmental analysis.

#### **4.1.1 Organization of Section 4**

This focused EIR assesses impacts of the proposed Project on agricultural resources, transportation, air quality and greenhouse gas emissions within the Project vicinity. All other environmental issue areas are anticipated to have impacts that will remain less than significant with the proposed mitigation measures implemented. The mitigation measures for all other issue areas can be found in the Initial Study (Appendix A2). Agriculture/forest resources, transportation, air quality, and greenhouse gas emissions sections addressed in this EIR are presented in terms of the following subsections:

- **Existing Conditions:** Provides information describing the existing setting on and/or surrounding the Project site that may be subject to change as a result of implementation of the Project. This setting discussion describes the conditions that existed when the NOP was sent to responsible agencies and the State Clearinghouse.
- **Regulatory Setting:** Provides a discussion of federal, state, regional, and local regulations, plans, policies, and ordinances applicable to the Project.
- **Thresholds and Methodology:** Provides criteria for determining the significance of Project impacts for each environmental issue (thresholds) and discusses the system of methods used to analyze potential Project impacts (methodology).
- **Impacts Analysis:** Provides a discussion of the characteristics of the Project that may have an impact on the environment, analyzes the nature and extent to which the Project is expected to change the existing environment, and indicates whether the Project's impacts would meet or exceed the levels of significance thresholds.
- **Mitigation Measures:** Identifies mitigation measures to reduce significant adverse impacts to the extent feasible.
- **Level of Significance After Mitigation:** Provides a discussion of significant adverse environmental impacts that cannot be feasibly mitigated or avoided, significant adverse environmental impacts that can be feasibly mitigated or avoided, and environmental impacts that are not significant/have no impact.

Based on the analysis presented in the Initial Study (Appendix A2), this section addresses four issues: the permanent loss of agricultural land, potential conflicts with the City's General Plan, potential impacts to sensitive receptors (air quality), and potentially adverse impacts from the emission of greenhouse gases. This detailed analysis is presented in the following subsections.

#### 4.1.2 Scope of the Analysis

The impact analysis contained in Section 4 has been written against the backdrop of CEQA case law addressing the scope of analysis required in EIRs for potential impacts resulting from existing environmental hazards found at the site or in the vicinity of a site for a proposed Project. In *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369, 377, the California Supreme Court held that "agencies subject to CEQA generally are not required to analyze the impact of existing environmental conditions on a Project's future users or residents." (Italics added.) The court reasoned that "ordinary CEQA analysis is concerned with a Project's impact on the environment, rather than with the environment's impact on a Project and its users or residents." (Id. at p. 378.)

The court did not hold, however, that CEQA never requires consideration of the effects of existing environmental conditions on the future occupants or users of a proposed Project. But the circumstances in which such conditions may be considered are narrow: "when a proposed Project risks exacerbating those environmental hazards or conditions that already exist, an



agency must analyze the potential impact of such hazards on future residents or users. In those specific instances, it is the Project's impact on the environment—and not the environment's impact on the Project—that compels an evaluation of how future residents or users could be affected by exacerbated conditions.” (*Id.* at pp. 377–378, italics added.)

#### 4.1.3 Cumulative Analysis

According to CEQA, “cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts” (CEQA Guidelines, Section 15355). CEQA requires that cumulative impacts be discussed when the “Project's incremental effect is cumulatively considerable” (CEQA Guidelines, Section 15130 (a)).

An analysis of cumulative impacts is provided in Section 5, Cumulative Effects. As defined in CEQA Guidelines, Section 15355, cumulative impacts refer to two or more past, present and/or reasonably foreseeable future actions which, when considered together, result in a significant impact. The cumulative impacts analyze the extent to which the Project would contribute to cumulative impacts, and whether that contribution would be considerable (i.e., would cause a cumulative condition to be significant and/or substantially increase the severity of a cumulative impact that would be significant whether or not the Project was developed. An introductory statement that defines the cumulative analysis methodology and the cumulative context for respective sections (e.g., buildout of the City's General Plan, development within the San Joaquin Valley Air Basin) is at the beginning of the “Cumulative Analysis” discussion. In some instances, a Project-specific impact may be considered less than significant but would be considered potentially significant in combination with other developments within the surrounding area. Or, in some instances, a potentially significant impact could result on a Project level but would not result in a cumulatively considerable impact.

#### 4.1.4 Terminology Used in the EIR

This Draft EIR uses the following terminology to describe environmental effects of the proposed Project:

- Standards of Significance:** A set of criteria used by the lead agency to determine at what level or “threshold” an impact would be considered significant. Standards of significance used in this EIR include those set forth in CEQA Guidelines Section 15065 (Mandatory Findings of Significance) and those derived from questions set forth in Appendix G to the CEQA Guidelines; criteria based on regulatory standards of local, state, and federal agencies; and criteria based on goals and policies identified in the City of Tulare General Plan and other applicable planning documents. In fashioning criteria based on these sources, City staff and the EIR preparers have also relied on their own professional judgment and experience in some instances. In determining the level



of significance, the analysis assumes that the proposed Project would comply with relevant federal, state, and local regulations and ordinances.

- **Less-than-Significant Impact:** A Project impact is considered less than significant when it does not reach the standard of significance, indicating that there would be no substantial change in the environment. No mitigation is required for less-than-significant impacts.
- **Potentially Significant Impact:** A potentially significant impact is an environmental effect that could cause a substantial adverse change in the environment; however, additional information is needed regarding the extent of the impact to make the determination of significance. For CEQA purposes, a potentially significant impact is treated as if it were a significant impact.
- **Significant Impact:** A Project impact is considered significant if it results in a substantial adverse change in the physical conditions of the environment. Significant impacts are identified by the evaluation of Project effects in the context of specified significance criteria. When available, potentially feasible mitigation measures and/or Project alternatives are identified to reduce these effects to the environment.
- **Significant and Unavoidable Impact:** A Project impact is considered significant and unavoidable if it results in a substantial adverse change in the physical conditions of the environment and there are no potentially feasible mitigation measures and/or Project alternatives available to reduce these effects to less than significant.

## 4.2 Agriculture and Forest Resources

This section describes the existing agriculture and forestry conditions of the Project site and vicinity, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the proposed Project. Analysis of the Project site is based on the City of Tulare’s General Plan EIR and the California Department of Conservation (DOC) Farmland Mapping and Monitoring Program (FMMP). Other sources consulted are listed in Section 8, References.

This section assesses potential effects on agricultural resources that could result from the implementation of the proposed Project. The Project also includes annexing approximately 140.32 acres into the City of Tulare (City), which includes Assessor’s Parcel Numbers [APNs] 172-010-021, 184-020-010, and 172-010-022. Land use changes are proposed, which would convert the site to Low Density Residential with a square-foot minimum of 5,000 and 6,000 S.F. (R-1-5, R-1-6). The analysis in this section is focused only on impacts related to the construction and operation of the proposed FNC Farming Subdivision, which includes 546 units of low-density residential uses and a small community park.

### 4.2.1 Existing Conditions

Agriculture is an important sector within Tulare County and the City’s economy. According to the Tulare County Crop & Livestock 2023 Annual Report, Tulare County had a total gross production value of \$7,866,730,100, representing an 8.7% decrease from 2022 production value of \$8,612,450,000. Forty-one commodities have a gross value in excess of \$1,000,000. The top 10 commodities for Tulare County in 2022 and 2023 are shown in Table 4-1, below (Tulare County 2023).

Table 4-1. Top 10 Commodities for Tulare County 2021

2023 Ranking	Commodity	Total Value (USD)	2022 Ranking
1	Milk	\$2,039,238,000	1
2	Grapes	\$997,141,000	3
3	Cattle & Calves	\$910,980,000	4
4	Oranges – Navels & Valencias	\$ 796,757,000	2
5	Pistachio Nuts	\$ 505,850,000	5
6	Almonds – Meats & Hulls	\$ 387,553,000	6
7	Tangerines	\$ 366,120,000	7
8	Lemons	\$ 213,834,000	10
9	Nectarines	\$ 205,920,000	11
10	Corn – Grain & Silage	\$ 196,466,000	8

Most of Tulare County’s farming occurs in the western portion of the County, and the Central and Eastern portions are either used for cattle ranching or preserved for open space. There is a geographic divide in the County, mainly due to the presence of the Sierra Nevada Mountains

in the eastern part of the County, which is not arable land. The western portion consists of agriculturally productive fertile soils, so the major agricultural operations include crop and dairy production.

### Department of Conservation Farmland Mapping and Monitoring Program (FMMP)

The Farmland Mapping and Monitoring Program (FMMP) identifies agricultural farmland categories for lands in the County. These lands are categorized and identified using modern soil surveys developed by the United States Department of Agriculture through technical soil ratings and current land use (DOC 2022). These categories are used for reporting changes in land use as required for FMMPs biennial farmland conversion report. FMMP agricultural farmland categories are defined by the California Department of Conservation (DOC) as follows (DOC 2022).

#### Prime Farmland

Farmland with the best combination of physical and chemical features able to sustain long term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

#### Farmland of Statewide Importance

Farmland of Statewide Importance is similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

#### Farmland of Local Importance

Land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.

#### Unique Farmland

Farmland of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.

## Grazing

Land on which the existing vegetation is suited to the grazing of livestock. This category was developed in cooperation with the California Cattlemen's Association, University of California Cooperative Extension, and other groups interested in the extent of grazing activities. Large swaths of the City do not contain any farmland and are designated as "Urban and Built Up" land. "Semi-agricultural and Rural Commercial Land" is also prevalent in the City. Aerial imagery indicates that the Project site and the surrounding uses have been used for agricultural purposes ever since 1956, according to historic aerial maps of the site. Although lands adjacent to the Project site developed scattered rural residences starting in the 1980's, the Project site continued to be used for agricultural purposes (NetrOnline 1956-2018).

According to the 2020 FMMP Map, the entire Project site is designated as "Prime Farmland" (Figure 4-1, Important Farmlands Map). Due to conversion to other/non-agricultural uses, the amount of prime farmland in Tulare County has been declining since the Department started compiling such information in 1998. Table 4-2 Tulare County Summary and Change by Land Use Category, below, details the changes in FMMP Land Use Category between 2016 and 2018.

Table 4-2. Tulare County Summary and Change by Land Use Category

Land Use Category	Total Acreage Inventoried		2016-2018 Acreage Changes			
	2016	2018	Acres Lost (-)	Acres Gained (+)	Total Acreage Changed	Net Acreage Changed
Prime Farmland	366,137	365,943	2,262	2,068	4,330	-194
Farmland of Statewide Importance	322,354	326,476	2,544	6,666	9,210	4,122
Unique Farmland	11,693	11,812	275	394	669	119
Farmland of Local Importance	157,938	153,782	8,285	4,129	12,414	-4,156
<i>Important Farmland Subtotal</i>	<i>858,122</i>	<i>858,013</i>	<i>12,547</i>	<i>13,257</i>	<i>26,623</i>	<i>-109</i>
Grazing Land	439,933	440,213	539	576	872	280
<i>Agricultural Land Subtotal</i>	<i>1,298,055</i>	<i>1,298,226</i>	<i>13,086</i>	<i>13,833</i>	<i>27,495</i>	<i>171</i>
Urban and Built-Up Land	64,618	66,115	61	1,819	2,141	1,497
Other Land	218,599	216,932	1,610	1,584	4,835	-1,667
Water	4,656	4,655	1	0	1	-1
<b>Total Area Inventoried</b>	<b>1,585,928</b>	<b>1,585,928</b>	<b>17,236</b>	<b>17,236</b>	<b>34,472</b>	<b>0</b>

**Source:** Appendix A of California Department of Conservation (DOC) 2016-2018

### California Land Conservation Act of 1965 (Williamson Act) Lands

The Williamson Act provides tax incentives to retain prime agricultural land and open space in agricultural use, which subsequently slows its conversion to urban development. The Williamson Act requires a 10-year contract between the County and landowners who enter into contracts with local government for long-term use restrictions on qualifying agricultural and open space land. In accordance with the contract, the land must be taxed based on its agricultural use rather than its full market value. The overall purpose of the Williamson Act is to protect agricultural lands and open space. The amount of land under Williamson Act Contracts within Tulare County has been declining in recent years (Tulare County 2012).

The Project site is currently within the County's Exclusive Agricultural Zone – 20 Acre Minimum and 40 Acre Minimum (AE-20 & AE-40) but is not under a Williamson Act Contract.

### Forest Land, Timberland, and Timberland Production Zones

As defined in California Public Resources Code Section 12220(g), "Forest Land" refers to land that can support 10% native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. Several forests and national parks exist within Tulare County. These include Sequoia National Park, Kings Canyon National Park, and Inyo National Forest. However, they are outside of and not adjacent to the Project site.

"Timberland," as defined by Public Resources Code Section 4526, refers to land, other than land owned by the federal government and land designated by the State Board of Forestry and Fire as experimental forest land, which is available for, and capable of, growing a crop of trees of a commercial species used to produce lumber and other forest products, including Christmas trees. A "Timberland Production Zone," as defined by Government Code Section 51104(g), refers to an area which is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses. There are no TPZs on the Project site.

## 4.2.2 Regulatory Setting

### Federal

#### Farmland Protection Policy Act (7 USC 4201)

The purpose of the Farmland Protection Policy Act (FPPA) is to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to non-agricultural uses. It additionally directs federal programs to be compatible with State and

local policies for the protection of farmland. Under the FPPA, the term “farmland” includes Prime Farmland, Unique Farmland, and Farmland of Statewide or Local Importance. Farmland that is subject to FPPA requirements does not have to be currently used as cropland. It can be forestland, pastureland, or other land but not urban and built-up land or water. FPPA assures that, to the extent possible, federal programs are administered to be compatible with State, local units of government, and private programs and policies to protect farmland. In 1981, Congress passed the Agriculture and Food Act (Public Law 97-98) which contained the FPPA, Subtitle I of Title XV, Sections 1539–1549. Federal agencies are required to develop and review their policies and procedures related to implementing the FPPA every 2 years. The FPPA does not authorize the federal government to regulate the use of private or nonfederal land or, in any way, affect the property rights of owners. Projects are subject to FPPA requirements if they may irreversibly convert farmland (directly or indirectly) to nonagricultural use and are completed by a Federal agency or rely on assistance from a federal agency (NRCS 2020).

## **State**

### **Farmland Mapping and Monitoring Program**

As mentioned above in Section 4.2.1, the goal of the FMMP is to provide consistent and impartial data to decision makers for use in assessing present status, reviewing trends, and planning for the future of California’s agricultural land resources. FMMP produces Important Farmland Maps, which are a hybrid of resource quality (soils) and land use information. Agricultural land is rated according to soil quality and irrigation status; the best quality land is called Prime Farmland. The maps are updated every 2 years with the use of a computer mapping system, aerial imagery, public review, and field reconnaissance. Data is also released in statistical formats—principally the biennial California Farmland Conversion Report.

### **California Land Conservation Act (Williamson Act)**

The Williamson Act is applicable to specific parcels within the State of California. The Williamson Act enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space uses in return for reduced property tax assessments. Private land within locally designated agricultural preserve areas is eligible for enrollment under a Williamson Act Contract. The Williamson Act program is administered by the DOC, in conjunction with local governments that administer the individual contract arrangements with landowners. Under the Williamson Act, a landowner commits the parcel to a 10-year period, during which time no conversion out of agricultural or open space use is permitted. In return, the land is taxed at a rate based on the actual use (i.e., agricultural production), as opposed to its unrestricted market value. Each year the contract automatically renews unless a notice of nonrenewal or cancellation is filed (DOC 2019a).

*Easement Exchange.* Williamson Act easement exchange legislation became effective January 1, 1998. It provides a voluntary rescission process for local entities and landowners to cancel the Williamson Act contract and simultaneously dedicate a permanent agricultural conservation easement on other land. A board or council must make specified findings in order to cancel the contract. The land to be placed under easement must be of equal size or larger than the Williamson Act contracted land. In addition, the value of the easement parcel must be equal to or greater than the cancellation fee required to cancel the contract (DOC 2019b).

#### Public Resources Code Section 21060.1

Public Resources Code Section 21060.1 uses the FMMP to define agricultural land for the purposes of assessing environmental impacts. The FMMP was established in 1982 to assess the location, quality, and quantity of agricultural lands and analyze the conversion of such lands. The FMMP provides analysis pertaining to agricultural land use changes throughout California.

### Local

#### City of Tulare General Plan

Agricultural resources are protected through policies in the City of Tulare's General Plan Conservation and Open Space Element. The goals and policies in the City's General Plan for agricultural resources applicable to the Project are provided below. The General Plan contains additional goals and policies that are more general in nature and not specific to development such as the Project. Therefore, they are not listed below, but as stated in Section 2, Introduction, all goals, and policies in the City's General Plan are incorporated by reference (City of Tulare 2014).

#### Conservation and Open Space Element

**Goal:** (COS-3) To promote the productivity of agricultural lands surrounding Tulare and the continued viability of Tulare County agriculture.

#### Policies:

- **COS-P3.2 Agricultural Buffers.** The City shall require that agricultural land uses designated for long- term protection (in a Williamson Act contract or under a conservation easement located outside the City's Urban Development Boundary (UDB)) shall be buffered from urban land uses through the use of techniques including, but not limited to, spatial separations (e.g. greenbelts, open space setbacks, etc.), transitions in density, soundwalls, fencing, and/or berming.
- **COS-P3.3 Agricultural Disclosures.** The City shall require that developers of residential Projects, which are within general proximity of agricultural operations in the City, to

provide notification to new homeowners within their deeds of the City's right to farm ordinance

- **COS-P3.4 Discourage Leapfrog Development.** The City shall discourage leapfrog development (defined as urban development more than 1/2 mile from existing urban development) and development of peninsulas extending into agricultural lands to avoid adverse effects on agricultural operations and contribute to premature conversion.
- **COS-P3.5 Support County Programs.** The City shall encourage, support, and coordinate with Tulare County in the implementation of its agricultural programs, outside the city's sphere of influence.
- **COS-P3.9 Williamson Act Contracts.** The City shall encourage the use of Williamson Act contracts on parcels located outside the UDB.
- **COS-P3.10 Williamson Act Contracts near City Limits.** The City shall protest the formation of new Williamson Act or Super Williamson Act contracts within the UDB.
- **COS-P3.11 Williamson Act Non-Renewal in UDB.** The City shall support non-renewal or cancellation processes for Williamson Act designated lands within the City of Tulare UDB.
- **COS-P3.12 Mitigation for Agricultural Land Conversion.** The City shall create and adopt a mitigation program to address the conversion of Prime Farmland & Farmland of Statewide Importance within the UDB and outside the city limits to non-agricultural uses. This mitigation program shall:
  - Require a 1:1 ratio of agricultural land preserved for every acre of land converted.
  - Require land to be preserved be equivalent to the land converted, e.g. Prime Farmland, and further require that the land to be preserved has adequate existing water supply to support agricultural use, is designated and zoned for agriculture, is located outside of a city UDB, and is within the southern San Joaquin Valley.
  - Require mitigation prior to or at time of impact.
  - Allow mitigation to be provided either by purchase of agricultural easements or by payment of agricultural mitigation fees, but state that purchase of conservation easements is the preferred form of mitigation. Both purchase of easements and payment of mitigation fees should cover not only the cost of an agricultural easement, but additional costs of transactional fees and administering, monitoring, and enforcing the easement.
  - Require easements to be held by and/or mitigation fees to be transferred to a qualifying entity, such as a local land trust with demonstrated experience administering, monitoring, and enforcing agricultural easements.
  - Require the qualifying entity to submit annual status and monitoring reports to the City and to Tulare County.
  - Allow stacking of conservation and agricultural easements if habitat needs of species on conservation easement are compatible with agricultural activities/use on agricultural easement.



- Allow exemptions for conversion of land to agricultural tourism uses, agricultural processing uses, agricultural buffers, public facilities, and roadways.

#### 4.2.3 Thresholds and Methodology

The significance criteria used to evaluate the Project impacts to agriculture and forestry resources are based on Appendix G of the CEQA Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to agriculture and forestry resources would occur if the Project would:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.
- Conflict with existing zoning for agricultural use, or a Williamson Act contract.
- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)).
- Result in the loss of forest land or conversion of forest land to non-forest use.
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use.

The existing General Plan, review of aerial photographs, and state farmland maps were used to evaluate known agricultural, timberland, and/or forest resources located within the Project site. The potential impacts of the proposed Project are then determined based on how the Proposed Project could impact the agricultural resources.

#### 4.2.4 Impacts Analysis

***a. Would the Project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?***

***Significant and Unavoidable Impact.*** Implementation of the proposed Project would result in the conversion of approximately 140.32 acres of active agricultural land into a residential community with a small community park. As shown in Figure 4-1, the entire site (140.32 acres) is designated as Prime Farmland. The Project site has been actively farmed for the past 50 years and has a developed on-site irrigation water supply that is dependable. While the Project site land designated as "Prime Farmland" only represent a fraction of a percent of the 366,136

acres of Prime Farmland within Tulare County, the direct loss of this farmland is considered significant, even with implementation of Mitigation Measure (MM) AG-1.

MM AG-1 would require the Project proponent to mitigate the loss of agricultural land at a ratio of 1:1 consistent with the City's General Plan Policy COS-P3.12 (City of Tulare 2014) and the City of Tulare Zoning Code (Tulare Municipal Code, Section 10.222). Although MM AG-1 preserves farmland that may otherwise be converted to non-agricultural use in the future, it does not provide additional farmland to replace the 140.32 acres lost as a result of Project implementation.

Therefore, although implementation of the Project would convert a very small portion of the County's "Prime Farmland" to non-agricultural uses, the conversion of approximately 140.32 acres to non-agricultural uses constitutes a *significant and unavoidable impact* even with the incorporation of Mitigation Measure AG-1.

***b. Would the Project conflict with existing zoning for agricultural use, or a Williamson Act contract?***

***Less Than Significant Impact.*** The site is currently zoned for Exclusive Agriculture 20-Acres and 40-Acres (AE-20, AE-40) by Tulare County. Although the site is currently under Tulare County jurisdiction, it is within the City of Tulare's Urban Development Boundary and is proposed to be annexed into the City. The Project site currently has a City of Tulare General Plan designation of Residential Estate and Rural Residential which would allow the conversion of farmland to residential development on larger lots. The applicant is proposing to change the General Plan land use designation to low-density residential to accommodate the proposed development of the Project. The Project site is also proposed to be pre-zoned to R-1-5 and R-1-6 designations (Single-Family Residential, 5,000 & 6,000 sq. ft. minimum lot area zoning designation). This action, if approved, would make the Project consistent. Additionally, the Project site is not subject to a Williamson Act Contract.

Although the Project would conflict with existing County of Tulare zoning for agricultural use, annexation of the site into the City of Tulare will eliminate this conflict through pre-zoning of the site as single family residential and amending the General Plan to allow low density residential land uses on the site. There is a *less than significant impact*.

***c. Would the Project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?***

***No Impact.*** The City does not contain lands zoned for forest land or timberland production. The proposed Project includes the development of approximately 546 total units of low-density

housing, an undeveloped rural residential zone, and a central park. All development proposed by the Project would be confined to the Project site boundaries and, therefore, would not affect protected forest lands or timberlands located within the Project vicinity. Therefore, implementation of the proposed Project would not conflict with zoning for, or cause rezoning of, forest land or timberland or timberland zoned for timber production, off-site. *No impacts* would occur.

***d. Would the Project result in the loss of forest land or conversion of forest land to non-forest use?***

***No Impact.*** Since the Project site is not located on a site zoned for forest land or timberland production, development of proposed uses would not result in the conversion or loss of land zoned for forest land or timberland, and *no impact* would occur.

***e. Would the Project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?***

***Significant and Unavoidable Impact.*** As described above, the Project proposes the permanent conversion of approximately 140.32-acres of agricultural land to non-agricultural land use. Although the Project proponent will be required to mitigate the loss of agricultural land at a ratio of 1:1 through implementation of conservation easements per Mitigation Measure AG-1, the Project will result in the conversion of Farmland to non-agricultural uses.

Additionally, the implementation of 140.32 acres of residential development may further promote the conversion of nearby agricultural sites to non-agricultural land uses. This may occur as a result of population growth and the resource needs associated with a growing population, resulting in the development of commercial land uses adjacent to the proposed residential development. Therefore, impacts would be *significant and unavoidable*. The Project does not include any features which could result in the conversion of forestland to non-forest use.

#### **4.2.5 Mitigation Measures**

- MM AG-1:** Prior to issuance of a grading or building permit, whichever occurs first, the Project proponent shall provide written evidence of completion of one or more of the following measures, consistent with Tulare General Plan Policy COS-P3.12 to mitigate the loss of agricultural land at a ratio of 1:1 for net acreage before conversion:
- Funding and/or purchasing agricultural conservation easements which shall be managed and maintained by an appropriate entity;

- Purchasing credits from an established agricultural farmland mitigation bank;
- Contributing agricultural land or equivalent funding to an organization that provides for the preservation of farmland in California; or
- Participating in any agricultural land mitigation program adopted by Tulare County provides equal or more effective mitigation than the measures listed above.

The net acreage calculation used to determine mitigation lands shall exclude the existing roads and areas already developed with structures on the Project site. A site plan shall be submitted to the City of Tulare Community Development Department to substantiate the net acreage calculation, along with written evidence of compliance.

Mitigation land shall meet the definition of Prime Farmland and be of similar agricultural quality or higher, as established by the Department of Conservation. Completion of the selected measure or a combination of selected mitigation measures can occur on qualifying land within the southern San Joaquin Valley (Kings, Tulare, or Kern County) that is located outside of a City's UDB and shall be approved by the City of Tulare Community Development Department Director.

#### **4.2.6 Level of Significance After Mitigation**

**Threshold a:** Although implementation of the Project would convert a very small portion of the County's "Prime Farmland" to non-agricultural uses, the conversion of approximately 140.32 acres to non-agricultural uses constitutes a **significant and unavoidable** impact even with the incorporation of Mitigation Measure AG-1.

**Threshold e:** Although the Project would comply with MM-AG-1 listed above, implementation of the proposed Project would result in the conversion of Farmland to non-agriculture uses and therefore impacts would be **significant and unavoidable**.

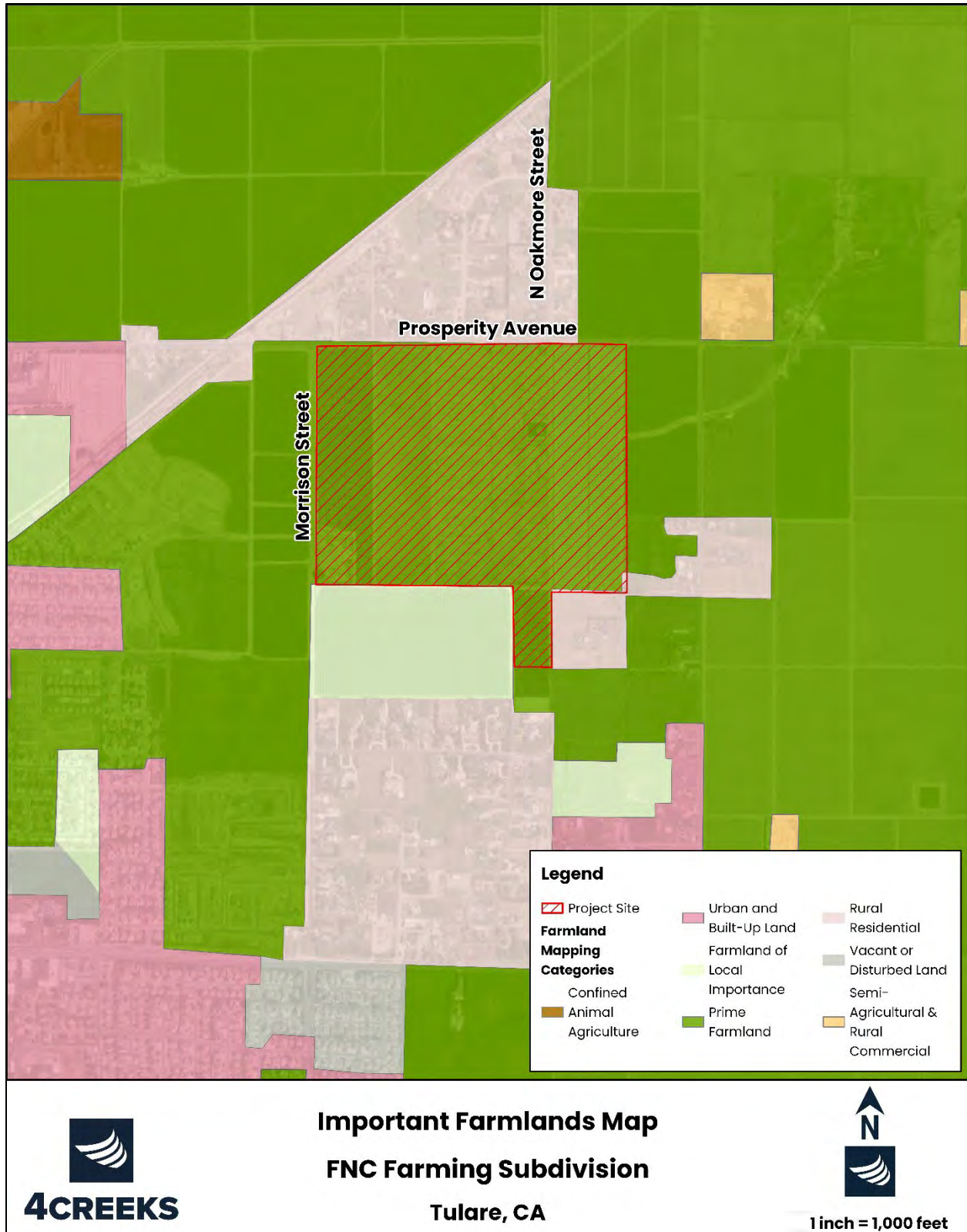


Figure 4-1. Important Farmlands Map

## 4.3 Transportation

This section describes the existing transportation conditions of the Project site and vicinity, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the proposed Project. This section analyzes the potential impacts of the Project based on the California Environmental Quality Act (CEQA) Guidelines Section 15064.3(b), which focuses on newly adopted criteria (vehicle miles traveled [VMT]) for determining the significance of transportation impacts. Pursuant to Senate Bill (SB) 743, the focus of transportation analysis changed from level of service (LOS) or vehicle delay to VMT. The related updates to the CEQA Guidelines required under SB 743 were approved on December 28, 2018. This new methodology was required to be used statewide beginning July 1, 2020.

In addition to the documents incorporated by reference, the following analysis is based, in part, on the following source, which is found in Appendix A2 of this Draft EIR:

- Traffic Study: Residential Development at Prosperity & Morrison Street (Appendix A2) prepared by Ruettgers & Schuler in September 2024

### 4.3.1 Existing Conditions

This section provides a summary of the existing circulation network, bicycle and pedestrian facilities, transit service, and truck routes in the study area.

#### Existing Circulation Network

Regional access to the Project site is provided by State Route (SR) 99 approximately 1.8 miles west of the site, and State Route 137, which is approximately 0.45 miles south of the site. The local street system serving the site includes Prosperity Avenue, Morrison Street, Oakmore Street, Blackstone Street, Cartmill Avenue, Hillman Street, Laspina Street, Mooney Boulevard, Seminole Avenue, State Route 99 and Tulare Avenue. The site can be accessed by Prosperity Avenue to the north, Morrison Street to the west, and Oakmore Street, which dissects the Project in a north/south direction. Residential land uses exist to the north and generally south of the site, with agricultural land uses to the immediate west, and south of the site.

**Blackstone Street** is a primarily north-south arterial that extends south from Prosperity Avenue in the city of Tulare. In the vicinity of the Project, it exists as a four-lane roadway and provides access from State Route 99 as well as commercial land uses.

**Cartmill Avenue** is an east-west major arterial that extends throughout the northern part of the city of Tulare. In the vicinity of the Project, it exists as a two- to four-lane roadway and provides access to agricultural and residential land uses.

**Hillman Street** is a north-south major arterial north of Prosperity Avenue and collector south of Prosperity Avenue in the city of Tulare. In the vicinity of the Project, it exists as a three- to six-lane roadway and provides access to agricultural, commercial, and residential land uses.

**Laspina Street** is a north-south arterial that extends south from Rosa Avenue in the city of Tulare. In the vicinity of the Project, it exists as a two-lane roadway and provides access to commercial and residential land uses.

**Mooney Boulevard** is a north-south major arterial that extends throughout the center of the city of Tulare. In the vicinity of the Project, it exists as a four-lane roadway and provides access to agricultural, commercial, and residential land uses.

**Morrison Street** is a north-south collector that extends south from Prosperity Avenue in the city of Tulare. In the vicinity of the Project, it exists as a two-lane roadway and provides access to agricultural and residential land uses.

**Oakmore Road** is a north-south arterial that extends north from Prosperity Avenue in the city of Tulare. In the vicinity of the Project, it exists as a two-lane roadway and provides access to agricultural and residential land uses.

**Prosperity Avenue** is an east-west arterial that extends throughout the center of the city of Tulare. In the vicinity of the Project, it exists as a four-lane roadway and provides access to agricultural, commercial, industrial, and residential land uses.

**Seminole Avenue** is an east-west local roadway that extends from Mooney Boulevard to Spyglass Street in the city of Tulare. In the vicinity of the Project, it exists as a two-lane roadway and provides access to residential land uses.

**State Route 99** is a primarily north-south highway that extends throughout the state of California. In the vicinity of the Project, it exists as a four-lane highway and provides access to Blackstone Street, Hillman Street, Tulare Avenue, and Bardsley Avenue.

**Tulare Avenue** is an east-west major arterial that extends throughout the southern portion of the city of Tulare. In the vicinity of the Project, it exists as a four-lane roadway and provides access to agricultural, commercial, and residential land uses.

### Bicycle and Pedestrian Facilities

The Project site is located in a less developed area of unincorporated Tulare County and contains limited pedestrian and bicycle facilities. Adjacent residential neighborhoods and institutional facilities have sidewalks along site frontages, which are located west of the Project site. The Project will construct pedestrian facilities (i.e. curb and gutter) along the perimeter of



the Project site. As the adjacent areas surrounding the Project site continue to become developed, connectivity throughout Prosperity Avenue, Morrison Street, Road 126, Tulare Avenue, and other major roadways will be realized.

There are no bicycle facilities within the immediate vicinity of the site. However, the City of Tulare Bike Plan proposes a Class III bicycle route along North Oakmore Street, and multiple Class I bike paths are proposed as part of the proposed Project, particularly along the portion of Oakmore that occurs on the Project. The proposed Class I bike paths would occur along Oakmore Street, Monarch Dunes Avenue (future), and Castle Rock Avenue (future).

### Transit Service

Public transit service in Tulare County, including the City of Tulare, is provided by the Tulare County Regional Transit Agency (TCRTA). A description of the transit services available to the Project area is presented below.

#### Tulare County Regional Transit Agency (TCRTA)

The Tulare County Regional Transit Agency (TCRTA) provides regional transit services across Tulare County, including fixed-route bus service and on-demand transportation. TCRTA operates multiple routes connecting cities and communities such as Tulare, Visalia, Porterville, Dinuba, and Delano. Regular bus service is provided seven days a week. Route 20 offers transit between Porterville, Strathmore, Lindsay, Tulare, and Visalia, while additional routes serve other parts of the county. TCRTA also provides curb-to-curb service for ADA-eligible riders through advance reservations and offers Dial-a-Ride transportation on weekdays.

#### Tulare InterModal Express (TIME)

Tulare InterModal Express (TIME), operated by TCRTA, runs several local fixed bus routes within the City of Tulare, including one express route. Each route operates as a one-way loop connecting the Tulare Transit Center to various employment centers, retail locations, schools, and the Tulare Outlets. Route 7 operates in the vicinity of the Project site along East Bardsley Avenue. The nearest bus stop to the Project site is located at the commercial shopping center on the southwest corner of North Mooney Blvd and Prosperity Avenue, approximately 0.80 miles southwest of the Project site.

### 4.3.2 Regulatory Setting

The following section describes state and local regulations, plans, policies, and ordinances relevant to the study area. There are no transportation-specific federal regulations applicable to the Project.



## Senate Bill 743

On September 27, 2013, Governor Brown signed SB 743, which became effective on January 1, 2014. SB 743 streamlines the review under the CEQA process for several categories of development Projects, including the development of infill Projects in transit priority areas to balance the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas (GHG) emissions. SB 743 adds Chapter 2.7: Modernization of Transportation Analysis for Transit Oriented Infill Projects to the CEQA Statute (PRC Section 21099). Section 21099(d)(1) provides that aesthetic and parking impacts of a residential, mixed-use residential, or employment center Project on an infill site within a transit priority area shall not be considered significant impacts on the environment. In addition, SB 743 mandates that alternative metric(s) for determining impacts relative to transportation shall be developed to replace the use of LOS in CEQA documents.

In the past, environmental review of transportation impacts focused on the delay that vehicles experience at intersections and on roadway segments, often measured using LOS. Mitigation for impacts on vehicular delay often involves increasing capacity such as widening a roadway or the size of an intersection, which in turn encourages more vehicular travel and greater pollutant emissions. Additionally, improvements to increase vehicular capacity can often discourage alternative forms of transportation such as biking and walking. SB 743 directed OPR to develop an alternative metric(s) for analyzing transportation impacts in CEQA documents. The alternative shall promote the state's goals of reducing GHG emissions and traffic-related air pollution, promote the development of multimodal transportation system, and provide clean, efficient access to destinations.

Pursuant to SB 743, OPR released the draft revised CEQA Guidelines in November 2017, recommending the use of VMT for analyzing transportation impacts. Additionally, OPR released Updates to Technical Advisory on Evaluating Transportation Impacts in CEQA, to provide guidance on VMT analysis. In this Technical Advisory, OPR provides its recommendations to assist lead agencies in screening out Projects from VMT analysis and selecting a significance threshold that may be appropriate for their jurisdictions. While OPR's Technical Advisory is not binding on public agencies, CEQA allows lead agencies to "consider thresholds of significance ... recommended by other public agencies, provided the decision to adopt those thresholds is supported by substantial evidence" (14 CCR 15064.7[c]). In December 2018, the CEQA Guidelines were updated to add a new Section 15064.3, Determining the Significance of Transportation Impacts, which describes specific considerations for evaluating a Project's transportation impacts using the VMT methodology.

In December 2018, the CEQA Guidelines were updated to add a new Section 15064.3, Determining the Significance of Transportation Impacts, which describes specific considerations for evaluating a Project's transportation impacts using the VMT methodology.

CEQA Guidelines Section 15064.3(b) is divided into four subdivisions as follows:

1. **Land Use Projects.** Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, Projects within one-half mile of either an existing major transit stop or a stop along an existing high quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle miles traveled in the Project area compared to existing conditions should be presumed to have a less than significant impact on transportation.
2. **Transportation Projects.** Transportation Projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway capacity Projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, such as in a regional transportation plan EIR, a lead agency may tier from that analysis as provided in Section 15152.
3. **Qualitative Analysis.** If existing models or methods are not available to estimate the vehicle miles traveled for the particular Project being considered, a lead agency may analyze the Project's vehicle miles traveled qualitatively. Such a qualitative analysis would evaluate factors such as the availability of transit, proximity to other destinations, etc. For many Projects, a qualitative analysis of construction traffic may be appropriate.
4. **Methodology.** A lead agency has discretion to choose the most appropriate methodology to evaluate a Project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a Project's vehicle miles traveled and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate vehicle miles traveled and any revisions to model outputs should be documented and explained in the environmental document prepared for the Project.

OPR's regulatory text indicates that the guidelines must be implemented statewide by July 1, 2020. However, the OPR Technical Advisory allows local agencies to retain their congestion-based LOS standards in general plans and for Project planning purposes. This EIR relies on VMT as the basis for evaluating transportation impacts under CEQA, as detailed in Appendix A2, and the Project's LOS effects have been documented in the TIA prepared for the proposed Project and provided to the City

## Sustainable Communities Strategies: Senate Bill 375

The Sustainable Communities and Climate Protection Act of 2008 (Sustainable Communities Act, SB 375, Chapter 728, Statutes of 2008) supports the state's climate action goals to reduce greenhouse gas emissions through coordinated transportation and land use planning with the goal of more sustainable communities. Under the Sustainable Communities Act, the California Air Resources Board sets regional targets for greenhouse gas emissions reductions from passenger vehicle use. In 2010, the California Air Resources Board established these targets for 2020 and 2035 for each region covered by one of the state's Metropolitan Planning Organizations (MPOs). The California Air Resources Board will periodically review and update the targets, as needed.

Each of California's MPOs must prepare a Sustainable Communities Strategy (SCS) as an integral part of its Regional Transportation Plan (RTP). The SCS contains land use, housing, and transportation strategies that, if implemented, would allow the region to meet its greenhouse gas emission reduction targets. Once adopted by the MPO, the RTP/SCS guides the transportation policies and investments for the region. The California Air Resources Board must review the adopted SCS to confirm and accept the MPO's determination that the SCS, if implemented, would meet the regional greenhouse gas targets. If the combination of measures in the SCS would not meet the regional targets, the MPO must prepare a separate alternative planning strategy to meet the targets. The alternative planning strategy is not a part of the RTP. The Project is within the Tulare County Association of Governments (TCAG) MPO, which has adopted 2022 Regional Transportation Plan/Sustainable Communities Strategy as their SCS, as discussed below (TCAG 2022).

The Sustainable Communities Act also establishes incentives to encourage local governments and developers to implement the SCS or the alternative planning strategy. Developers can get relief from certain CEQA requirements if their new residential and mixed-use Projects are consistent with a region's SCS (or alternative planning strategy) that meets the targets (see California Public Resources Code Sections 21155, 21155.1, 21155.2, 21159.28).

## Caltrans

As the owner and operator of the State Highway System, Caltrans implements established state planning priorities in all functional plans, programs, and activities. Caltrans has the responsibility to coordinate and consult with local jurisdictions when proposed local land use planning and development may impact state highway facilities. To comply with SB 743 implementation, the Caltrans Transportation Impact Study Guide (Caltrans 2020a), replaced the Guide for the Preparation of Traffic Impact Studies (Caltrans 2002).

Per the 2020 Transportation Impact Study Guide, Caltrans' primary review focus is VMT, replacing LOS as the metric used in CEQA transportation analyses. Caltrans recommends use

of OPR's recommended thresholds and guidance on methods of VMT assessment found in OPR's Technical Advisory (OPR 2018). In addition to VMT, Caltrans has developed an Interim Local Development and Intergovernmental Review Safety Review Practitioners Guidance (December 2020), which may request a targeted operational and safety analysis to address a specific geometric or operational issue related to the State Highway System and connections with the State Highway System (Caltrans 2020b). To comply with this requirement, an assessment of queuing at SR-99 off-ramps and Tulare Avenue intersections in the Project study area has been included in the EIR.

## **Regional**

### [Tulare County Association of Governments Regional Transportation Plan/Sustainable Communities Strategy](#)

TCAG is the designated MPO for the County of Tulare and is federally mandated to develop plans for its forecasting future growth, identifying regional priorities, and planning for infrastructure improvements. The 2022 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) is to be adopted in 2023 and presents the land use and transportation vision for the region through the year 2046, providing a long-term investment framework for addressing the region's challenges (TCAG 2022). The RTP/SCS explicitly lays out goals related to housing, transportation, equity, and resilience in order to adequately reflect the increasing importance of these topics in the region, and where possible the goals have been developed to link to potential performance measures and targets. The RTP/SCS development process involved working closely with local governments throughout the region to collect and compile data on land use and growth trends. The core vision of the RTP/SCS is to build upon and expand land use and transportation strategies established over several planning cycles to increase mobility options and achieve a more sustainable growth pattern.

## **Local**

### [City of Tulare General Plan Circulation Element](#)

The City of Tulare General Plan Circulation Element addresses many transportation issues such as automobile travel and parking, transit, non-motorized transportation, goods movement, and air transportation. It provides roadway classifications within the City of Tulare, which include state freeways and highways, expressways, major arterials, minor arterials, primary collectors, secondary collectors, industrial collectors, and local streets.

The main goals of the Circulation Element, relevant to the Project, are:

- To develop an integrated transportation system that provides for the safe and efficient movement of people and goods

- To maintain an efficient, affordable, and safe roadway system throughout Tulare in a way that is economically sustainable and fits within the Projected budgeted resources.
- To maintain a system for funding needed roadway improvements that ensure a safe and efficient level of service that meets the City's established standards
- To maintain and develop an adequate transit system that provides for the local and regional transit needs of Tulare residents
- To maintain an efficient and safe non-vehicular circulation system through Tulare
- To improve the city's transportation systems through use of transportation systems management (TSM) and transportation demand management (TDM)

### County of Tulare General Plan Circulation Element

The County of Tulare General Plan Circulation Element provides an overview of existing conditions within the County of Tulare.

The main goals of the Circulation Element are as follows:

- To promote an efficient roadway and highway system for the movement of people and goods, which enhances the physical, economic, and social environment while being safe, environmentally friendly, and cost-effective
- To improve and enhance current rail services that stimulate economic growth and meet the needs of freight human transportation
- To support the development of a public transportation system that provides an alternative to the private automobile and meets the needs of those considered "transit dependent"
- To encourage the development of safe, continuous, and easily accessible bicycle and trail systems that facilitate the use of viable transportation alternatives in a safe and financially feasible manner
- To address the transportation system from a multimodal perspective and identify how to provide for routine accommodation for all roadway users, including motorists, pedestrians, bicyclists, people with disabilities, seniors, and users of public transportation in a manner suitable to the rural, suburban, or urban context of the general plan

### 4.3.3 Thresholds and Methodology

The significance criteria used to evaluate the Project impacts to transportation are based on Appendix G of the CEQA Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to transportation would occur if the Project would:

- a. Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

- b. Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b).
- c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- d. Result in inadequate emergency access.

#### 4.3.4 Impacts Analysis

##### ***a. Would the Project conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?***

**Less than Significant Impact with Mitigation.** The Project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities, as discussed below. Impacts would be less than significant. The full Traffic Study was prepared by Ruettggers & Schuler Civil Engineers and can be found in Appendix A2.

##### [Regional Transportation Plan/Sustainable Communities Strategy](#)

The Project would be consistent with the 2023 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) by promoting improved circulation, multi-modal transportation options, and enhanced connectivity within the City of Tulare. Specifically, the Project includes several features that align with the goals and policies of the RTP/SCS. These features include the construction of Class I Bike Paths along key internal access roads, providing safe and accessible bicycle infrastructure that encourages alternative transportation modes and reduces vehicle trips. Additionally, the Project proposes the extension of Oakmore Road, a major north-south arterial, through the Project site, which will improve circulation and reduce congestion in the eastern portion of the City of Tulare.

Furthermore, the Project incorporates the development of sidewalks along all internal access roads and Project frontages, enhancing pedestrian mobility and ensuring safe access for residents. The combination of these improvements supports regional efforts to reduce greenhouse gas emissions, promote active transportation, and enhance overall transportation efficiency, all of which are key objectives of the 2023 RTP/SCS.

##### [City of Tulare General Plan Circulation Element](#)

The Project would be consistent with the applicable goals and policies of the City's General Plan Circulation Element. The Project would not hinder the City's ability to develop a safe, efficient, and affordable transportation system throughout the community. The Project would include on and off-site roadway improvements to serve internal circulation needs, as well as to mitigate impacts to ensure a safe and efficient level of service that meets the City's established standards. These include Class I Bike Paths along several internal access roads

and proposes the extension of existing roads. One such road extension is the extension of the north-south arterial, Oakmore Street, which would improve connectivity in the eastern portion of Tulare. The Project provides improved pedestrian and bicycle facilities that meet the City's goals to maintain an efficient and safe non-vehicular circulation system through Tulare.

Although the addition of Project traffic would cause certain intersections to operate below an acceptable Level of Service (LOS) beginning after the completion of the second phase (2029), it is important to note that LOS has been removed as a criterion for impact analysis under CEQA, as per Senate Bill (SB) 743. As outlined in Section 4.3.2 Regulatory Setting, SB 743 mandates that Vehicle Miles Traveled (VMT) is now the primary metric for evaluating transportation impacts under CEQA, which is fully addressed in Threshold B of this section. Therefore, any discussion of LOS is provided for informational purposes and does not influence the determination of significance under CEQA's transportation thresholds.

However, the City of Tulare's General Plan still requires intersections to operate at a minimum LOS D, and this Project is subject to those local requirements. As a result, while the LOS analysis is not used to assess CEQA transportation impacts, the City has identified specific off-site intersection improvements as part of the conditions of approval to ensure compliance with the General Plan's LOS standards. These improvements will mitigate the Project's traffic impact at affected intersections, restoring them to an acceptable LOS D or better.

The required off-site intersection improvements include enhancements at Prosperity Avenue and Morrison Street, Mooney Boulevard and Cartmill Avenue, Mooney Boulevard and Prosperity Avenue, Morrison Street and Tulare Avenue, and Seminole and Mooney Boulevard. These improvements will be implemented as part of Mitigation Measure TRT-1, ensuring that the surrounding roadway network can accommodate future traffic volumes while adhering to the City's General Plan LOS requirements.

In summary, while LOS is not used to determine the significance of transportation impacts under CEQA, the Project's compliance with the City's LOS standards will be ensured through off-site intersection improvements that are incorporated as mitigation measures.

The Traffic Study presents the proposed Project in three phases of construction. These phases are outlined below:

- Phase I (2027)
- Phase II (2029)
- Phase III Cumulative (2044)

## County of Tulare General Plan Circulation Element

The Project would be consistent with the applicable goals and policies of the County's General Plan Circulation Element. As discussed in Section 3.4, the Project site is currently under the jurisdiction of Tulare County; however, the Project site is within the City's SOI and UDB and future development of the area was contemplated in the City's 2035 General Plan and evaluated in the General Plan EIR. Because development of the Master Plan is dependent upon the site being annexed into the City, the City is serving as lead agency. As such, an analysis of consistency with the Tulare County General Plan is not provided. However, as some roadways within the study area analyzed in the Traffic Study fall within the County of Tulare, consistency with the County's Circulation Element was reviewed. Specifically, the Project is consistent with the County's goal to encourage the development of safe, continuous, and easily accessible bicycle and trail systems that facilitate the use of viable transportation alternatives in a safe and financially feasible manner and to address the transportation system from a multimodal perspective.

## Transit, Bicycle, and Pedestrian Facilities

The Project would not conflict with any plans or policies regarding existing or proposed bicycle and pedestrian facilities in the study area and would be consistent with the City of Tulare General Plan non-motorized transportation plan; the Regional Active Transportation Plan for the Tulare County Region. Class I Bike/Pedestrian Paths are proposed throughout the site, which would connect the residential and park components. Additionally, all Project frontages would include sidewalks and landscaping, which would encourage alternative modes of transportation along the perimeter of the site. The site improvements would improve transit, pedestrian, and bicycle access over existing conditions and would not impede the construction of new or the expansion of such existing facilities in the future. Based on analysis provided above, the Project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities, and its impact to transportation plans and programs would be less than significant.



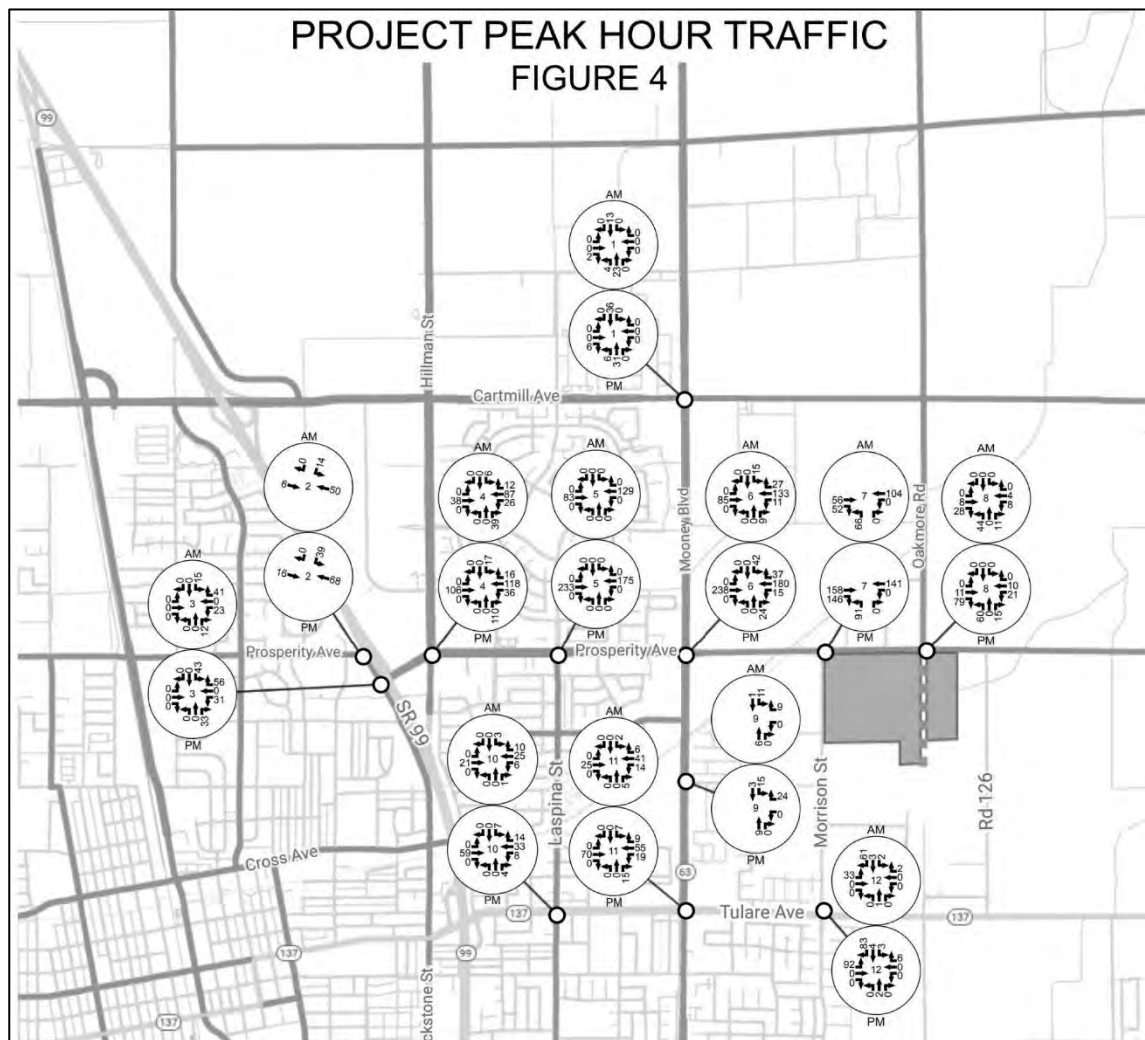


Figure 4-2. Intersections Map

**Source:** Traffic Study prepared by Ruettggers & Schuler Civil Engineers in March 2024

### Level of Service

In 2029, with the addition of Project traffic, the intersection of Hillman Street & Prosperity Avenue is anticipated to operate below an acceptable level of service. In 2044, the intersections of Mooney Boulevard & Cartmill Avenue, Mooney Boulevard & Prosperity Avenue, Mooney Boulevard & Seminole Avenue, Morrison Street & Prosperity Avenue, and Mooney Boulevard & Tulare Avenue are anticipated to operate below an acceptable level of service prior to the addition of project traffic. With the addition of project traffic, the intersection of Morrison Street & Tulare Avenue is anticipated to operate below an acceptable level of service. The remaining four intersections are expected to operate at an acceptable level of service through 2044 prior to, and with the addition of Project traffic. All remaining intersections operate at an acceptable level of service in 2024 through 2044 prior to, and with the addition of Project traffic.

Ruettggers & Schuler identified various intersection improvements that would improve the level of service, which would include the installation of traffic signals and the addition/alteration of

right-turn lanes and through lanes for north, south, east and west bound traffic. These improvements are needed by the year 2044 to maintain or improve the operational level of service of the street system in the vicinity of the Project site and are used as reference to determine the Conditions of Approval for the Project, these improvements are provided as Mitigation Measure TRT-1. Recommended future intersection and roadway improvements are shown on Table 4-3, below.

Table 4-3. Potential Intersection Improvements

#	Intersection	Total Improvements Required by 2044	Project Percent Share
1	Mooney Blvd & Cartmill Ave	Add NBT, SBT	1.55%
6	Mooney Blvd & Prosperity Ave	Add NBT, NBL, SBT, SBL, EBT, WBT, WBL	11.39%
7	Morrison St & Prosperity Ave	Signal	37.76%
9	Mooney Blvd & Seminole Ave	Signal	2.21%
12	Morrison St & Tulare Ave	Add EBR	11.45%

**Traffic Improvement Acronyms:**

NBT – North Bound Through

SBL – South Bound Left

WBT – West Bound Through

NBL – North Bound Left

EBT – East Bound Through

WBL – West Bound Left

SBT – South Bound Through

EBR – East Bound Right

In order to address conflicts with the City's General Plan policies pertaining to level-of-service surrounding the Project site, Mitigation Measure (MM) TRT-1 will be implemented. With the incorporation of the improvements provided in MM TRT-1, the Project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities, and its impact to transportation plans and programs would be ***less than significant with mitigation***

***b. Would the Project conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b)?***

**Less than Significant Impact.** An analysis of Project VMT (vehicle miles traveled) was conducted in accordance with Implementing Vehicle Miles Traveled Thresholds in CEQA Analysis Required by SB 743, a City of Tulare memorandum, dated June 26, 2020, (VMT Guidelines).

**Project Screening**

The VMT Guidelines contain "screening thresholds" for identifying whether a land use Project should be expected to result in a less than significant transportation impact under the California Environmental Quality Act (CEQA). Projects meeting one or more of these screening criteria are presumed to generate insignificant levels of VMT and would not be required to

undergo a detailed VMT analysis. Detailed Project Trip information is provided in Tables 4-4, 4-5, and 4-6, below.

*Table 4-4. Phase I Project Trip Generation*

General Information			Daily Trips		AM Peak Hour Trips			PM Peak Hour Trips		
ITE Code	Development Type	Variable	ADT RATE	ADT	Rate	In %Split/Trips	Out% Split/Trips	Rate	In% Split/Trips	Out%Split/Trips
210	Single Family Detached Housing	195 Dwelling Units	eq	1865	eq	25% 34	75% 103	eq	63% 117	37% 69

*Table 4-5. Phase II Project Trip Generation*

General Information			Daily Trips		AM Peak Hour Trips			PM Peak Hour Trips		
ITE Code	Development Type	Variable	ADT RATE	ADT	Rate	In %Split/Trips	Out% Split/Trips	Rate	In% Split/Trips	Out%Split/Trips
210	Single Family Detached Housing	393 Dwelling Units	eq	3554	eq	25% 65	75% 194	eq	63% 227	37% 133

*Table 4-6. Phase III Project Trip Generation*

General Information			Daily Trips		AM Peak Hour Trips			PM Peak Hour Trips		
ITE Code	Development Type	Variable	ADT RATE	ADT	Rate	In %Split/Trips	Out% Split/Trips	Rate	In% Split/Trips	Out%Split/Trips
210	Single Family Detached Housing	556 Dwelling Units	eq	5243	eq	25% 89	75% 266	eq	63% 314	37% 184

**Source for Tables 4-3, 4-4, and 4-5:** Institute of Transportation Engineers (ITE) *Trip Generation*, 11<sup>th</sup> Edition, Traffic Study prepared by Ruettggers & Schuler (2024)

One screening threshold applies to residential Projects located in low VMT areas. The VMT Guidelines include a map generated by the TCAG regional travel model that identifies which areas satisfy the City's VMT "reduction target" (at least 15 percent below the regional average). Since the Project is shown to be in a low VMT area, the residential portion of the Project is presumed to create a less than significant transportation impact.

The Project meets VMT screening criteria, and therefore is presumed to have a **less than significant** impact under CEQA.

***c. Would the Project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?***

**No Impact.** The proposed Project does not include any features that could result in increased hazards due to a geometric design feature. All proposed road designs will be reviewed and approved by the City of Tulare Engineering department. There is ***no impact***.

***d. Would the Project result in inadequate emergency access?***

**Less Than Significant Impact.** This Project would not result in inadequate emergency access. Emergency access to the site would be via Morrison Street, Prosperity Avenue and Oakmore Street. A network of local roads within the proposed Project property would provide full access onto and off of the Project site. Any impacts related to emergency access would be ***less than significant***.

#### **4.3.5 Mitigation Measures**

**Mitigation Measure TRT-1:** The following improvements shall be implemented as part of the Project's off-site transportation mitigation. These improvements are necessary to ensure that intersections continue to operate at an acceptable Level of Service (LOS) in compliance with the City of Tulare's General Plan and minimize congestion as the Project is developed:

- 1. Mooney Blvd & Cartmill Ave:** Add a northbound through lane (NBT) and a southbound through lane (SBT).
- 2. Mooney Blvd & Prosperity Ave:** Add a northbound through lane (NBT), northbound left-turn lane (NBL), southbound through lane (SBT), southbound left-turn lane (SBL), eastbound through lane (EBT), eastbound left-turn lane (EBL), westbound through lane (WBT), and westbound left-turn lane (WBL).
- 3. Morrison St & Prosperity Ave:** Install a traffic signal, eastbound right-turn lane (EBR) and westbound left-turn lane (WBL) as part of Phase 1 opening day improvements.
  - A focused traffic study shall be completed prior to Phases 2 and 3 to determine whether warrants for traffic signal construction are projected to be met by the completion of each phase. If the traffic signal warrants will be met, a traffic signal or roundabout will be required as an opening day improvement for that phase.
- 4. Mooney Blvd & Seminole Ave:** Install a traffic signal.
  - A focused traffic study shall be completed prior to Phases 2 and 3 to determine whether warrants for traffic signal construction will be met. If so, a traffic signal and median island modifications will be part of opening day requirements for Phases 2 and 3.
- 5. Morrison St & Tulare Ave:** Add an eastbound right-turn lane (EBR).

**6. Prosperity Ave & Oakmore St:** This intersection shall incorporate an eastbound right-turn lane (EBR), eastbound left-turn lane (EBL) and a westbound left-turn lane (WBL) by opening day of Phase 3.

- A focused traffic study shall be completed prior to Phase 3 to determine if warrants for traffic signal construction will be met. If so, a traffic signal or roundabout will be required by the opening day of Phase 3.

All traffic improvements shall be subject to Caltrans design and permitting requirements, including completion of an Intersection Control Evaluation per Caltrans guidelines, with completion of the improvements recommended therein required as an opening day improvement.

#### **4.3.6 Level of Significance After Mitigation**

As detailed above, the potential impacts of the proposed Project were found to be less than significant with the implementation of Mitigation Measure TRT-1.

### **4.4 Air Quality**

This section describes the existing air quality conditions of the Project site and vicinity, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the proposed Project. This section analyzes the potential impacts of the Project based on the California Environmental Quality Act (CEQA) Guidelines Appendix G, which contains the checklist used to evaluate whether a project may have significant air quality impacts. Additionally, Section 15126.2 of the CEQA Guidelines discusses significant environmental effects that must be analyzed in EIRs, which includes direct and indirect impacts related to air quality.

The information contained in this section is based on the air quality-related emissions calculations and modeling files prepared for the Project, provided as follows:

- Appendix A2: Initial Study & Associated Technical Studies
- Appendix C: Health Risk Assessment (Core Environmental Consulting, Inc.) prepared in September 2024

#### **4.4.1 Existing Conditions**

##### **Topography**

California is divided into regional air basins based on topographic air drainage features. The proposed Project site is within the San Joaquin Valley Air Basin, which is bordered by the Sierra Nevada Mountains to the East, Coastal Ranges to the West, and the Tehachapi Mountains to the South. The San Joaquin Valley comprises the southern half of California's Central Valley

and is approximately 250 miles long and averages 35 miles wide, with a slight downward elevation gradient from Bakersfield in the southeast end (elevation 408 feet) to sea level at the northwest end where San Joaquin Valley opens to the San Francisco Bay at the Carquinez Strait. At its northern edge is the Sacramento Valley, which comprises the northern half of California's Central Valley. The mountain ranges surrounding the San Joaquin Valley Air Basin (SJVAB) serve to restrict air movement and prevent the dispersal of pollution. As a result, the SJVAB is highly susceptible to pollution accumulation over time. The SJVAB is in nonattainment for several pollutant standards. The primary pollutants of concern in the San Joaquin Valley are ozone (O<sub>3</sub>) and PM<sub>10</sub>.

## **Climate**

The San Joaquin Valley is in a Mediterranean Climate Zone, influenced by a subtropical high-pressure cell most of the year and characterized by warm, dry summers and cooler winters. Mediterranean climates are characterized by sparse rainfall, which occurs mainly in winter. Summertime maximum temperatures in San Joaquin Valley often exceed 100°F. The vertical dispersion of air pollutants in the San Joaquin Valley can be limited by the presence of persistent temperature inversions. Air temperatures usually decrease with an increase in altitude in the troposphere. A reversal of this atmospheric state, where the air temperature increases with height, is termed an inversion. A temperature inversion can act like a lid, restricting vertical mixing of air above and below an inversion because of differences in air density and thereby trapping air pollutants below the inversion. The subtropical high-pressure cell is strongest during spring, summer, and fall and produces subsiding air, which can result in temperature inversions. Most of the surrounding mountains are above the normal height of summer inversions (1,500–3,000 feet). Wintertime high-pressure events can often last many weeks, with surface temperatures often lowering into the 30s°F. During these events, fog can be present, and inversions are extremely strong. These wintertime inversions can inhibit vertical mixing of pollutants to a few hundred feet (SJVAPCD n.d.).

## **Air Pollutants of Concern**

Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards for outdoor concentrations. The federal and state standards have been set at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons such as children, pregnant women, and the elderly, from illness or discomfort. Criteria air pollutants include ozone (O<sub>3</sub>), nitrogen dioxide (NO<sub>2</sub>), carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), particulate matter 2.5 microns or less in diameter (PM<sub>2.5</sub>), particulate matter ten microns or less in diameter (PM<sub>10</sub>), and lead (Pb). Note that reactive organic gases (ROGs), which are also known as reactive organic compounds (ROCs) or volatile organic compounds (VOCs), and nitrogen oxide (NO<sub>x</sub>) are not classified as criteria pollutants. However, ROGs and NO<sub>x</sub> are widely emitted from land development projects and participate in photochemical

reactions in the atmosphere to form O<sub>3</sub>; therefore, NO<sub>x</sub> and ROG<sub>s</sub> are relevant to the proposed Project and are of concern in the air basin and are listed below along with the criteria pollutants. As shown in Table 4-7, the SJVAB is in nonattainment for several pollutant standards.

**Ozone:** Ozone is not emitted directly into the environment but is generated from complex chemical reactions between reactive organic gases (ROG), or non-methane hydrocarbons, and oxides of nitrogen (NO<sub>x</sub>) that occur in the presence of sunlight. ROG and NO<sub>x</sub> generators in Tulare County include motor vehicles, recreational boats, other transportation sources, and industrial processes.

**PM<sub>10</sub>:** PM<sub>10</sub>, or particulate matter, is a complex mixture of primary or directly emitted particles, and secondary particles or aerosol droplets formed in the atmosphere by precursor chemicals.

**Carbon Monoxide:** Carbon Monoxide (CO) is a colorless, odorless, and poisonous gas produced by incomplete burning of carbon in fuels. When CO enters the bloodstream, it reduces the delivery of oxygen to the body's organs and tissues. Health threats are most serious for those who suffer from cardiovascular disease, particularly those with angina or peripheral vascular disease. Exposure to elevated CO levels can cause impairment of visual perception, manual dexterity, learning ability and performance of complex tasks. The primary source of carbon monoxide is automobile use.

**Nitrogen Dioxide:** Nitrogen Dioxide (NO<sub>2</sub>) is a brownish, highly reactive gas that is present in all urban atmospheres. NO<sub>2</sub> can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections. Nitrogen oxides are an important precursor both to ozone (O<sub>3</sub>) and acid rain and may affect both terrestrial and aquatic ecosystems. The major mechanism for the formation of NO<sub>2</sub> in the atmosphere is the oxidation of the primary air pollutant nitric oxide (NO). NO<sub>2</sub> plays a key role, together with VOCs, in the atmospheric reactions that produce O<sub>3</sub>. NO<sub>2</sub> forms when fuel is burned at hot temperatures. The two major emission sources are transportation and stationary fuel combustion sources such as electric utility and industrial boilers.

**Sulfur Dioxide:** Sulfur Dioxide (SO<sub>2</sub>) affects breathing and may aggravate existing respiratory and cardiovascular disease in high doses. Sensitive populations include asthmatics, individuals with bronchitis or emphysema, children, and the elderly. SO<sub>2</sub> is also a primary contributor to acid deposition, or acid rain, which causes acidification of lakes and streams and can damage trees, crops, historic buildings, and statues. In addition, sulfur compounds in the air contribute to visibility impairment in large parts of the country. This is especially noticeable in national parks. Ambient SO<sub>2</sub> results largely from stationary sources such as coal and oil combustion, steel mills, refineries, pulp, and paper mills and from nonferrous smelters.

Table 4-7. San Joaquin Valley Attainment

Pollutant	Designation/Classification
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	Federal Standards	State Standards
Ozone – One hour	No Federal Standard <sup>f</sup>	Nonattainment/Severe
Ozone – Eight hour	Nonattainment/Extreme <sup>e</sup>	Nonattainment
PM 10	Attainment <sup>c</sup>	Nonattainment
PM 2.5	Nonattainment <sup>d</sup>	Nonattainment
Carbon Monoxide	Attainment/Unclassified	Attainment/Unclassified
Nitrogen Dioxide	Attainment/Unclassified	Attainment
Sulfur Dioxide	Attainment/Unclassified	Attainment
Lead (Particulate)	No Designation/Classification	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified
Vinyl Chloride	No Federal Standard	Attainment

<sup>a</sup> See 40 CFR Part 81

<sup>b</sup> See CCR Title 17 Sections 60200–60210

<sup>c</sup> On September 25, 2008, EPA redesignated the San Joaquin Valley to attainment for the PM10 National Ambient Air Quality Standard (NAAQS) and approved the PM10 Maintenance Plan.

<sup>d</sup> The Valley is designated nonattainment for the 1997 PM2.5 NAAQS. EPA designated the Valley as nonattainment for the 2006 PM2.5 NAAQS on November 13, 2009 (effective December 14, 2009).

<sup>e</sup> Though the Valley was initially classified as serious nonattainment for the 1997 8-hour ozone standard, EPA approved Valley reclassification to extreme nonattainment in the Federal Register on May 5, 2010 (effective June 4, 2010).

<sup>f</sup> Effective June 15, 2005, the U.S. Environmental Protection Agency (EPA) revoked the federal 1-hour ozone standard, including associated designations and classifications. EPA had previously classified the SJVAB as extreme nonattainment for this standard. EPA approved the 2004 Extreme Ozone Attainment Demonstration Plan on March 8, 2010 (effective April 7, 2010). Many applicable requirements for extreme 1-hour ozone nonattainment areas continue to apply to the SJVAB.

**Source:** SJVAPCD

## Ambient Air Quality

Ambient air quality in the City of Tulare can be inferred from measurements taken at nearby air quality monitoring stations. While there are no monitoring stations within the immediate vicinity of the Project site, the closest and most representative stations are located in Visalia, which is approximately 10 miles north of Tulare. The San Joaquin Valley Air Pollution Control District (SJVAPCD) maintains these stations to measure ambient pollutant concentrations and determine whether air quality meets the National Ambient Air Quality Standards (NAAQS) and the California Ambient Air Quality Standards (CAAQS).



Given the proximity and similarity in regional air quality conditions, data from the Visalia – W. Ashland Avenue station, located at 2005 West Ashland Avenue, Suite G (approximately 10 miles north of the Project site), is considered the most representative of air quality near the Project site. This station monitors pollutants of particular concern in the San Joaquin Valley Air Basin (SJVAB), including ozone and particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), and also measures nitrogen dioxide and PM<sub>2.5</sub> speciation. Additionally, data from the Visalia – N. Church Street station has been included for further context, providing a comprehensive overview of air quality from 2021 to 2023.

It is important to note that while localized variations in emissions sources and climate can affect pollutant concentrations, these monitoring stations provide a reasonable approximation of ambient air quality conditions near the Project site, based on their proximity and pollutant monitoring capabilities. Refer to Table 4-8, Nearest Air Monitoring Station Data for air quality data at these stations.

Table 4-8. Nearest Air Monitoring Station Data

Pollutant	Averaging Time	Item	Standard	2021	2022	2023
<b>Ozone</b>	1 Hour	Max 1 Hour (ppm)	0.09 ppm	0.119	0.114	0.100
		Days > State Standard (0.09 ppm)	--	14	8	3
	8 Hour	Max 8 Hour (ppm)	0.070 ppm	0.099	0.099	0.087
		Days > State Standard (0.070 ppm)	--	52	64	30
		Days > National Standard (0.070 ppm)	--	51	62	27
		Days > National Standard (0.075 ppm)	--	35	26	8
<b>PM 2.5</b>	24-Hour	Max 24 Hour Average Concentration (µg/m <sup>3</sup> )	--	129.2	48.3	42.9
		Days > National 24-Hour Standard	--	46.6	18.5	6.1
	Annual	Annual average Concentration (µg/m <sup>3</sup> )	12 µg/m <sup>3</sup>	16.6	16.1	13.5
<b>PM 10</b>	24-Hour	Max 24 Hour Average Concentration (µg/m <sup>3</sup> )	50 µg/m <sup>3</sup>	302.1	125.2	107.5
		Days > State 24-Hour Standard	--	151.7*	171.2*	108.5
		Days > National 24-Hour Standard	--	4.7	3.8*	0
	Annual	Annual Average Concentration (µg/m <sup>3</sup> )	20 µg/m <sup>3</sup>	52.8	54.9	39.1

**Source:** California Air Resources Board Air Quality Statistics – iADAM tool

California and National Air Quality Standards have been included in Table 4-9 below, California and National Ambient Air Quality Standards.

Table 4-9. California and National Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	National Standards	
		Concentration <sup>3</sup>	Primary	Secondary
<b>Ozone (03)</b>	1 Hour	0.09 ppm (180 µg/m <sup>3</sup> )	--	Same as Primary Standard
	8 Hour	0.070 ppm (137 µg/m <sup>3</sup> )	0.075 ppm (147 µg/m <sup>3</sup> )	
	24 Hour	50 µg/m	150 µg/m <sup>3</sup>	

Pollutant	Averaging Time	California Standards	National Standards	
		Concentration <sup>3</sup>	Primary	Secondary
Respirable Particulate Matter (PM <sub>10</sub> )	Annual Arithmetic Mean	20 µg/m3	--	Same as Primary Standard
Fine Particulate Matter (PM <sub>2.5</sub> )	24 Hour	--	35 µg/m³	Same as Primary Standard
	Annual Arithmetic Mean	12 µg/m³	15 µg/m³	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m³)	35 ppm (40 mg/m³)	--
	8 Hour	9.0 ppm (10 mg/m³)	9 ppm (10 mg/m³)	--
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m³)	--	--
Nitrogen Dioxide (NO <sub>2</sub> ) <sup>8</sup>	1 Hour	0.18 ppm (339 µg/m³)	100 ppb (188 µg/m³)	--
	Arithmetic Mean	0.030 ppm (57 µg/m³)	53 ppb (100 µg/m³)	Same as Primary Standard
Sulfur Dioxide	1 Hour	0.25 ppm (655 µg/m³)	75 ppb (196 µg/m³)	--
	3 Hour	--	--	0.5 ppm (1300 µg/m³)
	24 Hour	0.04 ppm (105 µg/m³)	0.14 ppm (for certain areas)	--
	Annual Arithmetic Mean	--	0.030 ppm (for certain areas)	--
Lead <sup>10,11</sup>	30 Day Average	1.5 µg/m³	--	--
	Calendar Quarter	--	1.5 µg/m3 (for certain areas)	Same as Primary Standard
	Rolling 3-Month Average	--	0.15 µg/m³	
Visibility Reducing Particles <sup>12</sup>	8 Hour	See Footnote 1	No National Standards	
Sulfates	24 Hour	25 µg/m³		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m³)		
Vinyl Chloride <sup>10</sup>	24 Hour	0.01 ppm (26 µg/m³)		

**Source:** SJVAPCD

Notes: 1 In 1989, the California Air Resources Board (CARB) converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively. Key: µg/m<sup>3</sup> = micrograms per cubic meter; mg/m<sup>3</sup> = milligrams per cubic meter; ppm = parts per million Source: CARB 2016c

## **Toxic Air Contaminants**

In addition to the criteria pollutants discussed above, toxic air contaminants (TACs) are another group of pollutants of concern. TACs are considered either carcinogenic or noncarcinogenic based on the nature of the health effects associated with exposure to the pollutant. For regulatory purposes, carcinogenic TACs are assumed to have no safe threshold below which health impacts would not occur, and cancer risk is expressed as excess cancer cases per one million exposed individuals. Noncarcinogenic TACs differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis.

There are many different types of TACs, with varying degrees of toxicity. Sources of TACs include industrial processes, such as petroleum refining and chrome-plating operations; commercial operations, such as gasoline stations and dry cleaners; and motor vehicle exhaust. Public exposure to TACs can result from emissions from normal operations, as well as from accidental releases of hazardous materials during upset conditions. The health effects associated with TACs are quite diverse and generally are assessed locally, rather than regionally. TACs can cause long-term health effects such as cancer, birth defects, neurological damage, asthma, bronchitis, genetic damage, or short-term acute effects such as eye watering, respiratory irritation (a cough), running nose, throat pain, and headaches.

To date, CARB has designated 244 compounds as TACs. Additionally, CARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control. The majority of the estimated health risks from TACs can be attributed to a relatively few compounds. CARB identified diesel particulate matter (DPM) as a TAC. DPM differs from other TACs in that it is not a single substance but rather a complex mixture of hundreds of substances. Diesel exhaust is a complex mixture of particulates and gases produced when an engine burns diesel fuel. DPM is a concern because it causes lung cancer; many compounds found in diesel exhaust are carcinogenic. DPM includes the particle phase constituents in diesel exhaust. The chemical composition and particle sizes of DPM vary between different engine types (heavy-duty, light-duty), engine operating conditions (idle, accelerate, decelerate), fuel formulations (high/low sulfur fuel), and the year of the engine. Some short-term (acute) effects of diesel exhaust include eye, nose, throat, and lung irritation, and diesel exhaust can cause coughs, headaches, lightheadedness, and nausea. DPM poses the greatest health risk among the TACs. Almost all diesel exhaust particle mass is 10 microns or less in diameter. Because of their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lung.

## **Sensitive Receptors**

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the

elderly, the acutely ill, and the chronically ill, especially those with cardiovascular diseases. Residential areas are considered sensitive receptors to air pollutions because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Children are considered more susceptible to health effects of air pollution due to their immature immune systems and developing organs. As such, schools are also considered sensitive receptors, as children are present for extended durations and engage in regular outdoor activities. Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory functions, which can be impaired by air pollution. In addition, noticeable air pollution can detract from the enjoyment of recreation.

#### **4.4.2 Regulatory Setting**

##### **Regional Attainment Status**

The state and federal standards for the criteria pollutants are presented in Section 8.4 of The San Joaquin Valley Unified Air Pollution Control District's 2015 "Guidance for Assessing and Mitigating Air Quality Impacts". These standards are designed to protect public health and welfare. The "primary" standards have been established to protect public health. The "secondary" standards are intended to protect the nation's welfare and account for air pollutant effects on soils, water, visibility, materials, vegetation, and other aspects of general welfare. The U.S. EPA revoked the national 1-hour ozone standard on June 15, 2005, and the annual PM<sub>10</sub> standard on September 21, 2006, when a new PM<sub>2.5</sub> 24-hour standard was established. The California Environmental Quality Act (CEQA) requires lead agencies to determine if each Project of a certain threshold has an impact on the air quality of the area. The Air Quality standards and Greenhouse Gas guidance measures are used to establish levels of air quality impact of a Project. The following regulatory background represents global, federal, state, and local standards and guidance that have been reviewed in this study.

##### **City of Tulare General Plan (2035)**

The 2035 General Plan includes the following goals and policies related to air quality that correlate to the proposed Project:

**Goal AQ-1:** To promote better air quality conditions locally and regionally.

- **AQ-P1.2 Cumulative Air Quality Impacts.** The City shall require developments to be located, designed, and constructed in a manner that would minimize cumulative air quality impacts. Developers shall be required to present alternatives that reduce air emissions and enhance, rather than harm, the environment.

- **AQ-P2.7 Mixed Land Uses.** The City should encourage the mixing of land uses that generate high trip volumes, especially when such uses can be mixed with support services and where they can be served by public transportation.

### **Federal Clean Air Act**

The 1977 Federal Clean Air Act (CAA) authorized the establishment of the National Ambient Air Quality Standards (NAAQS) and set deadlines for their attainment. The Clean Air Act identifies specific emission reduction goals, requires both a demonstration of reasonable further progress and an attainment demonstration, and incorporates more stringent sanctions for failure to meet interim milestones. The U.S. EPA is the federal agency charged with administering the Act and other air quality-related legislation. EPA's principal functions include setting NAAQS; establishing minimum national emission limits for major sources of pollution; and promulgating regulations. Under CAA, the NCCAB is identified as an attainment area for all pollutants.

### **California Clean Air Act**

The California Air Resources Board coordinates and oversees both state and federal air pollution control programs in California. As part of this responsibility, the California Air Resources Board monitors existing air quality, establishes California Ambient Air Quality Standards, and limits allowable emissions from vehicular sources. Regulatory authority within established air basins is provided by air pollution control and management districts, which control stationary-source and most categories of area-source emissions and develop regional air quality plans. The Project is located within the jurisdiction of the San Joaquin Valley Air Pollution Control District.

The state and federal standards for the criteria pollutants are presented in Section 8.4 of The San Joaquin Valley Unified Air Pollution Control District's 2015 "Guidance for Assessing and Mitigating Air Quality Impacts". These standards are designed to protect public health and welfare. The "primary" standards have been established to protect the public health. The "secondary" standards are intended to protect the nation's welfare and account for air pollutant effects on soils, water, visibility, materials, vegetation, and other aspects of general welfare. The U.S. EPA revoked the national 1-hour ozone standard on June 15, 2005, and the annual PM<sub>10</sub> standard on September 21, 2006, when a new PM<sub>2.5</sub> 24-hour standard was established.

San Joaquin Valley Air Pollution Control District (SJVAPCD): The SJVAPCD is responsible for enforcing air quality standards in the Project area. The following SJVAPCD rules and regulations may apply to the proposed Project:

- **Rule 2010:** Permits Required. The purpose of this rule is to require any person constructing, altering, replacing, or operating any source operation which emits, may emit, or may reduce emissions to obtain an Authority to Construct or a Permit to Operate. This rule also explains the posting requirements for a Permit to Operate and the illegality of a person willfully altering, defacing, forging, counterfeiting, or falsifying any Permit to Operate.
- **Rule 3135:** Dust Control Plan Fee. All Projects which include construction, demolition, excavation, extraction, and/or other earth moving activities as defined by Regulation VIII (Described below) are required to submit a Dust Control Plan and required fees to mitigate impacts related to dust.
- **Rule 4002:** National Emission Standards for Hazardous Air Pollutants. This rule incorporates the National Emission Standards for Hazardous Air Pollutants from Part 61, Chapter I, Subchapter C, Title 40, Code of Federal Regulations (CFR) and the National Emission Standards for Hazardous Air Pollutants for Source Categories from Part 63, Chapter I, Subchapter C, Title 40, Code of Federal Regulations (CFR).
- **Rule 4101:** Visible Emissions. District Rule 4101 prohibits visible emissions of air contaminants that are dark in color and/or have the potential to obstruct visibility.
- **Rule 4102:** Nuisance. The purpose of this rule is to protect the health and safety of the public.
- **Rule 4601:** Architectural Coatings. The purpose of this rule is to limit VOC emissions from architectural coatings. This rule specifies architectural coatings storage, cleanup, and labeling requirements.
- **Rule 4641:** Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations. The purpose of this rule is to limit VOC emissions from asphalt paving and maintenance operations. This rule applies to the manufacture and use of cutback asphalt, slow cure asphalt and emulsified asphalt for paving and maintenance operations.
- **Rule 4662:** District Rule 4662 was developed to help reduce emissions of volatile organic compounds (VOC) and hazardous air pollutants produced from degreasing operations, in which an enclosure or device is used for removing dirt, oil, grease and other contaminants.
- **Rule 4663:** District Rule 4663 was developed to limit the emissions of volatile organic compounds (VOCs) from organic solvent cleaning and from the storage and disposal of solvents and waste solvent materials.
- **Rule 9510:** Indirect Source Review (ISR). This rule reduces the impact PM10 and NOX emissions from growth on the SJVB. This rule places application and emission reduction requirements on applicable development Projects in order to reduce emissions through onsite mitigation, offsite SJVAPCD administered Projects, or a combination of the two. This Project will submit an Air Impact Assessment (AIA) application in accordance with Rule 9510's requirements.
- **Regulation VIII:** Fugitive PM10 Prohibitions. Regulation VIII is composed of eight rules which together aim to limit PM10 emissions by reducing fugitive dust. These rules

contain required management practices to limit PM10 emissions during construction, demolition, excavation, extraction, and/or other earth moving activities

#### 4.4.3 Thresholds and Methodology

The impact analysis provided in Chapter 4.4 is based on the application of the following California Environmental Quality Act (CEQA) Guidelines Appendix G, which indicates that a project would have a significant impact on air quality if it would:

1. *Conflict with or obstruct implementation of any applicable air quality plan.*
2. *Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard.*
3. *Expose sensitive receptors to substantial pollutant concentrations.*
4. *Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.*

The significance criteria established by the applicable air quality management or air pollution control district (SJVAPCD) may be relied upon to make the above determinations. According to the SJVAPCD, an air quality impact is considered significant if the proposed Project would violate any ambient air quality thresholds, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations. The SJVAPCD has established thresholds of significance for air quality for construction and operational activities of land use development projects, which is shown in Table 4-10 – SJVAPCD Thresholds of Significance for Criteria Pollutants.

Table 4-10. Thresholds of Significance for Criteria Pollutants

Pollutant/Precursor	Construction Emissions	Operational Emissions	
		Permitted Equipment and Activities	Non-Permitted Equipment and Activities
	Emissions (tpy)	Emissions (tpy)	Emissions (tpy)
<b>CO</b>	100	100	100
<b>NOx</b>	10	10	10
<b>ROG</b>	10	10	10
<b>SOx</b>	27	27	27
<b>PM10</b>	15	15	15
<b>PM2.5</b>	15	15	15

Source: SJVAPCD

#### CO Hotspot Analysis

In addition to the daily thresholds listed above, the proposed Project area would also be subject to the ambient air Quality standards, through an analysis of localized CO impacts. The California 1-hour and 8-hour CO standards are:

- 1-hour = 20 parts per million (ppm)
- 8-hour = 9 parts per million (ppm)

The significance of localized impacts depends on whether ambient CO levels in the vicinity of the Project site are above state and federal carbon monoxide standards. Carbon monoxide concentrations in the San Joaquin Air Basin currently meets the California Ambient Air Quality Standards (CAAQS) and National Ambient Air Quality Standards (NAAQS) for carbon monoxide (CO).

## **Methodology**

Air pollution emissions can be estimated by using emission factors and examining the level of activity occurring. Emission factors are the emission rate of a pollutant given the activity over time; for example, grams of NO<sub>x</sub> per horsepower hour. The ARB has published emission factors for on-road equipment and vehicles in the OFFROAD emission model. An air emissions model (or calculator) combines the emission factors and the various levels of activity and outputs the emissions for the various pieces of equipment.

The California Emissions Estimator (CalEEMod), Version 2020.4.0, is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutants and greenhouse gas (GHG) emissions associated with both construction and operations from a variety of land use Projects. The model quantifies direct emissions from construction and operations, including vehicle use, as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use. The model incorporates Pavley standards and Low Carbon Fuel standards into the mobile source emission factors. Further, the model identifies mitigation measures to reduce criteria pollutant and GHG emissions along with calculating the benefits achieved from measures chosen by the user. The CalEEMod model was run based off of the following land use assumption:

- Single Family Housing: 546 dwelling units (D.U.s), 140.32 Acres
- City Park: 5.47 acres

CalEEMod default values were used to construction trips, equipment use, trip lengths, and solid waste generation. In order to account for recent changes to new residential building standard (2022 update to Title 24, Part 6 of the California Code of Regulations), no natural gas usage is expected for the proposed Project. This update mandates that new homes constructed from 2023 onward must be equipped with electric systems capable of supporting all-electric



appliances, which assisted the transition for developers. Therefore, all default natural gas emission factors were set to zero. Project specific values were used for Land Use, Architectural Coating VOC Emissions, Woodstoves, Area Coating, and Consumer Products.

#### 4.4.4 Impacts Analysis

##### **a) *Would the Project conflict with or obstruct implementation of the applicable air quality plan?***

**Less Than Significant Impact.** The SJVAPCD drafted a series of State Implementation Plans (SIP) for the criteria pollutants that are of concern for the San Joaquin Valley Air Basin. The integration of multiple SIPs for each criteria pollutant collectively form the air quality plan for the San Joaquin Valley Air Basin. The most recent SIP is the “2024 Plan for the 2012 PM 2.5 Standard”, which focuses on meeting the annual PM 2.5 standard of 12 micrograms/cubic meters originally set in 2012. This SIP includes measures to reduce fine particulate matter emissions and improve air quality by the year 2030. The SJVAPCD has established thresholds in the adopted SIPs and other air quality plans prepared by the Air District. These thresholds are depicted in Tables 4-11 and 4-12 for construction and operation. Criteria for determining consistency with the established standards are whether or not the Project’s estimated emissions exceed those thresholds established by the Air District. As long as the Project construction and operational emissions do not exceed the thresholds, the Project will not result in new air violations, delay the timely attainment of air quality standards, or result in increased severity of an existing air quality violation.

#### **Short-Term Emissions**

Project construction would generate pollutant emissions from the following construction activities: site preparation, grading, building construction, application of architectural coatings, and paving. The short-term emissions from these activities were calculated using CalEEMod Version 2020.4.0. The full CalEEMod Report can be found in Appendix A2, respectively. As shown in Table 4-11 below, Project construction related emissions do not exceed the thresholds for criteria pollutants established by the SJVAPCD.

#### **Construction Phase Modeling Parameters**

Construction schedule assumptions and lot sizes were based on the approved site plan for the Project and the standards set forth in the City of Tulare Municipal Code and General Plan. Default values provided in CalEEMod were used where detailed Project information was not available. The construction phases for the Project included site preparation, grading, building construction, paving and architectural coating. Total construction is expected to occur over the span of 10 years (2025-2035). Default CalEEMod values were

used for off-road equipment estimations, construction vehicle trips/VMT, VOC content of architectural coatings, and electricity emission factors

### Construction Emissions

The implementation of the Project would generate air pollutant emissions from entrained dust, offroad equipment, vehicle emissions, architectural coatings, and asphalt pavement application. Entrained dust results from the exposure of earth surfaces to wind from the direct disturbance and movement of soil, resulting in PM10 and PM2.5 emissions. The Project would implement various dust control strategies and would be required to comply with SJVAPCD Regulation VIII to control dust emissions generated during the grading activities. Proposed construction practices that would be employed to reduce fugitive dust emissions include watering of the active sites and unpaved roads two times per day depending on weather conditions. Internal combustion engines used by construction equipment, vendor trucks (i.e., delivery trucks), and worker vehicles would result in emissions of ROG, NOx, CO, PM10, and PM2.5.

The application of architectural coatings, such as exterior application/interior paint and other finishes, and of asphalt pavement would also produce ROG emissions; however, the contractor is required to procure architectural coatings from a supplier in compliance with the requirements of SJVAPCD's Rule 4601 (Architectural Coatings) and limit the amount of ROG emissions from cutback asphalt in compliance with the requirements of SJVAPCD's Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations). Pursuant to Regulation VIII, Rule 8021, Section 6.3, the Project would be required to develop, prepare, submit, obtain approval of, and implement a dust control plan, which would reduce fugitive dust impacts to less than significant for Project construction.

Table 4-11 presents the estimated emissions generated during construction of the Project. The full CalEEMod estimates can be found in Appendix A2 of this report.

*Table 4-11. Projected Construction Emissions Compared to SJVAPCD Thresholds*

	<b>CO (tpy)</b>	<b>ROG (tpy)</b>	<b>SOx (tpy)*</b>	<b>NOx (tpy)</b>	<b>PM10 (tpy)</b>	<b>PM2.5 (tpy)</b>
Emissions Generated from Project Construction	<b>3.44</b>	<b>3.45</b>	<b>0.0085</b>	<b>3.50</b>	<b>0.667</b>	<b>0.316</b>
SJVAPCD Thresholds of Significance	<b>100</b>	<b>10</b>	<b>27</b>	<b>10</b>	<b>15</b>	<b>15</b>
*Threshold established by SJVAPCD for SOx, however emissions are reported as SO2 by CalEEMod.						

## Long-Term Emissions

Implementation of the proposed Project would result in long-term emissions associated with mobile, energy, and area sources. Operational emissions from these factors were calculated using CalEEMod. The full CalEEMod Report can be found in Appendix A2 of this report.

## Operational Phase Modeling Parameters

CalEEMod default vehicle trips were used to model residential vehicle trips during the operational phase. For area sources of emissions under the operational phase, default values were used for all inputs except for the “Hearths” and “Energy” sections. Under the “Hearths” section, all values for woodstoves, gas powered fireplaces, propane-powered fireplaces, wood-powered fireplaces were set to zero. The proposed Project will not utilize any natural gas sources, so if there are fireplaces, they will utilize electricity as the power source. To account for the exclusion of natural gas as an energy source for Project operations, the natural gas output was set to zero in the “Energy” section of the CalEEMod tool. For the remaining sections, including Water, Waste, Refrigerants, operational Off-Road Equipment, and Stationary Sources, default values were used.

## Operational Emissions

The Project would involve the construction of 546 low -density residential homes. Operation of the Project would generate ROG, NOx, CO, SOx, PM10, and PM2.5 emissions from mobile sources, including vehicle trips from passenger vehicles; area sources, including the use of consumer products, architectural coatings for repainting, and landscape maintenance equipment; and energy sources, including the use of electric-powered space and water heating. As discussed previously, pollutant emissions associated with long-term operations were quantified using CalEEMod for area, energy, and mobile sources, and were primarily based on CalEEMod default values. Project-generated mobile source emissions were based on the default trip rates provided by CalEEMod. Details of the emissions estimates is provided in Appendix A2. As shown in Table 4-12 below, the Project's operational emissions do not exceed the thresholds established by the SJVAPCD.

*Table 4-12. Projected Operational Emissions Compared to SJVAPCD Thresholds*

	<b>CO (tpy)</b>	<b>ROG (tpy)</b>	<b>SOx (tpy)*</b>	<b>NOx (tpy)</b>	<b>PM10 (tpy)</b>	<b>PM2.5 (tpy)</b>
Emissions Generated from Project Operation	<b>19.43</b>	<b>5.79</b>	<b>0.0384</b>	<b>2.24</b>	<b>5.38</b>	<b>1.46</b>
SJVAPCD Thresholds of Significance	<b>100</b>	<b>10</b>	<b>27</b>	<b>10</b>	<b>15</b>	<b>15</b>

\*Threshold established by SJVAPCD for SO<sub>x</sub>, however, emissions are reported as SO<sub>2</sub> by CalEEMod.

As shown in Tables 4-11 and 4-12, Project construction and operational emissions would not exceed the SJVAPCD thresholds of significance. Since the Project is not anticipated to exceed any SJVAPCD thresholds of significance, the Project will not conflict with or delay the implementation of the SJVAPCD attainment/implementation plans for criteria pollutants. The impacts resulting from CEQA Thresholds a and b would remain *less than significant with mitigation*.

**b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?**

**Less Than Significant Impact.** The SJVAPCD is responsible for bringing air quality in the Tulare Planning Area into compliance with federal and state air quality standards. The significance thresholds and rules developed by the SJVAPCD are designed to prevent Projects from violating air quality standards or significantly contributing to existing air quality violations. As discussed above, neither construction-related emissions nor operation-related emissions will exceed thresholds established by the SJVAPCD. The Project will comply with all applicable SJVAPCD rules and regulations, which will further reduce the potential for any significant impacts related to air quality as a result of Project implementation. Because these thresholds and regulations are designed to achieve and/or maintain federal and state air quality standards, and the Project is compliant with these thresholds and regulations, the Project will not violate an air quality standard or significantly contribute to an existing air quality violation. The impact is *less than significant*.

**c) Expose sensitive receptors to substantial pollutant concentrations?**

**Less than Significant with Mitigation.** The Project could result in toxic air contaminant (TAC) emissions during construction and, to a limited extent, during operation. The primary TAC emissions resulting from Project construction would include diesel particulate matter (DPM), which consists of particulate matter 2.5 microns and smaller (PM<sub>2.5</sub>) exhausted during the operation of on- and off-road diesel-fueled vehicles and equipment. DPM is the particulate component of diesel exhaust and has been identified as a TAC by the California Air Resources Board (CARB) based on its potential exposures and health concerns. Epidemiological studies strongly suggest a relationship between occupational diesel exhaust exposure and lung cancer. A number of adverse acute and chronic effects have also been associated with exposure to diesel exhaust.

**Construction Phase.** Sensitive receptors are defined as areas where young children, chronically ill individuals, the elderly, or people who are more sensitive than the general population reside, such as schools, hospitals, nursing homes, and daycare centers. Sensitive receptors include nearby residences to the north, east, and west, with the closest being approximately 40 meters north of the Project site perimeter. A total of 89 nearby receptors were selected for a representative analysis. SJVAPCD recommended parameters were used throughout. Results of the AERMOD modeling and ADMRT calculations are attached in Appendix C, along with a map of receptors.

During the construction phase the Project would produce diesel particulate matter (DPM), which has been classified as a carcinogen. DPM is the particulate component of diesel exhaust and has been identified as a TAC by the California Air Resources Board (CARB) based on its potential exposures and health concerns. Epidemiological studies strongly suggest a relationship between occupational diesel exhaust exposure and lung cancer. A number of adverse acute and chronic effects have also been associated with exposure to diesel exhaust.

According to the Health Risk Assessment prepared by Core Environmental Consulting, (Appendix C), construction risk would be below the SJVAPCD Thresholds of Significance. The construction results are shown in Table 4-13, below.

*Table 4-13. HRA Results Compared to SJVAPCD Thresholds of Significance*

<b>Risk</b>	<b>Carcinogen (risk in one million)</b>	<b>Acute Hazard Index</b>	<b>Chronic Hazard Index</b>
Construction	9.4	n/a	n/a
Thresholds of Significance	20	1	1

Source: Appendix C HRA Results

Notes: Hazard indices are for Maximally Exposed Individual. Includes Tier 4 Engine Controls for Off-Road Diesel Equipment

The results include implementation of Mitigation Measure HRA-1, which is described in Section 4.4.5, below. The highest risk exposure occurred at receptor 3, which is approximately 40 meters north of the Project site.

**Operational Phase.** Once operational, diesel-fueled vehicle and equipment use would be minimal and would not result in a substantial health risk. The Project includes residential units and a city park; thus, there are no other substantial sources of TAC expected during construction or operation. Additional health risk could occur from the use of household cleaners, commercial products, landscaping equipment, and a number of other area sources; however, determining the use of such TAC sources would be highly speculative, and the health risk impact from these sources would be less than significant because

existing federal, state, and local regulations are enforced for the composition, use, and disposal of these hazardous materials. This analysis is thus focused on construction DPM only.

Since construction risk would be below the SJVAPCD Thresholds of Significance with the implementation of Mitigation Measure HRA-1 (Tier 4 Engine Controls), the impact is *less than significant with mitigation incorporated*.

**d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?**

**Less than Significant.** Some typical construction-related odors would be generated during Project construction. As mentioned in Threshold C, the Project is adjacent to sensitive receptors to the north and southeast, which may be temporarily affected by such odors. The majority of the Project site is separated by large parcels of agricultural or vacant land, with only a minor portion of the Project being adjacent to sensitive receptors. The residential properties to the north are separated by Prosperity Avenue, making the home approximately 36–40 feet away from the northern Project boundary. The sensitive receptors to the east are more distanced, with the closest point being approximately 200 feet from the southeast Project boundary. The proposed Project would not include any odor sources identified in Table 6 of the SJVAPCD's Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI).

Project construction may create objectionable odors, but the odors would be temporary and would not affect a substantial number of people. The operational phase is solely residential development, so there are no objectionable odors that would result from this phase of the Project. The overall impact is *less than significant*.

#### **4.4.5 Mitigation Measures**

To reduce potentially significant impacts under Threshold C, Mitigation Measure HRA -1 is identified to reduce Project-generated construction diesel particulate matter emissions.

**Mitigation Measure HRA-1:** Implement Tier 4 Engine Controls for all off-road, diesel-fueled equipment during construction.

#### **4.4.6 Level of Significance After Mitigation**

The use of Tier 4 engine controls is consistent with U.S. EPA, CARB, and SJVAPCD goals for implementing mitigation measures that directly reduce DPM emissions. According to the CalEEMod analysis, implementation of Mitigation Measure HRA-1 would reduce worst-year,

annual DPM emissions by approximately 69%, thus reducing potential impacts to a *less-than-significant level*.

## 4.5 Greenhouse Gas Emissions

This section describes the existing conditions of the Project site and vicinity related to greenhouse gas (GHG) emissions, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the proposed Project (Project). This section assesses potential effects on greenhouse gas emissions that could result from the implementation of the proposed Project. Information contained in this section is based on the greenhouse gas related emissions calculations and modeling files prepared for the Project, as follows:

- Appendix A2: Initial Study (Attachment A: CalEEMod Report)
- Appendix C: Health Risk Assessment, prepared by Core Environmental Consulting (2024)

Other sources consulted are listed in Section 8, References, of this report.

### 4.5.1 Existing Conditions

#### Climate Change

Climate Change is a change in the average weather of the earth that may be measured by alterations in wind patterns, storms, precipitation, and temperatures. These changes are assessed using historical records of temperature changes occurring in the past, such as during previous ice ages. Many of the concerns regarding climate change use this data to extrapolate a level of statistical significance, specifically focusing on temperature records from the last 150 years, the Industrial Age, which differ from previous climate changes in rate and magnitude.

The United Nations Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of GHG needed to stabilize global temperatures and climate change impacts. The IPCC predicted that global mean temperatures change from 1990 to 2100, given six scenarios, could range from 1.1 degree Celsius (°C) to 6.4°C. Regardless of analytical methodology, global average temperatures and sea levels are expected to rise under all scenarios (IPCC 2007). In California, climate change may result in consequences such as the following form (CCCC 2006 and Moser et al. 2009).

1. A reduction in the quality and supply of water to the State from the Sierra snowpack.
2. Increased risk of large wildfires.



3. Reduction in the quality and quantity of certain agriculture products.
4. Exacerbation of air quality problems.
5. A rise in sea levels resulting in the displacement of coastal businesses and residences.
6. Damage to marine ecosystems and their natural environment.
7. An increase in infections, disease, asthma, and other health-related problems.
8. A decrease in the health and productivity of California's forest. (CCCC 2006 and Moser et al. 2009)

### **Greenhouse Gases**

Greenhouse Gases (GHG) are gases that trap heat in the atmosphere and the presence of GHGs in the atmosphere affects the earth's temperature. The effect is equivalent to the way a greenhouse retains heat. Natural processes and human activities emit greenhouse gases. Common GHGs include water vapor, carbon dioxide, methane, nitrous oxide, ozone, chlorofluorocarbons, hydro chlorofluorocarbons, hydro fluorocarbons, per fluorocarbons, sulfur, and hexafluoride. Human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations. Some greenhouse gases can remain in the atmosphere for over hundreds of years.

Some GHGs have a greater impact on climate change than others. In order to accurately compare GHG emissions, a Global Warming Potential (GWP) has been calculated for each greenhouse gas based on how long it remains in the atmosphere, on average, and how strongly it absorbs energy. Gases with a higher GWP absorb more energy per pound, than gases with a lower GWP, and thus contribute more to global warming. For example, one pound of methane is equivalent to twenty-one pounds of carbon dioxide.

In regard to the quantity of these gases in the atmosphere, we first must establish the amount of particular gas in the air, known as Concentration, or abundance, which are measured in parts per million, parts per billion and even parts per trillion. To put this measurement in more relatable terms, one part per million is equivalent to one drop of water diluted into about thirteen gallons of water, roughly a full tank of gas in a compact car. Therefore, it can be assumed larger emission of greenhouse gases lead to a higher concentration in the atmosphere.

GHGs as defined by AB 32 include the following gases: carbon dioxide, methane, nitrous oxide, hydrocarbons, perfluorocarbons, and sulfur hexafluoride. GHGs as defined by AB 32 and sources are summarized in Table 4-14.

Table 4-14. Greenhouse Gases

Greenhouse Gas	Description & Physical Properties	Lifetime	GWP	Sources
Methane (CH <sub>4</sub> )	Is a flammable gas and is the main component of natural gas	12 years	21	Emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
Carbon dioxide (CO <sub>2</sub> )	An odorless, colorless, natural greenhouse gas.	30-95 years	1	Enters the atmosphere through burning fossil fuels (coal, natural gas and oil), solid waste, trees and wood products, and also as a result of certain chemical reactions (e.g., manufacture of cement). Carbon dioxide is removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.
Chlorofluorocarbons	Gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. They are non-toxic nonflammable,	55-140 years	3,800 to 8,100	Were synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone.

	insoluble and chemically unreactive in the troposphere (the level of air at the earth's surface).			
Hydrofluorocarbons	A man-made greenhouse gas. It was developed to replace ozone-depleting gases found in a variety of appliances. Composed of a group of greenhouse gases containing carbon, chlorine and at least one hydrogen atom.	14 years	140 to 11,700	Powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for stratospheric ozone-depleting substances. These gases are typically emitted in smaller quantities, but because they are potent greenhouse gases
Nitrous oxide (N <sub>2</sub> O)	Commonly known as laughing gas, is a chemical compound with the formula N <sub>2</sub> O. It is an oxide of nitrogen. At room temperature, it is a colorless, nonflammable gas, with a slightly sweet odor and taste. It is used in surgery and dentistry for its anesthetic and analgesic effects	120 years	310	Emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
Perfluorocarbons	Has a stable molecular structure and only breaks down by ultraviolet rays about 60	50,000 years	6,500 to 9,200	Two main sources of perfluorocarbons are primary aluminum production and semiconductor manufacturing.

	kilometers above Earth's surface.			
Sulfur hexafluoride	An inorganic, odorless, colorless, and nontoxic nonflammable gas.	3,200 years	23,900	This gas is manmade and used for insulation in electric power transmission equipment, in the magnesium industry, in semiconductor manufacturing and as a tracer gas.

Source: EPA, Intergovernmental Panel on Climate Change

Each of the designated gases described above can reside in the atmosphere for different amounts of time, ranging from a few years to thousands of years. All of these gases remain in the atmosphere long enough to become well mixed, meaning that the amount that is measured in the atmosphere is roughly the same all over the world regardless of the source of the emission.

#### 4.5.2 Regulatory Setting

Climate changes is a global, national, state, and local issue involving greenhouse gas emissions from all around the world; therefore, countries around the world, including the United States, have established regulations to assist in the emissions of GHGs. Tables 4-15 through 4-18 give a brief explanation of international, national, state, and local regulations.

Table 4-15. International Greenhouse Gas Regulations

Regulation	Adopted	Protocol
Intergovernmental Panel on Climate Change	1998	The United Nations and the World Meteorological Organization established the Intergovernmental Panel on Climate Change to assess the scientific, technical and socio-economical information relevant to understanding the scientific basis of risk of human-induced climate change and its potential impacts
United Nations Framework Convention on Climate Change	March 21, 1994	Governments gather and share information on GHG emissions, national policies and best practices; launch national strategies for addressing GHG emissions and adapting to expected impacts.

Kyoto Protocol	Adopted: December 1, 1997, Entered into Force: February 16, 2005	Sets binding targets for 37 industrialized countries and the European community for reducing GHG emissions at an average of 5% against 1990 levels over the five-year period of 2008–2012
Paris Climate Agreement	Adopted: December 12, 2015 Entered into Force: November 4 2016	The Paris Climate Agreement is an agreement within the United UNFCCC to limit global temperature rise to 2 degrees Celsius above preindustrial levels. Under the agreement, each country determines, plans, and regularly reports its own contribution to mitigate global warming. The agreement is voluntary and is not legally binding.

Table 4-16. Federal Greenhouse Gas Regulations

Regulation	Adopted	Protocol
Greenhouse Gas Endangerment	Endangerment December 7, 2009	The EPA Administrator signed two distinct findings regarding GHG emissions under section 2029(a) of the Clean Air Act. 1. Endangerment Finding: The Administrator finds that the current and Projected concentrations of the six key well mixed greenhouse gases – carbon dioxide (CO <sub>2</sub> ), methane (CH <sub>4</sub> ), nitrous oxide (N <sub>2</sub> O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF <sub>6</sub> ) 2. Cause or Contribute Finding: The Administrator finds that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which threatens public health and welfare.
Corporate Average Fuel Economy (CAFE)	Adopted: 1975 Revised: July 29, 2011	An agreement between thirteen large automakers (accounting for 90% of all vehicles sold in the United States), the United Auto Workers, and the State of California to increase fuel

		economy to 54.5 miles per gallon for cars and light-duty trucks by model year 2025.
Greenhouse Gas Reporting Program	September 22, 2009	Requires reporting of GHG emissions from large sources and suppliers in the United States. Any facility that emits 25,000 metric tons or more per year of GHG emissions are required to submit annual reports to the EPA.
New Source Review	May 13, 2013	Tailors the requirements of the Clean Air Act permitting programs to limit which facilities will be required to obtain Prevention of Significant Deterioration and Title V permits.
Standards of Performance for GHG Emissions for New Stationary Sources: Electrical Utility Generating Units	March 27, 2012	The EPA proposed new performance standards for emissions of carbon dioxide for new affected fossil fuel-fired electrical utility generated units. New sources greater than 25 megawatts would be required to meet an output-based standard of 1,000 pound of carbon dioxide per megawatt hour, based on the performance of widely used natural gas combined cycle technology
Western Climate Initiative Partner	Yet to be formally adopted	Jurisdictions have developed a comprehensive initiative to reduce regional GHG emissions to 15 percent below 2005 levels by 2020. The partners are California, British Columbia, Manitoba, Ontario, and Quebec. Its cap-and-trade program is estimated to be fully implemented by 2012.

Table 4-17. State Greenhouse Gas Regulations

<b>Regulation</b>	<b>Adopted</b>	<b>Protocol</b>
Title 24	Adopted: 1978 2008 Standards Effective: January 1, 2010	California's Energy Efficiency Standards for Residential and Non-Residential Buildings. Their standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods.
California Green Building Standards	January 12, 2010	A comprehensive and uniform regulatory code for all residential, commercial and K-14 school buildings.
Pavley Regulations, AB 1493	July 22, 2002	Reduce GHG emissions in new passenger vehicles from 2009 through 2016. These amendments are part of California's commitment toward a nation-wide program to reduce new passenger vehicle GHGs from 2012 through 2016. ARB's September amendments will cement California's enforcement of the Pavley rule starting in 2009 while providing vehicle manufacturers with new compliance flexibility.
Low Carbon Fuel Standard- Executive Order S01-07	January 18, 2007	Calls for a reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020. It instructed the California Environmental Protection Agency to develop and propose a draft compliance schedule to meet the 2020 target.
SB 1368	2006	The law limits long-term investments in base load generation by the state's utilities to power plants that meet an emissions performance standard (EPS).
SB 97	February 16, 2010	The Natural Resources Agency adopted Amendments to the



		CEQA Guidelines for greenhouse gas emissions.
AB 32	2006	Set the 2020 greenhouse gas emissions reduction goal into law. It directed the California Air Resources Board to begin developing discrete early actions to reduce greenhouse gases while also preparing a scoping plan to identify how best to reach the 2020 limit. The reduction measures to meet the 2020 target are to be adopted by the start of 2011
SB 375	August 30, 2008	Enhances California's ability to reach its AB 32 goals by promoting good planning with the goal of more sustainable communities. Sustainable Communities requires ARB to develop regional greenhouse gas emission reduction targets for passenger vehicles. ARB is to establish targets for 2020 and 2035 for each region covered by one of the State's 18 metropolitan planning organizations
Executive Order S13-08	2009	A comprehensive "Climate Adaptation Strategy" that would identify the state's vulnerabilities and plan accordingly. State agencies will take this report into account, due in December 2010, when planning new infrastructure such as roads, bridges, and water treatment facilities. The executive order noted that the country's longest continuously operating sea level gauge, San Francisco Bay's Fort Point, recorded a seven-inch rise in sea level over the 20th century
SB 1078, SB 107, and Executive Order S14-08	September 12, 2002	Requires California to generate 20% of its electricity from renewable energy by 2017. SB

		107 then changes the 2017 deadline to 2010. Executive Order S-14-08 required that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020
CEQA Guidelines Update	Adopted: April 13, 2009, Updated: May 2011	These Thresholds are designed to establish the level at which the District believed air pollution emissions would cause significant environmental impacts under CEQA and were posted on the Air District's website and included in the Air District's updated CEQA Guidelines
Executive Order B30-15	April 20, 2015	Establishes a California GHG reduction target of 40 percent below 1990 levels by 2030.
AB 398	July 17, 2017	Extended the California Cap and Trade program through 2030.

Table 4-18. Regional Greenhouse Gas Regulations

Regulation	Adopted	Protocol
San Joaquin Valley Air Pollution Control District	N/A	The San Joaquin Valley Air Pollution Control District is made up of eight counties in California's Central Valley: San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, and Kern. The Valley Air District is governed by a Governing Board consisting of representatives from the Board of Supervisors of all eight counties, one Health and Science member, one Physician, and five Valley city representatives.
SJVAPCD CEQA Greenhouse Gas Guidance	December 2009	The SJVAPCD approach is intended to streamline the process of determining if

		Project specific GHG emissions would have a significant effect. Best Performance Standards would be established according to performance-based determinations.
San Joaquin Valley Carbon Exchange	November 2008	Intended to quantify, verify, and track voluntary GHG emissions reductions generated within the San Joaquin Valley
Rule 2301	January 19, 2012	Emission Reduction Credit Banking. Provided an administrative mechanism for sources to bank GHG emissions, mechanism for sources to transfer GHG reductions to other users and defines eligibility standards, quantitative and procedures.

#### 4.5.3 Thresholds and Methodology

The impact analysis provided in Section 4.5.4 is based on the application of the following California Environmental Quality Act (CEQA) Guidelines Appendix G, which indicates that a project would have a significant impact on greenhouse gas emissions if it would:

1. *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.*
2. *Conflict with an applicable plan, policy or regulations adopted for the purpose of reducing the emissions of greenhouse gas emissions*

GHG emissions and climate change were evaluated in accordance with Appendix G of the 2024 CEQA Guidelines. CEQA Guidelines Section 15064.4 states that, when making a determination with respect to the significance of a project's GHG emissions, a lead agency shall have discretion to determine whether to: (1) Use a model or methodology to quantify greenhouse gas emissions resulting from a project, and which model or methodology to use; and/or (2) Rely on a qualitative analysis or performance-based standards. Section 15064.4 also states that a lead agency should consider the following

factors when assessing the significance of the impact of GHG emissions on the environment: (1) The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting; (2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and (3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

GHG emissions were calculated in the same CalEEMod model used to determine the proposed project's criteria air pollutant emissions. Consistent with SJVAPCD recommendations, construction emissions were amortized over a thirty-year period and added to the annual operational emissions to determine the proposed Project's annual GHG emissions. Consistent with CEQA Guidelines Section 15064(h)(3), project significance was determined based on the proposed Project's consistency with an approved plan or mitigation program that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area of the proposed Project. CARB's 2022 Scoping Plan applies to the proposed Project and are intended to reduce GHG emissions to meet the statewide targets set in Senate Bill (SB) 32. The SB 32 statewide target is to reduce GHG's to at least 40 percent below 1990 emissions by 2030 (CARB 2022). The project efficiency threshold of 6.7 MT CO<sub>2</sub>e yr/capita was derived from the CARB Scoping Plan and used to determine the Project's potential impact on greenhouse gas emissions. Thus, the proposed Project would not have a significant effect on the environment if it were found to be consistent with CARB's 2022 Scoping Plan efficiency metric.

#### 4.5.4 Impacts Analysis

***a) Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?***

##### **Construction**

Greenhouse gases (GHGs) would be generated during construction activities, including site preparation, grading, building construction, application of architectural coatings, and paving. The CalEEMod Emissions report predicts that the Project will generate a maximum of 787 metric tons (MT) of CO<sub>2</sub>e emissions per year during construction. To assess the significance of these emissions, the San Joaquin Valley Air Pollution Control District (SJVAPCD) has established a threshold of 10,000 metric tons of CO<sub>2</sub>e per year for construction emissions. The Project's construction-related GHG emissions are projected to be well below this threshold, at 787 MT of CO<sub>2</sub>e per year. Given that the Project's construction-related GHG emissions are significantly lower than the SJVAPCD

threshold, impacts related to GHG emissions during construction are considered less than significant.

## Operation

The proposed Project would have the following operational greenhouse gas emissions:

- CO<sub>2</sub>: 5,511 metric tons per year
- CH<sub>4</sub>: 8.34 metric tons per year
- N<sub>2</sub>O: 0.221 metric tons per year
- CO<sub>2</sub>e: 5,786 metric tons per year (combined CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O emissions w/ some margin of error due to rounding differences and addition of Global Warming Potential)

The SJVAPCD has not formally provided guidance on how to analyze GHG emissions impacts for projects within their San Joaquin Valley Air Basin (SJVAB). Until the SJVAPCD provides formal guidance, the following alternative metrics used by air districts in California to assess GHG emissions impacts have been identified:

**Bright-Line Numeric Threshold:** The bright-line significance threshold is a numeric, mass emissions threshold. In general, the bright-line threshold identifies the point at which additional analysis of project-related GHG emissions impacts is necessary. Projects below the established bright-line significance criteria have a de minimis contribution to the local, regional, and/or statewide GHG emissions inventory and have less than significant impacts. Projects above this threshold may result in a substantial increase in GHG emissions.

The bright-line threshold is based on the methodology identified in the 2016 AEP white paper (Walter et al., 2016). It is a market capture approach, reflecting the amount of emissions that 90 percent of development projects surveyed in four cities within California would generate. CAPCOA identified that a bright-line threshold set at 900 metric tons of CO<sub>2</sub>e per year would capture 90 percent of projects. In general, 900 metric tons of CO<sub>2</sub>e per year corresponds to (1) a residential development of 50 dwelling units; (2) 35,000 square feet of office space; (3) 11,000 square feet of retail space; and (4) 6,300 square feet of supermarket space. The 900 metric tons of CO<sub>2</sub>e per year is used as it is the most conservative bright line threshold. Exceeding the bright-line significance criterion does not necessarily indicate that the project generates a significant unavoidable impact. Consistent with how the bright-line threshold is applied in other air districts, this analysis utilizes the bright-line thresholds as a screening criterion to identify whether a full analysis of GHG emissions is warranted. If the project exceeds the screening threshold, the second level of analysis will compare the project to the efficiency metric discussed below.

**Efficiency-Based Threshold for Residential Projects:** The efficiency metric identified by some air districts in California in the absence of a county-wide GHG reduction plan is derived from CARB's Scoping Plan. Residential projects that are over the bright line threshold would not be considered significant if their overall GHG efficiency is less than 6.7 MT CO<sub>2</sub>e/yr/capita. However, it is noted that this threshold is based, in part, on the GHG reducing target established for the year 2020 under AB 32, but the Project would be implemented after the year 2020. Statewide goals for GHG reductions in the years beyond 2020 were codified into state law with the passage of SB 32, which as described previously mandates that California achieve a statewide GHG emission reduction of at least 40 percent below 1990 levels by no later than December 31, 2030. This equates to 40 percent below the statewide GHG reduction target for the year 2020. Therefore, a 40% reduction would be: 6.7 MT CO<sub>2</sub>e/yr/capita x 60% = 4.02 MT CO<sub>2</sub>e/yr/capita.

For this Project: The average household size in the City of Tulare is 3.77 persons (US Census Bureau 2024). The Project consists of up to 561 units, leading to an estimated population of:

$$561 \text{ units} \times 3.77 \text{ persons/household} = 2,115 \text{ people}$$

Using the efficiency-based threshold, the allowable emissions for this residential Project would be:

$$2,115 \text{ people} \times 4.02 \text{ MT CO}_2\text{e/capita} = 8,502 \text{ metric tons of CO}_2\text{e per year}$$

The total operational GHG emissions amount to 5,786 metric tons of CO<sub>2</sub>e per year. Since the Project's emissions are below the efficiency-based threshold for residential projects (8,502 metric tons of CO<sub>2</sub>e per year), the Project's operational GHG emissions are considered *less than significant*.

***b) Would the Project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?***

The Project will be consistent with all applicable plans, policies, and regulations, particularly the City of Tulare Climate Action Plan, which was adopted as part of the City of Tulare General Plan. Table 4-19 below demonstrates the consistency of the Project with all the applicable policies and goals of the City of Tulare General Plan & Climate Action Plan.

Table 4-19. Consistency Analysis with the City of Tulare Climate Action Plan

CAP Policies	Project Consistency
<b>Goal 1: Increase energy efficiency and conservation</b>	

<b>1.3</b> Increase energy efficiency in new commercial and residential development and require new residential and commercial development to achieve enhanced energy efficiency and exceed California Energy Code requirements by 15%.	<i>Consistent.</i> The Project buildings would be designed to achieve a minimum LEED certified goal identified by the LEED Green Building Rating System to conserve resources, including energy and renewable resources.
<b>1.4</b> Reduce the urban heat island effect to cool the local climate and reduce energy consumption by maintaining current rates of public tree planting and increased shading on private property, high albedo surfaces, and cool surfaces.	<i>Consistent.</i> The Project would maintain current rates of public tree planting and shading through implementation of landscaping along Project frontages in the existing Public ROW.
<b>1.5</b> Achieve a 20% reduction in water use by 2020 (20X2020) to reduce energy consumed for groundwater pumping.	<i>Consistent.</i> As discussed in Appendix A2 Initial Study, the water use of the proposed Project would be less than the water use resulting from its existing land use (row/field crops). Therefore, it would not impede sustainable groundwater management of the basin.
<b>1.6</b> Facilitate energy efficiency improvements within the residential building stock.	<i>Consistent.</i> The Project will be subject to the California Energy Code and CALGreen, which would ensure that the Project would result in energy efficient development.
<b>1.10</b> Continue to partner in regional initiatives that encourage achievement of regional energy efficiency targets.	<i>Consistent.</i> The Project would not obstruct the City from continuing to partner in regional initiatives that encourage achievement of energy targets.
<b>Goal 2: Promote and support renewable energy generation and use.</b>	
<b>2.4</b> Increase reliance on local renewable energy sources through provision of a minimum of 15% of baseline residential energy needs from on-site renewable energy sources by 2030.	<i>Consistent.</i> The Project promotes the attainment of this goal by proposing solar panel installation on all residential homes on the Project site.
<b>2.5</b> Support regional initiatives in expansion of the Valley's renewable energy supplies.	<i>Consistent.</i> The Project would not obstruct the City from supporting regional initiatives in expansion of the Valley's renewable energy supplies and furthers the attainment of this goal by proposing solar panel installation on homes.

<b>Goal 3: Shift single-occupancy vehicle trips to alternative modes.</b>	
<b>3.2</b> Increase transportation-related bicycle trips to reduce vehicle miles traveled.	<i>Consistent.</i> The Project proposes an internal Class I Bike Path as well as a trail throughout the residential area, which would maintain the City's goal to promote the reduction of VMT in the City.
<b>3.3</b> Improve mobility by implementing a citywide Complete Streets ordinance and program.	<i>Consistent.</i> The Project does not impede the City from implementing a Complete Streets program and proposes a Class I Bike Path along Oakmore Road, as well as walking paths throughout the community.
<b>3.6</b> Support regional transportation management programs to shift single-occupancy vehicle trips to other modes.	<i>Consistent.</i> The Project does not interfere with any regional transportation management programs. The Project furthers a shift to alternative modes by proposing a Class I Bike Path as well as small walking paths on the site.
<b>Goal 5: Increase accessible land use to reduce vehicular trips.</b>	
<b>5.1</b> Promote accessible housing near transit and services to reduce vehicular trips.	<i>Consistent.</i> The Project would take place within the City's Urban Development Boundary and is therefore within reasonable distance of City services. The downtown center is approximately 2.87 miles from downtown Tulare.

Source: City of Tulare 2011.

**Notes:** City = City of Tulare; EV = electric vehicle; GHG = greenhouse gas; LEED = Leadership in Energy and Environmental Design

As discussed in Table 4-19, the Project would be generally consistent with the City's CAP policies.

#### **4.5.5 Mitigation Measures**

No mitigation measures are required.

#### **4.5.6 Level of Significance After Mitigation**

As detailed above, the potential impacts of the proposed Project were found to be *less than significant* with no mitigation required.





**City of Tulare**  
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## **5 Cumulative Effects**

### ***Project Title: FNC Farming Subdivision***

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The California Environmental Quality Act (CEQA) requires an environmental impact report (EIR) to analyze cumulative impacts. The purpose of this chapter is to explain the methodology for the cumulative analyses and present the potential cumulative effects of the FNC Farming Subdivision (Project or proposed Project).

Section 15355 of the State CEQA Guidelines defines cumulative impacts as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.”

Section 15130 of the State CEQA Guidelines provides guidance for analyzing significant cumulative impacts in an EIR. The discussion of cumulative impacts “need not provide as great detail as is provided for the effects attributable to the project alone,” but instead is to be “be guided by standards of practicality and reasonableness” (14 CCR 15130[b]). CEQA requires that cumulative impacts be discussed when the “project’s incremental effect is cumulatively considerable” (14 CCR 15130 [a]). Additionally, Section 15130(a)(1) clarifies, “an EIR should not discuss impacts which do not result in part from the project evaluated in the EIR.”

Cumulative impacts can result from the combined effect of past, present, and future projects located in proximity to the project under review. Therefore, it is important for a cumulative impacts analysis to be viewed over time and in conjunction with other related past, present, and reasonably foreseeable future developments whose impacts might compound or interrelate with those of the project under review. The cumulative impacts analyze the extent to which the project would contribute to cumulative impacts, and whether that contribution would be considerable (i.e., would cause a cumulative condition to be significant and/or substantially increase the severity of a cumulative impact that would be significant whether or not the project was developed).

### **5.1 Methodology**

The CEQA Guidelines allow for the use of one of two alternative methods to determine the scope of projects for the cumulative impact analysis:

- List Method – A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency (Section 15130 (1)(A); and/or
- General Plan Projection Method – A summary of projections contained in an adopted General Plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact (Section 15130 (1)(B)).

For this Project, a hybrid approach that combines both the List Method and the General Plan Projection Method has been utilized to assess cumulative impacts. Since aspects of transportation, agricultural resources, air quality, and greenhouse gases are presented at a variety of geographic and temporal scales, this approach will portray cumulative conditions more accurately.

To support the cumulative list aspect of this analysis, a project list was prepared of other past, present, or reasonably foreseeable Projects was developed through consultation with the City and County. Table 5-1 provides a list of these cumulative projects and their associated land use. For topics requiring the use of projections, information is also drawn from the City of Tulare General Plan and the Tulare County General Plan and supporting EIR's for those plans. The land use map in the General Plan identifies the ultimate land use pattern and development potential of the adopted General Plan, and the EIR addresses the environmental effects associated with buildout of these land uses. The list shown in Table 5-1 is not intended to encompass every development project in the region; rather, it identifies the projects with the greatest potential for impacts that would overlap with those of the proposed project.

CEQA defines “probable future projects” as those with an active application at the time the NOP was released for a project (in this case, August 22<sup>nd</sup>, 2024). The list of projects in Table 5-1 was used in the development and analysis of the cumulative settings and impacts for each resource topic. Past and current projects in the Project vicinity (1-mile radius) were also considered as part of the cumulative setting as they contribute to the existing conditions upon which the Project and each probable future project's environmental effects are compared.

*Table 5-1. Cumulative Project List*

<b>Project Name</b>	<b>Project Description</b>	<b>Project Location</b>	<b>Status</b>
KCOK Subdivision	267 units of low-density residential development	Southwest corner of Prosperity Avenue & Morrison Street	Early phases built, construction of subsequent phases is ongoing
KCOK Phases 5 & 9 Subdivision	88 units of low-density residential development, elementary school and a park	Northwest corner of Seminole Avenue & Morrison Street	Entitlement applications have been approved

Farrar Estates	360 units of low-density residential development on a total of 76.5 acres	Northwest corner of Morrison Street & East Tulare Avenue (State Hwy 137)	First phase construction complete; 2 <sup>nd</sup> phase beginning
Fulton Estates	185 units of single-family residential development, commercial center	Southwest corner of Tulare Avenue & Oakmore Street	First phase under construction
Lago Subdivision	121 units of low-density residential development on 14.06 acres	Southwest corner of Cartmill Avenue and Mooney Boulevard	Entitlement applications have been approved
Derrel's Mini Storage Expansion	64,100 sq. ft. of mini-storage space and 132,020 sq. ft. of covered RV storage	East side of Mooney Blvd., south of Prosperity Avenue	Entitlement applications have been approved
Mooney Storage	84,400 sq. ft. of mini storage space	East side of Mooney Blvd., north of Tulare Avenue	Entitlement applications have been approved

### 5.1.1 Cumulative Impact Analysis

Section 15130(b)(3) of the State CEQA Guidelines states that “lead agencies shall define the geographic scope of the area affected by the cumulative effect and provide a reasonable explanation for the geographic limitation used.” Unless otherwise indicated in the analysis in Section 4 of this Draft EIR, the geographic scope used in the cumulative analysis includes those projects listed in Table 5-1 and depicted in Figure 5-1.

However, there are environmental issues whose relevant geographic scope for purposes of the cumulative impact analysis may be larger or smaller than this area, and may be defined by local, regional, or state agency jurisdiction or by other environmental factors. One example is the geographic scope of cumulative air quality impacts, defined by the San Joaquin Valley Air Basin (SJVAB), which consists of eight counties and is spread across 25,000 square miles of Central California. Whereas the geographic scope of cumulative transportation impacts is limited to the City of Tulare.

The analyses in Sections 5.1.1.1 through 5.1.1.4 of this Draft EIR address whether, after adoption of Project-specific mitigation, the residual impacts of the proposed Project would (1) contribute considerably to an existing/anticipated (with the Project) cumulatively significant effect; or (2) cause a new cumulatively significant impact. A cumulative impact is not considered significant if the impact can be mitigated to below the level of significance through mitigation. This Draft EIR examines “reasonable options for mitigating or avoiding any significant cumulative effects of a proposed project” (14 CCR 15130[a][3] and 15130[b][5]).

For the purposes of this EIR, the FNC Farming Subdivision Project would result in a significant cumulative effect if:

- The cumulative effects of related projects (past, current, and probable future projects) are not significant, and the incremental impact of implementing the FNC Farming Subdivision Project is substantial enough when added to the cumulative effects of related projects to result in a new cumulatively significant impact;
- The cumulative effects of related projects (past, current, and probable future projects) are already significant, and implementation of the FNC Farming Subdivision Project makes a considerable contribution to the effect. The standards used herein to determine a considerable contribution are that either the impact must be substantial or must exceed an established threshold of significance.

This cumulative analysis assumes that all mitigation measures identified in Sections 1 and 4 to mitigate project impacts are adopted. The analysis herein analyzes whether, after adoption of project-specific mitigation, the residual impacts of the project would cause a cumulatively significant impact or would contribute considerably to existing and anticipated (without the Project) cumulatively significant effects. Where the project would contribute, additional mitigation is recommended where feasible.

Based on the analysis presented in the Initial Study (Appendix A2), this EIR addresses four issues: the permanent loss of agricultural land, transportation impacts, specifically conflicts with policies outlined in the City's General Plan, potential air quality impacts to sensitive receptors and potentially significant greenhouse gas emissions. A detailed analysis of the cumulative impacts associated with all relevant issue areas are presented in subsections 5.1.1.1 through 5.1.1.4, below. No other environmental issue areas were included in the cumulative impact analysis because they did not contain any impacts above "less than significant", as explained in the Initial Study (Appendix A2).

### **Geographic Extent**

The analysis of cumulative effects considers a number of variables including geographic (spatial) limits, time (temporal) limits, and the characteristics of the resource being evaluated. The area within which a cumulative impacts can occur is within the City of Tulare and the San Joaquin Valley Air Basin (SJVAB). Agricultural impacts may extend to the greater Tulare County region, since agricultural production is a key component of the County's economy. The County has identified a range of policy tools aimed at protecting and enhancing this segment of the County's economic future. Transportation effects have a more limited geographic scope, and are typically localized around nearby residential uses that are more likely to generate trips and to the greater incorporated City of Tulare, at most. Air quality impacts, specifically to sensitive receptors, would include a 2 mile radius of the Project site, but potential air quality impacts

would extend to the greater SJVAB. Greenhouse gas emissions, on the other hand, have a much wider scope and can extend to the entire state of California. For this reason, the total geographic scope for the analysis of cumulative impacts includes the immediate project vicinity (1 mile radius), the City of Tulare, Tulare County, the San Joaquin Valley Air Basin, and the state of California.

#### **5.1.1.1 Agriculture & Forestry Resources**

The geographic scope of the cumulative agricultural and forest resources analysis is Tulare County. Agricultural and forest resources are most commonly evaluated in the context of countywide resources; therefore, it is most appropriate to use this as the basis for assessing cumulative impacts. Cumulative projects in the County would have the potential to continue to convert agricultural lands and resources to non-agricultural uses, resulting in a significant cumulative impact. The County General Plan EIR found a significant and unavoidable impact for conversion of farmland due to past development and future development that may occur in the County (Tulare County 2012). The General Plan EIR identifies a significant impact at both the county level, and in the Project area.

As part of the County's discretionary review process, all future projects would be evaluated under CEQA and would be required to implement feasible measures to minimize impacts to forest land or timberland, as necessary. Implementation of the proposed Project would not conflict with zoning for, or cause rezoning of, forest land or timberland or timberland zoned for timber production, off-site. As such, no impacts would occur related to the conversion or loss of land zoned for forest land or timberland production. The Project does not conflict with a Williamson Act Contract or with County zoning designations. The site is zoned as Exclusive Agriculture 20-Acre Minimum (AE-20) and Exclusive Agriculture 40-Acre Minimum (AE-40) by Tulare County, which is proposed to be annexed to the City of Tulare and pre-zoned to Single-Family Residential 5,000 SF Minimum and 6,000 SF Minimum (R-1-5 & R-1-6) and Rural Residential (RA). The transfer of the Project site from the County to the City of Tulare, as the site has been included in the City's most recent urban development boundary and has been designated as Rural Residential and Residential Estate in the City's General Plan. Although this conversion of agricultural land has been analyzed in the City's EIR previously, the Project will result in the permanent conversion of 140.32 acres of farmland to non-agricultural uses.

Ultimately even with implementation of MM-AG-1 and the consideration of past planning efforts, the proposed Project when combined with the projects in the County would have **cumulatively significant and unavoidable** impacts for agriculture resources.

#### **5.1.1.2 Transportation**

The geographic scope of the analysis was the study area defined in the Traffic Study (2-mile radius), which consists of twelve major intersections within the City that were both off and on

the Project site, and the rest of the City of Tulare. The farthest intersection included in the analysis was the State Route 99 offramp at Prosperity Avenue/Blackstone Street, which is approximately 2 miles west of the proposed Project site. This analysis evaluates whether the impacts of the Project, together with the impacts of other cumulative development, could result in a cumulatively significant impact with respect to transportation. This analysis then considers whether incremental contribution of impacts associated with the implementation of the Project would be cumulatively considerable and thus significant. Both conditions must apply for the Project's cumulative effects to rise to the level of significance.

Collectively, the cumulative projects and the proposed Project would result in increased development that would collectively increase demand for local roads (and thus increased congestion generally), as well as transit and use of pedestrian and bicycle facilities, and would result in increased VMT.

The Project, as well as each cumulative project, would be reviewed for consistency with applicable plans, policies, and ordinances relating to the transportation system at the regional and local level, including TCAG's RTP/SCS and the City's General Plan Circulation Element, and would be required to be consistent therewith, including the incorporation of any necessary improvement(s) and/or mitigation measure(s) to address potential impacts as they relate to transit, roadway, bicycle and pedestrian facilities. The process for related projects, similar to that of the Project's would reasonably contribute to offsetting a cumulative significant impact toward conflicting with transportation plans, policies, and ordinances. In so doing, this would result in a less than significant cumulative impact. Furthermore, the Project's impacts would not be cumulatively considerable given the nature of the proposed uses, the incorporation of a number of project design features that would facilitate bicycle and pedestrian connectivity, and the proposed MM TRT-1, which will implement several intersection improvements in the surrounding area. The Project would have a **less than cumutively considerable** transportation impact.

### **5.1.1.3 Air Quality**

#### **Cumulative Construction Impacts**

Construction activities associated with the Project would result in less than significant construction-related regional and localized air quality impacts, as quantified under Threshold A in Section 4.4 of this EIR. Short-term cumulative impacts related to air quality could occur if construction of the Project and other cumulative projects in the surrounding area were to occur simultaneously. In particular, with respect to local impacts, the consideration of cumulative construction particulate (PM10 and PM2.5) impacts is limited to cases when projects constructed simultaneously are within a few hundred yards of each other because of (1) the combination of the short range (distance) of particulate dispersion (especially when compared to gaseous pollutants), and (2) the SJVAPCD's required dust-control measures,

which further limit particulate dispersion from the Project site. Although a residential development is being constructed adjacent to the proposed Project (See Figure 5-1), construction will be concluded prior to the start of Project construction for the FNC Farming Residential Project.

SJVAPCD's policy with respect to cumulative impacts associated with the above-referenced pollutants and their precursors is that impacts that would be directly less than significant on a project level would also be cumulatively less than significant (SJVAPCD 2015). Because the Project's construction emissions are below the SJVAPCD's regional and local construction significance thresholds, the Project's regional and local construction emissions would not be cumulatively considerable, and the cumulative impact would be less than significant, and no mitigation measures are either required. In regard to TACs, because impacts are localized and the SJVAPCD thresholds of significance for TACs have been established at an extremely conservative level, risks that equal or exceed the individual thresholds of significance are also considered cumulatively significant (SJVAPCD 2015). With implementation of Mitigation Measure HRA-1 Tier 4 Engine Controls, the potential impacts to sensitive receptors were deemed to be less than significant. No other cumulative risk thresholds would apply. The SJVAPCD has not established cumulative significance thresholds regarding odor impacts. Air quality impacts from the construction phase have been deemed **less than cumulatively considerable**.

### **Cumulative Operational Impacts**

As shown in Table 4-12, Projected Operational Emissions Compared to SJVAPCD Thresholds, operational emissions of all criteria pollutants would be below the SJV APCD CEQA significance thresholds. Consistent with the approach described above (under Cumulative Construction Impacts) and based on the Air District's "Guidance for Assessing and Mitigating Air Quality Impacts" (SJVAPCD 2015), the SJVAPCD's policy on assessing cumulative impacts associated with the above-referenced pollutants and their precursors is that impacts that would be directly less than significant on a project level would also be cumulatively less than significant. Therefore, because the Project's operational emissions are less than the respective SJVAPCD daily operational thresholds, the Project's operations phase activities would not contribute to a cumulatively considerable net increase of a pollutant for which the SJVAPCD is in nonattainment.

Emissions of nonattainment pollutants or their precursors would not be cumulatively considerable and would be less than significant, and no mitigation measures are either required. No TACs would be released during Project operation, so this phase of the Project would not have any impact on nearby sensitive receptors. Additionally, no substantial odors are reasonably anticipated for a residential Project. As such, impacts related to operational pollutants and emissions would be **less than cumulatively considerable**.

#### 5.1.1.4 Greenhouse Gas Emissions

The geographic scope of the cumulative GHG emissions analysis is the San Joaquin Valley Air Basin (SJVAB). In a larger sense, however, the relevant geographic area is the entire Earth, as explained by the California Supreme Court. “Because of the global scale of climate change, any one project’s contribution is unlikely to be significant by itself” (Center for Biological Diversity v. Department of Fish and Wildlife (2015) 62 Cal.4th 204, 219). “With respect to climate change, an individual project’s emissions would most likely not have any appreciable impact on the global problem by themselves, but they would contribute to the significant cumulative impact caused by greenhouse gas emissions from other sources around the globe. The question therefore becomes whether the proposed project’s incremental addition of greenhouse gases is “cumulatively considerable” in light of the global problem, and thus significant” (id., quoting Crockett, Addressing the Significance of Greenhouse Gas Emissions Under CEQA: California’s Search for Regulatory Certainty in an Uncertain World (July 2011) Golden Gate U. Envtl. L.J. 203, 207–208). If a project would contribute its “fair share” of what will be required to achieve those long-term climate goals, then a reviewing agency can find that the impact will not be significant because the project will help to solve the problem of global climate change (62 Cal.4th 220–223).

The Project would emit new GHG emissions, as would other past, present, and reasonably foreseeable projects within the Air Basin. However, the Project, similar to other cumulative developments, would be required to adhere to applicable laws and regulations. Moreover, the Project, similar to other cumulative development, would incorporate numerous project design features that would reduce GHG emissions, such as the exclusion of natural gas as a fuel source on the site, and the use of solar panels to generate electricity. As such, the Project would not make a cumulatively considerable contribution to any cumulative impact related to GHG emissions. Moreover, the Project would not result in any wasteful, inefficient, or unnecessary energy usage as determined by the analysis required under CEQA Section 21100(b)(3) and Section 15126.2(b) of the State CEQA Guidelines (Appendix A2: Initial Study). Additionally, the Project’s total CO<sub>2</sub>e emissions do not exceed the efficiency threshold for residential projects of its size and regional locality, which was based on metrics from 2017 CARB Scoping Plan (See Section 4.5).

As mentioned above, the Project would not exceed the efficiency threshold for residential projects, which is demonstrated in Section 4.5. No mitigation measures are required, and it **would result in less than cumulatively considerable impacts** related to greenhouse gas emissions.



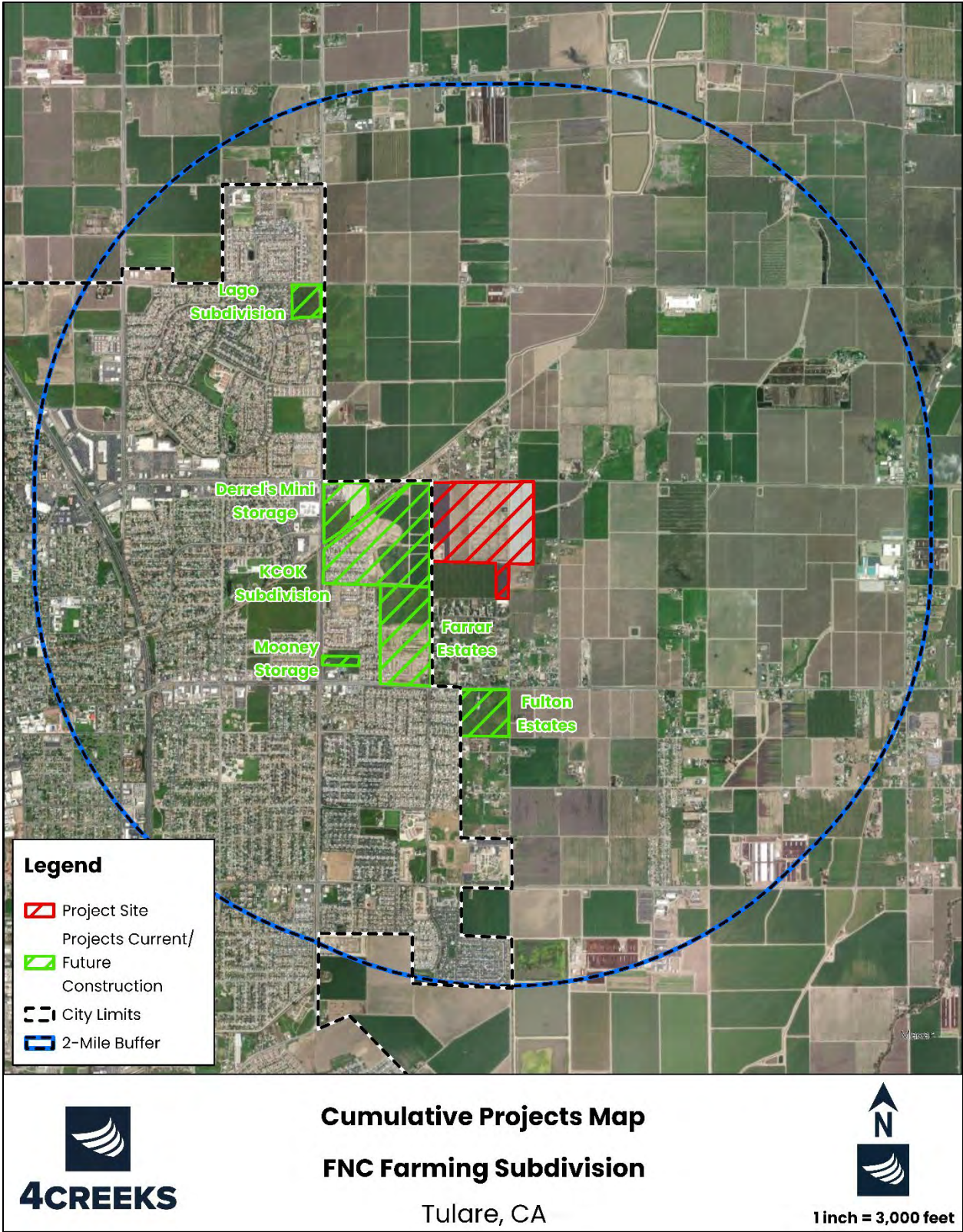


Figure 5-1. Cumulative Projects Map



**City of Tulare**  
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## **6 Alternatives**

### ***Project Title: FNC Farming Subdivision***

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#### **6.1 Introduction**

Pursuant to the State California Environmental Quality Act (CEQA) Guidelines, environmental impact reports (EIRs) are required to “describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project and evaluate the comparative merits of the alternatives” (14 CCR 15126.6(a)). This alternatives analysis is prepared in support of CEQA’s goals to foster informed decision making and public participation (14 CCR 15126.6(a)). An EIR is not required to evaluate the environmental impacts of alternatives at the same level of detail as the proposed project, but it must include enough information to allow meaningful evaluation, analysis, and comparison with the proposed project.

Section 15126.6(a) of the State CEQA Guidelines requires the following:

An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project and evaluate the comparative merits of the alternatives. An EIR should consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives which are infeasible. The lead agency is responsible for the selection of a range of project alternatives for examination and must publicly disclose its reasoning for selecting those alternatives. There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason.

The alternatives analysis is required even if the alternatives “would impede to some degree the attainment of the project objectives or would be more costly” (14 CCR 15126.6(b)). An EIR must evaluate “only those alternatives necessary to permit a reasoned choice” (14 CCR 15126.6(f)) and does not need to consider “every conceivable alternative” to a project (14 CCR 15126.6(a)). The alternatives evaluated should be “potentially feasible” (14 CCR 15126.6(a)), but inclusion of an alternative in an EIR does not constitute definitive evidence that the alternative is in fact “feasible.” The final decision regarding the feasibility of alternatives lies with the decision

makers for a given project who must make the necessary findings addressing the feasibility of alternatives for avoiding or substantially reducing a project's significant environmental effects (California Public Resources Code, Section 21081; see also 14 CCR 15091).

Section 15364 of the Guidelines defines "feasibility" as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors."

As discussed throughout Section 4, Environmental Analysis, of this Draft EIR, the FNC Farming Subdivision Project (Project or proposed Project) would result in the following significant and unavoidable impacts.

### **Agricultural Resources**

- The conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Agency, to non-agricultural use
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use
- Cumulative effect to agriculture resources

The alternatives analysis also considers those significant impacts of the Project that could be reduced to less-than-significant levels with mitigation. These topics were considered in the development of viable Project alternatives that could lessen environmental effects associated with the Project. To a lesser degree, the alternatives analysis also considers those impacts of the proposed Project in which mitigation is not necessary.

## **6.2 Project Objectives**

Section 15124(b) of the CEQA Guidelines requires that an EIR include a statement of the project objectives that "include the underlying purpose of the project and may discuss the project benefits." The following objectives have been identified for the Project:

- 1) Provide more housing opportunities consistent with the goals and policies outlined in the City's current Housing Element, which includes providing a mix of land uses and increasing available pedestrian and bicycle facilities while minimizing environmental effects.
- 2) Provide development that is functionally compatible with existing residential neighborhoods while enhancing the City's ability to provide fiscally positive development.
- 3) Amend the City's jurisdictional boundary in accordance with the Tulare County Local Agency Formation Commission's (LAFCO) goal to encourage logical and orderly development that promotes the efficient extension of municipal services.

- 4) Create a new community that can serve existing Tulare residents and accommodate future population growth.

### 6.3 Alternatives Considered and Rejected

An EIR is required to identify any alternatives that were considered by the lead agency but were rejected as infeasible. Among the factors described under Section 15126.6(c) of the Guidelines in determining whether to exclude alternatives from detailed consideration in an EIR are failure to meet most of the basic objectives of the project, infeasibility, or inability to avoid significant environmental impacts.

With respect to the feasibility of potential alternatives, Section 15126.6(f)(1) states the following:

*Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries ... and whether the proponent can reasonably acquire, control, or otherwise have access to the alternative site.*

In determining an appropriate range of project alternatives to be evaluated in this EIR, the following possible alternatives were initially considered and then rejected. These alternatives were rejected because they could not accomplish the basic objectives of the Project, would not have resulted in a reduction of significant adverse environmental impacts, and was considered infeasible to construct or operate.

#### 6.3.1 Alternative Sites

CEQA does not require an analysis of an alternate or off-site alternative be included in an EIR. However, if the surrounding circumstances make it reasonable to consider an alternate site, then a project alternative should be considered and analyzed in the EIR. Pursuant to CEQA Guidelines Section 15126.6(f)(2), in making the decision to include or exclude analysis of an alternate site, the “key question and first step in analysis is whether any of the significant effects of the project would be avoided or substantially lessened by putting the project in another location. Only locations that would avoid or substantially lessen any of the significant effects of the project need to be considered for inclusion in the EIR.”

An off-site alternative was rejected as infeasible because the Project applicant does not own any other property that would be feasible for this Project and cannot “reasonably acquire, control or otherwise have access to [an] alternative site” (refer to Section 15126.6[f][1] of the CEQA Guidelines). In addition, the proposed Project is not unique in that development of a similar project elsewhere would not preclude nor eliminate demand for the development of the Project on this site. In addition, the development of the Project in an alternate location would

have similar impacts as would occur with implementation of the Project at its proposed location. Thus, moving the Project to an alternative site – assuming that another 140-acres of property exists within the County and City of Tulare is available – would merely displace environmental impacts instead of avoiding or minimizing them. Thus, this alternative was eliminated from further consideration.

## 6.4 Alternatives Analyzed

This section provides an evaluation of the environmental effects of each alternative relative to the environmental effects of the proposed Project. These conclusions are listed in the alternative's summary matrix provided at the end of this discussion.

The alternatives to be analyzed in comparison to the proposed Project include:

**Alternative 1: No Project/No Development Alternative.** This alternative assumes no development would occur, and the site would remain under the jurisdiction of Tulare County and in its current undeveloped condition, no land would be annexed.

**Alternative 2: Reduced Development Alternative.** This alternative assumes the development of the site with less residential units and recommends development on only 70.16 acres of the site.

**Alternative 3: Increased Density Alternative.** This alternative modifies the Project to include only medium to high-density housing units such as townhouses and apartment buildings while keeping the community park the same size and maintaining a similar number of housing units. Therefore, this alternative suggests a smaller area of development while still maintaining a large number of housing units.

The alternatives are summarized below and compared with the proposed Project. The analysis considers the issue areas evaluated in Section 4, Environmental Analysis and Section 5, Cumulative Effects. In many cases, the Project and a Project alternative may share the same level of significance. Even if the two Projects do share the same level of significance under CEQA, the actual degree or impact may be slightly different for each scenario. This relative difference is the basis for a conclusion of greater or lesser impacts as compared to the Project.

An environmentally superior alternative is identified among the alternatives evaluated in this Draft EIR. An alternative would be environmentally superior to the Project if it would result in fewer or less significant environmental impacts while achieving most of the Project objectives. The environmentally superior alternative is provided at the end of this section.



#### **6.4.1 Alternative 1: No Project/No Development**

CEQA Guidelines, Section 15126.6(e), requires every EIR to include a “No Project Alternative” which is intended to allow decision-makers to compare the impacts of approving the proposed Project with the impacts of not approving the Project. In cases where the project constitutes a land development project, the No Project Alternative is the “circumstance under which the project does not proceed.” For many projects, the No Project Alternative represents a “No Development” or an “Existing Conditions” scenario, in which the project site remains in its existing condition and no new development occurs for the foreseeable future. However, CEQA Guidelines Section 15126.6(e)(3)(B) establishes that “If disapproval of the project under consideration would result in predictable actions by others such as the proposal of some other project, this ‘no project’ consequence should be discussed.” This EIR considers both situations. Alternative 1, No Project/No Development assumes no grading or development would occur on the Project site and the existing site conditions would remain. The site would remain under the jurisdiction of Tulare County and not be annexed into the City.

#### **Comparative Analysis of Environmental Effects**

Under Alternative 1, construction or operation of the Project would not occur. The Project site would remain under agricultural use, effectively eliminating the Project impacts discussed in this Draft EIR. Under the No Project/No Development Alternative, no demolition, construction, or ground disturbance would occur so there would be no changes to visual conditions, biological resources, cultural and tribal cultural resources, ambient noise, or effects to existing resources in the Project area. There would be no emissions of greenhouse gas (GHG) emissions, criteria pollutants, or odors associated with construction and operation activities, and no new vehicle trips. No new utilities, or services would be needed to serve new residents or land uses. No residents or structures would be affected by any potential hazards including wildfires, or other natural disasters. All impacts that would occur from the proposed Project would be avoided under this Alternative.

#### **Relationship to Proposed Project Objectives**

The No Project/No Development Alternative would preserve agriculture land and eliminate any potential air quality, greenhouse gas emission, or transportation impacts but would otherwise fail to achieve the proposed Project objectives such as meeting the needs of the City of Tulare General Plan Housing Element by providing more housing to the area.

## **6.4.2 Alternative 2: Reduced Development**

### **Description**

This alternative proposes the same residential density as the original Project but reduces the overall number of units and the amount of land developed. Specifically, this alternative would develop approximately 272 low-density residential units on 70.16 acres, with the same lot sizes and housing types as the original Project. The proposed density would remain consistent with the original design at approximately 3.89 dwelling units per acre, reflecting the R-1-5 and R-1-6 zoning designations. The alternative maintains the same 5.47-acre park as the original Project but allows for a larger portion of the site to remain in agricultural use by reducing the overall development footprint. By reducing the Project size by 50 percent, this alternative preserves additional farmland while maintaining the same density and character of the residential development.

### **Comparative Analysis of Environmental Effects**

A reduction of development acreage by 70.16 acres would result in a smaller development footprint and would result in impacts that are less severe or similar to those of the proposed Project. It is assumed that all mitigation measures outlined in this EIR and in the Initial Study (Appendix A2) would be implemented for this Alternative.

The Project site under Alternative 2 has been actively farmed in the last 10 years and has a developed water supply that is dependable. The Alternative 2 Project site has lands that are designated as "Prime Farmland". The site is not under an active Williamson Act Contract. Similar to the proposed Project, the Project proponent would be required to implement Mitigation Measure (MM)-AG-1 which require the mitigation of the loss of agricultural land at a ratio of 1:1 through implementation of a conservation easements. Despite implementation of mitigation and preservation of 70.16 acres of existing designated Prime Farmland, impacts related to agricultural resources would still remain significant and unavoidable; however, agricultural impacts would be less severe than those of the proposed Project, as the Alternative would result in less acres converted for urban development. A reduced intensity of development would result in a slight reduction in diesel particulate matter emissions due to the fewer residential units being constructed. However, because the entire site would still require grading, which is where the majority of construction-related emissions occur, the overall reduction in emissions would be minimal. Despite this, Mitigation Measure HRA-1 would still be implemented to address the impact of toxic air contaminants (TAC), including diesel particulate matter, on nearby residents, ensuring that health risks remain within acceptable limits.

Similar to the development of the proposed Project, roadways in the vicinity of the Alternative 2 site are expected to experience an increase in the number of vehicles on the road, but VMT will still remain less than significant, as it is for the proposed Project. Similar to the proposed Project, it can be assumed that Alternative 2 would generate additional traffic and contribute to local traffic delays. Alternative 2 would not conflict with the implementation of any local plans, policies, programs, or regulations related to transportation and circulation. In particular, the City's General Plan requires intersections to maintain a minimum Level of Service (LOS) D, which remains applicable for CEQA analysis in terms of consistency with local plans.

Mitigation Measure TRT-1 would be proposed as part of Alternative 2, similar to the proposed Project, to address traffic impacts and ensure compliance with the General Plan's LOS requirements. Additionally, this alternative would still implement Class I Bike Ways, contributing to alternative transportation options, and would not include any features that would exacerbate traffic conditions beyond what the proposed Project includes. Intersection improvements required under Mitigation Measure TRT-1 would mitigate traffic impacts and ensure consistency with the General Plan. Furthermore, Alternative 2 would not introduce any roadway designs that would result in hazardous conditions. The reduced development under Alternative 2 would result in fewer Project related vehicle trips, but would still result in similar traffic impacts to the proposed Project.

### **Relationship to Proposed Project Objectives**

The Reduced Development Alternative would fully achieve all the Project objectives, but in a reduced manner. This alternative would be generally similar to the proposed Project as planned, which is a community with a variety of land uses such as residential, parks, and a bike trail. A reduction in the total development acreage by 70.16 acres and 274 dwelling units would not achieve the intent of the Project objectives to provide housing opportunities to the extent that the proposed Project would. This Alternative would still result in significant and unavoidable agricultural impacts, and all other potential impacts (air quality, transportation, greenhouse gas emissions) would remain less than significant with/without mitigation, as it does for the proposed Project. It is anticipated that this Alternative would carry similar impacts, but to a lesser degree compared to the proposed Project.

### **6.4.3 Alternative 3: Increased Density Alternative**

#### **Description**

Under the Increased Density Alternative, land is used more efficiently by maintaining a large number of residential units while reducing the amount of agricultural land converted for urban use. This alternative proposes utilizing roughly half of Assessor's Parcel Number (APN) 172-010-



021 to accommodate 546 medium and high-density residential units and a small community park. This would consist of 278 units of medium-density residential units on 25 acres, 278 units of high-density residential units on 15 acres, and a 5-acre community park. Development would take place on approximately 45 acres, which reduces the Project's area by approximately 68 percent. The densities would be in alignment with the guidelines detailed in the City of Tulare General Plan Land Use Element, which is a range of 7.1-14.0 D.U./acre for medium-density development and 14.1-29.0 D.U./acre for high-density development. This alternative proposes 11 D.U./acre for the medium-density residential zone and 18 D.U./acre for the high-density residential zone.

### **Comparative Analysis of Environmental Effects**

Under Alternative 3, it is assumed that development in the Project area would occur on the northwest corner of the parcel, closest to existing urban development to promote connectivity throughout the Project vicinity. High-density development reduces the amount of land needed to accommodate a high number of units, reduces energy consumption, and may enhance the efficiency of alternative modes of transportation for residents. However, the increased intensity of development would result in similar transportation impacts, as this alternative would result in the same population increase. Agricultural impacts would be less severe than the proposed Project, as 95.32 acres would remain under agricultural land use, and only 45 acres of the site would be developed. Air quality and greenhouse gas emissions impacts would be reduced, since higher density development is associated with lower vehicle miles traveled, reduced energy use, and far less sensitive receptors would be impacted due to it having a smaller Project area (Housing Development Consortium 2020). Nevertheless, it is assumed that Mitigation Measure HRA-1 would be implemented for Alternative 3 since DPM would still be produced during the construction phase.

### **Relationship to Proposed Project Objectives**

The Increased Density Alternative would fully meet the objective of providing functionally compatible development near existing residential neighborhoods while enhancing the City's ability to provide for fiscally positive development. Multi-family housing provides more diverse housing options, which can accommodate different demographics and may provide more affordable housing options for Tulare residents. Additionally, this alternative would provide more housing opportunities to accommodate the City's anticipated growth to the same degree that the proposed Project would. This alternative would require the annexation of land from the County into the City of Tulare, and it would expand the City's jurisdictional boundary in a way that encourages logical and orderly development by preventing urban sprawl. However, agricultural impacts would still remain significant and unavoidable, despite its benefits and the decrease in the severity of impacts.

## 6.5 Summary Matrix

A matrix displaying the major characteristics and significant environmental effects of each Alternative is provided in Table 6-1 to summarize the comparison with the proposed Project.

Table 6-1. Alternatives Summary Matrix

Environmental Issue	Alternative 1: No Project/No Development	Alternative 2: Reduced Project	Alternative 3: Increased Density
<b>Agriculture and Forest Resources</b>			
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	No Impact	Significant and Unavoidable	Significant and Unavoidable
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	No Impact	Less than Significant	Less than Significant
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	No Impact	Significant and Unavoidable	Significant and Unavoidable
<b>Transportation/Traffic</b>			
a) <i>Would the Project conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?</i>	No Impact	Less than Significant	Less than Significant
b) <i>Would the Project conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b)?</i>	No Impact	Less than Significant	Less than Significant
c) <i>Would the Project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?</i>	No Impact	No Impact	No Impact
d) <i>Would the Project result in inadequate emergency access?</i>	No Impact	Less than Significant	Less than Significant
<b>Air Quality</b>			
a) <i>Conflict with or obstruct implementation of the applicable air quality plan?</i>	No Impact	Less than Significant	Less than Significant
b) <i>Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard?</i>	No Impact	Less than Significant	Less than Significant
c) <i>Expose sensitive receptors to substantial pollutant concentrations?</i>	No Impact	Less than Significant with Mitigation	Less than Significant with Mitigation
d) <i>Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?</i>	No Impact	Less than Significant	Less than Significant

<b>Greenhouse Gas Emissions</b>			
<i>a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.</i>	No Impact	Less than Significant	Less than Significant
<i>b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?</i>	No Impact	Less than Significant	Less than Significant

## 6.6 Environmentally Superior Alternative

Section 15126(e)(2) of the State CEQA Guidelines requires an EIR to identify an “environmentally superior alternative.” If the No Project/No Development Alternative is the environmentally superior alternative, the EIR must also identify an environmentally superior alternative from among the other Project alternatives.

Each of the three Project alternatives considered herein would lessen at least one environmental impact relative to the Project. As previously addressed, if the No Project/No Development Alternative is the environmentally superior alternative, which is the case in this analysis—the EIR must also identify another environmentally superior alternative among the remaining alternatives.

Based on a comparison of Alternative 2 and Alternative 3, all environmental impacts associated with both alternatives would be similar, but Alternative 3 meets more of the Project objectives by providing the same amount of housing on less land. Alternative 3 would have a greater reduction to the significant and unavoidable impacts related to agricultural resources, while still meeting all Project objectives. Overall, based on these findings, Alternative 3 would be considered the environmentally superior alternative.



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## **7 Other CEQA Considerations**

### ***Project Title: FNC Farming Subdivision***

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Section 15126 of the State California Environmental Quality Act (CEQA) Guidelines requires that all aspects of a project must be considered when evaluating its impact on the environment, including planning, acquisition, development, and operation. As part of this analysis, the environmental impact report (EIR) must also identify (1) significant environmental effects of the proposed project, (2) significant environmental effects that cannot be avoided if the proposed project is implemented, (3) significant irreversible environmental changes that would result from implementation of the proposed project, (4) growth-inducing impacts of the proposed project, and (5) alternatives to the proposed project (evaluated in Section 6, Alternatives).

The FNC Farming Subdivision (Project or proposed Project) includes annexing approximately 140.32 acres into the City of Tulare (City). A City of Tulare General Plan Amendment and a Zoning Amendment will be required as part of the proposed Project. Therefore, the Draft EIR is focused on the construction and operation of the proposed FNC Farming Subdivision, which is referred to as the proposed Project.

#### **7.1 Significant Environmental Effects**

Section 1, Executive Summary, and Section 4, Environmental Analysis of this Draft EIR provide a comprehensive overview of the proposed Project's significant environmental effects. This document is a focused Draft EIR, so only Agricultural Resources, Transportation, Air Quality and Greenhouse Gas Emissions sections are described in detail. The Initial Study describes every environmental issue area from Appendix G of the CEQA Guidelines in greater detail and can be found in Appendix A2 of this document.

#### **7.2 Significant and Unavoidable Environmental Impacts**

Pursuant to State CEQA Guidelines Section 15126.2(b), an EIR must describe any significant environmental impacts that cannot be avoided, even with the implementation of feasible mitigation measures. As discussed throughout Section 4, Environmental Analysis of this Draft EIR, the Project would result in significant and unavoidable impacts related to agricultural resources (Project and Cumulative). Because these impacts cannot feasibly be mitigated to a less-than-significant level, they would remain significant and unavoidable. The remainder of all Project impacts can be mitigated to a less-than-significant level through the adoption of

recommended mitigation measures (Appendix A2) and Section 4 – Environmental Analysis of this EIR.

### **7.3 Significant Irreversible Environmental Impacts**

The State CEQA Guidelines require that an EIR address any significant irreversible changes that would be caused by the implementation of a project. According to Section 15126.2(d), a project would result in significant irreversible changes if:

- The primary and secondary impacts would generally commit future generations to similar uses (such as highway improvement that provides access to a previously inaccessible area);
- The project would involve a large commitment of nonrenewable resources (CEQA Guidelines Section 15126.2(c));
- The primary and secondary impacts would generally commit future generations to similar uses;
- The project would involve uses in which irreversible damage could result from any potential environmental accidents associated with the project;
- The proposed consumption of resources is not justified (e.g., the project involves the wasteful use of energy).

Implementation of the Project would result in the long-term commitment of resources of the Project site to urban land use. The development of the Project would likely result in or contribute to the following irreversible environmental changes:

- Conversion of approximately 140.32 acres of undeveloped land to urban uses, thus precluding other alternate land uses in the future.
- Irreversible consumption of energy and natural resources associated with the future use of the site.

Development of the Project would result in the commitment of approximately 140.32 acres to urban development, thereby precluding other uses for the lifespan of the Project. Restoration of the site to pre-developed conditions would not be feasible given the degree of disturbance, the urbanization of the area, and the level of capital investment.

Resources that would be permanently and continually consumed by Project implementation include water, electricity, and fossil fuels. Commitment of nonrenewable resources includes issues related to increased energy consumption, and loss of agricultural lands. There would be an irretrievable commitment of labor, capital, and materials used during the construction and operation of the Project. Nonrenewable resources would primarily be committed in the form of fossil fuels such as fuel, oil, natural gas, and gasoline used by equipment associated with construction of the Project. Consumption of other nonrenewable or slowly renewable resources

would also occur. These resources would include lumber and other forest products, sand and gravel, asphalt, and metals such as steel, copper, and lead.

With respect to operational activities, compliance with all applicable state and local building codes, as well as mitigation measures, City of Tulare zoning regulations, and standard conservation features would ensure that resources are conserved to the maximum extent feasible. The Project would incorporate a number of sustainable practices that reduce the consumption of energy. Nonetheless, construction and operation of the Project would result in irretrievable commitment of nonrenewable energy resources, primarily in the form of fossil fuels, gasoline and diesel for automobiles and construction equipment.

The State CEQA Guidelines also require a discussion of the potential for irreversible environmental damage caused by environmental accidents associated with the project. While the Project would result in the use, transport, storage, and disposal of minor amounts of hazardous materials during project construction and operation as described in the Initial Study (Appendix A2) all such activities would comply with applicable local, state, and federal laws related to the use, storage, and transport of hazardous materials, which would significantly reduce the likelihood and severity of accidents that could result in irreversible environmental damage. The Project itself does not include any uniquely hazardous uses that would require any special handling or storage. Further, the Project does not contain any industrial uses that would use or store acutely hazardous materials.

The proposed Project would result in the long-term commitment of resources to urban development. The most notable significant irreversible impacts include the use of non-renewable and/or slow renewable energy resources, such as lumber and other forest products and water resources during construction activities. Operations associated with future uses would also consume water and electricity. These irreversible impacts, which are unavoidable consequences of urban growth, are described in detail in the appropriate sections of the Initial Study (Appendix A2).

To ensure that energy implications are considered in project decisions, CEQA requires that EIRs include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy (California Public Resources Code Section 21100[b][3]). Energy conservation implies that a project's cost-effectiveness be reviewed not only in dollars, but also in terms of energy requirements. For many projects, cost-effectiveness may be determined more by energy efficiency than by initial dollar costs. A lead agency may consider the extent to which an energy source serving a project has already undergone environmental review that adequately analyzed and mitigated the effects of energy production.

Consistent with California Public Resources Code Section 211009(b)(3), CEQA Guidelines Appendix G, and a ruling set forth by the court in *California Clean Energy Committee v. City of*

Woodland, potentially significant energy implications of a project must be considered in an EIR to the extent relevant and applicable to that project. Accordingly, based on the energy consumption thresholds set forth in both Appendix F and Appendix G of the CEQA Guidelines, the Project's estimated energy demands (both short-term construction and long-term operational demands) were evaluated (see Energy section in Initial Study, Appendix A2 of this Draft EIR). The overall purpose of the energy analysis was to evaluate whether the Project would result in the wasteful, inefficient, or unnecessary consumption of energy. The energy analysis presented in the Initial Study found that impacts related to wasteful, inefficient, or unnecessary consumption of energy would be less than significant.

As further assessed in the energy analysis, compliance with California Title 24 energy efficiency requirements is considered demonstrable evidence of efficient use of energy. The Project would provide for and promote energy efficiencies beyond those required under other applicable federal and state standards and regulations, and in doing so would meet or exceed all Title 24 standards. This is supported by the Project's exclusion of natural gas usage during its operational phase, so the Project proposes all electric appliances in the homes. On this basis, the Project would not result in the inefficient, wasteful, or unnecessary consumption of energy.

## 7.4 Growth-Inducing Impacts

As stated in Section 15126.2(e) of the State CEQA Guidelines, an EIR must also discuss ways in which a proposed project could foster economic or population growth or the construction of additional housing, either directly or indirectly, in the surrounding environment. Also, the EIR must discuss the characteristics of the project that could encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively.

Growth can be induced in a number of ways, such as through the elimination of obstacles to growth, the stimulation of economic activity within the region, or the establishment of policies or other precedents that directly or indirectly encourage additional growth. Under CEQA, this growth is not to be considered necessarily detrimental, beneficial, or of significant consequence. Induced growth would be considered a significant impact if it can be demonstrated that the potential growth, directly or indirectly, significantly affects the environment.

These circumstances are described below.

- **Elimination of Obstacles to Growth:** This refers to the extent to which a proposed project removes infrastructure limitations or provides infrastructure capacity or removes regulatory constraints that could result in growth unforeseen at the time of project approval.
- **Economic Effects:** This refers to the extent to which a proposed project could cause increased activity in the local or regional economy. Economic effects can include such

effects as the “multiplier effect.” A “multiplier” is an economic term used to describe interrelationships among various sectors of the economy. The multiplier effect provides a quantitative description of the direct employment effect of a project, as well as indirect and induced employment growth. The multiplier effect acknowledges that the on-site employment and population growth of each project is not the complete picture of growth caused by the project.

### **Elimination of Obstacles to Growth**

The elimination of either physical or regulatory obstacles to growth is considered to be a growth-inducing effect, though not necessarily a significant one. A physical obstacle to growth typically involves the lack of public service infrastructure. The extension of public service infrastructure, including roadways, water mains, and sewer lines into areas that are not currently provided with these services would be expected to support new development. Similarly, the elimination or change to a regulatory obstacle, including existing growth and development policies, could result in new growth.

### **Removal of Infrastructure Limitations of Provision of Capacity**

The proposed Project includes the construction of new water supply infrastructure, roadways, telecommunication facilities, electrical utility infrastructure, and storm drain infrastructure consistent with the City’s approved infrastructure master plans. (See Section 3, Project Description, for a more detailed description of proposed infrastructure improvements.) The new infrastructure improvements would extend through and connect to the City’s existing infrastructure to the west of the Project site. The Project site is located in the City of Tulare’s approved Sphere of Influence (SOI) and the Project is proposing to annex approximately 140.32 acres. The Project proposes a General Plan Amendment to change the site’s land use from Rural Residential (0-2 D.U./acre) and Residential Estate (2.1-3 D.U./acre) to Low Density Residential (5,000-6,000 SF/lot). The Project also proposes pre-zoning the site prior to annexation from the County’s zoning of Exclusive Agriculture 20-Acre Minimum and 40-Acre Minimum (AE-20, AE-40) to Single-Family Residential, 5,000 and 6,000 square-foot minimum (R-1-5, R-1-6) and Rural Residential (RA).

Existing development or areas planned for development are located to the west of the Project site. Undeveloped land in the County is located to the north and east of the Project site, which could feasibly be developed in the future. However, this land is currently zoned and used for agricultural purposes. Development of infrastructure to accommodate the Project could be considered growth inducing because it would extend services into a previously undeveloped area. Additionally, improvements would be sized to serve the Project itself and future development of areas to the north and east of the Project site, should the area be developed in the future per the City’s future development goals. Improvements may also be sized and located to serve existing residents to the east of the Project site should the City pursue



annexation of the area in the future. Therefore, the Project would encourage future growth in these areas due to expansion of services and development of the Project site.

If, in the future, development is proposed north and east of the Project site within the unincorporated County it would require annexation into the City, a general plan amendment, rezone, and environmental review under CEQA, as well as other permits and approvals prior to approval. The City has determined that future growth can be accommodated within City or within its SOI, so it is not anticipated the City will expand their SOI to accommodate additional demand for growth in the foreseeable future.

#### **7.4.1 Economic Effects**

The proposed Project would affect the local economy by the construction of new residences that would encourage people to live in the City of Tulare and would help encourage people to stay in the City to take advantage of proximity to local businesses and other amenities in the nearby downtown area, as the Project site is approximately 3 miles from the City's downtown center.

The Project would require a temporary construction workforce, which could potentially induce population and economy in the Project site. The temporary workforce would be needed to construct the residential, commercial center, and the central park. The number of construction workers needed during any given period would largely depend on the specific stage of construction but would likely range from a dozen to several dozen workers on a daily basis. In addition, the new housing would generate demand for such services as retail, landscaping, home cleaning, and maintenance which would stimulate the local economy.

Additional local employment can be generated through the multiplier effect, as discussed previously in this section. The multiplier effect tends to be greater in regions with larger, diverse economies due to a decrease in the requirement to import goods and services from outside the region.

Two different types of additional employment are tracked through the multiplier effect. Indirect employment includes those additional jobs that are generated through the expenditure patterns of direct employment associated with the Project. Indirect jobs tend to be in relatively close proximity to the places of employment and residence. The multiplier effect also calculates induced employment. Induced employment follows the economic effect beyond the expenditures of the residents within the Project site to include jobs created by the stream of goods and services necessary to support residences within the proposed Project. When a manufacturer buys or sells products, the employment associated with those inputs or outputs are considered induced employment.

For example, when an employee of the Project goes out to lunch, the person who serves the employee lunch holds a job that is indirectly related to the proposed Project. When the server then goes out and spends money in the economy, the jobs generated by this third-tier effect are considered induced employment. The multiplier effect also considers the secondary effect of employee expenditures. Thus, it includes the economic effect of the dollars spent by those employees and residents who support the employees of the Project. Increased future employment generated by employee and resident spending ultimately results in physical development of space to accommodate those employees. It is the characteristics of this physical space and its specific location that determine the type and magnitude of environmental impacts of this additional economic activity. Although the economic effect can be predicted, the actual environmental implications of this type of economic growth are too speculative to predict or evaluate, since they can be spread throughout the City, the County, and beyond.

### **Impacts of Induced Growth**

The growth induced directly and indirectly by the proposed Project could result in environmental impacts in the City and the County, as well as the greater regional area. As discussed above, a project would indirectly induce growth if it would remove an obstacle to additional growth and development, such as removing a constraint on a required public service. An example of this indirect effect would be the expansion of both wet and dry utility infrastructure, which might allow for more development to be served by access to these services. The Project would also require the extension of an existing roadway (Oakmore Street) and would require construction of on-site roads and perimeter improvements such as sidewalks, landscaping, curbs, and gutters, underground utilities, and other infrastructure. More specifically, implementation of the proposed Project would include the construction of new water supply and wastewater infrastructure, storm drain infrastructure, internal roadways, telecommunication facilities, and electrical utility infrastructure to service the Project site. The new infrastructure improvements would extend through and connect to the City's existing infrastructure near the Project site. The proposed infrastructure improvements would be sized to serve the Project itself and to serve future development of areas to the north and east of the Project site, should the area be developed in the future per the City's General Plan development goals. Improvements may also be sized and located to serve existing residents to the east of the Project site should the City pursue annexation of the area in the future. Development of the proposed Project site for residential uses is outlined in the City's General Plan Land Use Map. Under CEQA, growth is not considered necessarily detrimental or beneficial.

Indirect and induced population growth in the City could further contribute to the loss of open space because it may encourage the conversion of undeveloped land to urban uses for additional housing and infrastructure. However, it is assumed this new growth would occur within areas of the City designated and zoned for development or planned for potential future urban development. Again, however, the particular open space that might get converted

cannot be predicted with any certainty, all such conversions to urban land use would occur within areas planned for growth in the City's General Plan. Development of the property to the north and east of the Project site is not currently proposed for future development by either the City or the County. However, as noted above, if development is proposed in the future by the City, it would require an annexation into the City, a general plan amendment, rezone, and environmental review under CEQA prior to approval.

In summary, although the proposed Project can be said to induce growth, this growth is not unplanned. The proposed Project is consistent with the goals outlined in the City's General Plan and the area has been planned to be converted to residential development according to the City's Land Use Map. Therefore, the conversion of the entire Project site has been analyzed in the City's General Plan EIR previously. No growth beyond what was already analyzed would occur and the City is not planning on extending its Urban Development Boundary.

Furthermore, due to existing General Plan goals, policies and actions that support planned growth, the proposed Project would not result in a significant growth inducing impact. Growth inducement, as it pertains to CEQA and this document, generally denotes growth that is not planned. Because the growth that would be induced by the Project was previously planned and analyzed, growth-inducing effects would be considered less than significant.

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**City of Tulare**  
411 East Kern Ave  
Tulare, CA 93274

## **9 List of Preparers**

***Project Title: FNC Farming Subdivision***

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### **List of Preparers**

#### **4-Creeks Inc.**

- David Duda, AICP, GISP
- Molly Baumeister, Planner/Project Manager
- Annamarie Wagner, Assistant Planner

### **Persons and Agencies Consulted**

The following individuals and agencies contributed to this Initial Study:

#### **City of Tulare**

- Steven Sopp, Principal Planner
- Mario Anaya, AICP, MPA, Community Development Director

#### **Ruettgers & Schuler, Civil Engineers**

- Ian Parks, PE

#### **Soar Environmental Consulting**

- Heather Froshour, M.A., R.P.A., Senior Archaeologist
- Joe Bashore, Environmental Planner

#### **Core Environmental Consulting**

- Jesse Madsen

## Appendix A1

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### Notice of Preparation and Scoping Comment Letters

# NOTICE OF PREPARATION

**To:** Office of Planning and Research  
Responsible and Trustee Agencies  
Other Interested Parties

**From:** Steven Sopp, Principal Planner  
City of Tulare  
411 East Kern Ave.  
Tulare, CA 93274  
(559) 684-4223

**Subject:** Notice of Preparation of an Environmental Impact Report (EIR) and Scoping Meeting for the F and C Farming Annexation Project

**Date:** August 22, 2024

**City/County Location:** City of Tulare, Tulare County

**Applicant:** San Joaquin Valley Homes

Pursuant to Section 15082(a) of the California Environmental Quality Act (1970), the City of Tulare (City) will be the lead agency and will require preparation of an environmental impact report for the project described below. Consistent with your agency's statutory authority, the City requests input regarding the scope and content of the EIR. The City has concluded that the project could result in potentially significant environmental impacts and therefore an EIR is required. The project description and location are included herein.

The Project proposes the construction of 556 single-family residential units and a 5.47-acre central park and pond on parcels 172-010-021, 172-010-022, and 184-020-010 as well as annexation of the 140.32-acre site into the City of Tulare. The 140.32-acre Project site is currently under Tulare County jurisdiction but has been included in the City of Urban Development Boundary according to the 2035 City of Tulare General Plan. The County has zoned the site as Exclusive Agriculture 20-Acre and 40-Acre minimum (AE-20, AE-40), and the City of Tulare has designated the site as Residential Estate (2.1-3 D.U./acre) and Rural Residential (0-2 D.U./acre). The applicant is proposing to pre-zone the majority of the subject property to R-1-5 Single-Family Residential, 5,000 sq. ft. minimum lot area zoning designation with an approximately 7.8-acre remainder to be zoned Rural Residential. The proposed pre-zoning will become effective upon annexation of the Project site into the City of Tulare.

The Project would result in onsite and offsite infrastructure improvements including new and relocated utilities, new residential streets, including the extension of North Oakmore Street. Morrison Street and Prosperity Avenue will be widened to their full planned right-of-way and curb, gutter, and sidewalk will be installed. The Project would not require



demolition of any anchored structure, but there are approximately 33.9 acres of agricultural high tunnels that will be removed prior to construction. The construction of the Project will be in five phases.

The proposed Project site is located on the Southeast corner of Prosperity Avenue and Morrison Street within the City of Tulare Urban Development Boundary and Sphere of Influence and the unincorporated area of Tulare County. The site is West of Road 126, East of Morrison Street, and South of Prosperity Avenue. The site is topographically flat and is bounded by agricultural uses to the South and East, single-family housing to the North, and a single-family subdivision that is currently under construction to the West. The property was used for irrigated row crops until recently. Currently the Project Area is partially covered with a tarp or is bare ground after row crop removal, with annual grasses and herbaceous weeds in portions where there is no tarp cover. A small portion of the property is used for potted blueberry cultivation. The site also contains an on-site irrigation water supply, which includes a 0.5-acre pump station pond.

Discretionary actions for this project would include approval of a tentative subdivision map, zone amendment (pre-zoning for anticipated annexation), general plan amendment, and annexation of the property from the County of Tulare to the City of Tulare.

Pursuant to CEQA Section 15060(d) of the CEQA Guidelines, the project may potentially result in significant impacts related to: Agricultural Resources, Greenhouse Gas Emission, Transportation, and Mandatory Findings of Significance. An EIR will be prepared to evaluate the proposed project's potential impacts on the environment, outline mitigation measures, and analyze potential project alternatives.

## **PUBLIC SCOPING**

The EIR will consider potential environmental effects of the proposed project to determine the level of significance of the environmental effect and will analyze these potential effects to the detail necessary to make a determination on the level of significance. Those environmental issues that have been determined to be less than significant will have a discussion that is limited to a brief explanation of why those effects are not considered potentially significant. In addition, the EIR may also consider those environmental issues which are raised by responsible agencies, trustee agencies, and members of the public or related agencies during the NOP process. Comments that are provided during the NOP scoping period will be included as part of the administrative record for the project and will be appropriately addressed in the EIR.

We need to know the views of your agency or organization as to the scope and content of the environmental information germane to your agency's statutory responsibilities or of interest to your organization in connection with the proposed project. Specifically, we are requesting the following:

1. If you are a public agency, state whether your agency will be a responsible or trustee agency for the proposed project and list the permits or approvals from your agency that will be required for the project and its future actions;

2. Identify significant environmental effects and mitigation measures that you believe need to be explored in the EIR with supporting discussion of why you believe these effects may be significant;
3. Describe special studies and other information that you believe are necessary for the City of Tulare to analyze the significant environmental effects, alternatives, and mitigation measures you have identified;
4. For public agencies that provide infrastructure and public services, identify any facilities that must be provided (both on- and off-site) to provide services to the proposed project;
5. Indicate whether a member(s) from your agency would like to attend a scoping workshop/meeting for public agencies to discuss the scope and content of the EIR's environmental information;
6. Provide the name, title, and telephone number of the contact person from your agency or organization that we can contact regarding your comments.

Due to the limits mandated by State law, your response must be sent and received by the City of Tulare by the following deadlines:

- For responsible agencies, not later than 30 days after you receive this notice.
- For all other agencies and organizations, not later than 30 days following the publication of this Notice of Preparation. The 30-day review period ends September 24, 2024

If we do not receive a response from your agency or organization, we will presume that your agency or organization has no response to make.

A responsible agency, trustee agency, or other public agency may request a meeting with the City of Tulare or its representatives in accordance with Section 15082(c) of the CEQA Guidelines. A public scoping meeting will be held during the public review period as follows:

- **Wednesday, September 11, 2024 from 4:00 pm to 6:00 pm**  
*Olympic Room*  
Tulare Public Library  
475 North 'M' Street  
Tulare, CA 93274

Please send your responses to Steven Sopp, Principal Planner at the City of Tulare, 411 East Kern Ave. Tulare, CA 93274; or via email at [ssopp@tulare.ca.gov](mailto:ssopp@tulare.ca.gov). If you have any questions, please contact Steven Sopp at (559) 684-4216 or [ssopp@tulare.ca.gov](mailto:ssopp@tulare.ca.gov).

**Signature:**



Steven Sopp, Principal Planner

**Date:** August 22, 2024

**Attachments:**

Figure 1, Location Map

Figure 2, Proposed Tentative Subdivision Map



**FNC Farming Annexation and Subdivision Project**

Location Map

**Legend**  
 Project Area





# FNC FARMING

## TENTATIVE SUBDIVISION MAP

## PREPARED FOR:

SAN JOAQUIN VALLEY HOMES  
5607 AVE DE LOS ROBLES  
VISALIA, CA 93291

## PREPARED BY:

4CREEKS, INC.  
324 S. SANTA FE ST., STE. A  
VISALIA, CA 93292

## ACREAGE

140.32 AC 556 UNITS

## LEGEND

APN:  
ZONING:  
GENERAL PLAN:

172010021, 172010022, 184020010  
COUNTY  
RURAL RESIDENTIAL / RESIDENTIAL  
ESTATE

FLOOD ZONE:  
ELECTRICITY:  
TELEPHONE:  
NATURAL GAS:  
EXISTING USE:  
PROPOSED USE:

X  
SOUTHERN CALIFORNIA EDISON  
AT&T  
SOUTHERN CALIFORNIA GAS  
VACANT  
LOW DENSITY RESIDENTIAL

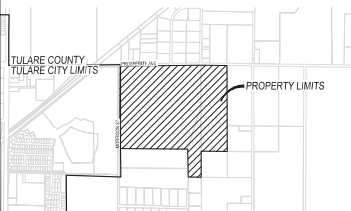
## TYPICAL LOT SIZES:

5000 SF LOTS± (50' X 100') (248 UNITS)  
6600 SF LOTS± (60' X 110') (308 UNITS)

TOTAL 556 UNITS

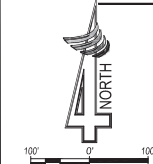
\*OUTLOTS A-L AND PARK (5.34 AC) TO BE DEDICATED TO CITY OF TULARE

TRAIL PER RESPECTIVE CROSS SECTION



VICINITY MAP

SCALE: 1" = 100'



## PREPARED BY:

324 S. SANTA FE, STE. A  
VISALIA, CA 93292  
TEL: 558.882.9020  
FAX: 558.882.3215  
www.4creeks.com

4CREEKS

PAGE 1 OF 5



September 23, 2024

Steven Sopp  
City of Tulare  
Planning Department  
411 East Kern Avenue  
Tulare, CA 93274

**Project: Notice of Preparation of an Environmental Impact Report (EIR) for the  
F and C Farming Annexation Project**

**District CEQA Reference No: 20240975**

Dear Mr. Sopp:

The San Joaquin Valley Air Pollution Control District (District) has reviewed the Notice of Preparation (NOP) from the City of Tulare (City) for the above project. Per the NOP, the project consists of the construction of 556 single-family homes and a 5.47 acre central park and pond on a 140.32 acre site (Project). The Project is located on the southeast corner of Prosperity Avenue and Morrison Street in Tulare, CA.

The District offers the following comments at this time regarding the Project:

**1) Project Related Emissions**

At the federal level under the National Ambient Air Quality Standards (NAAQS), the District is designated as extreme nonattainment for the 8-hour ozone standards and serious nonattainment for the particulate matter less than 2.5 microns in size (PM<sub>2.5</sub>) standards. At the state level under California Ambient Air Quality Standards (CAAQS), the District is designated as nonattainment for the 8-hour ozone, PM<sub>10</sub>, and PM<sub>2.5</sub> standards.

The NOP indicates that an EIR will be prepared for this Project. The District recommends the air emissions be compared to the District significance thresholds as identified in the District's Guidance for Assessing and Mitigating Air Quality Impacts: <https://ww2.valleyair.org/media/g4nl3p0g/gamaqi.pdf>.

**Samir Sheikh**  
Executive Director/Air Pollution Control Officer

---

**Northern Region**  
4800 Enterprise Way  
Modesto, CA 95356-8718  
Tel: (209) 557-6400 FAX: (209) 557-6475

**Central Region (Main Office)**  
1990 E. Gettysburg Avenue  
Fresno, CA 93726-0244  
Tel: (559) 230-6000 FAX: (559) 230-6061

**Southern Region**  
34946 Flyover Court  
Bakersfield, CA 93308-9725  
Tel: (661) 392-5500 FAX: (661) 392-5585

### **1a) Construction Emissions**

The District recommends, to reduce impacts from construction-related diesel exhaust emissions, the Project should utilize the cleanest available off-road construction equipment.

### **1b) Operational Emissions**

Operational (ongoing) air emissions from mobile sources and stationary sources should be analyzed separately. For reference, the District's significance thresholds are identified in the District's Guidance for Assessing and Mitigating Air Quality Impacts:

<https://ww2.valleyair.org/media/g4nl3p0g/gamaqi.pdf>.

*Recommended Mitigation Measure:* At a minimum, project related impacts on air quality should be reduced to levels below the District's significance thresholds through incorporation of design elements such as the use of cleaner Heavy Heavy-Duty (HHD) trucks and vehicles, measures that reduce Vehicle Miles Traveled (VMTs), and measures that increase energy efficiency. More information on transportation mitigation measures can be found at:

<https://ww2.valleyair.org/media/ob0pweru/clean-air-measures.pdf>

### **1c) Recommended Model for Quantifying Air Emissions**

Project-related criteria pollutant emissions from construction and operational sources should be identified and quantified. Emissions analysis should be performed using the California Emission Estimator Model (CalEEMod), which uses the most recent CARB-approved version of relevant emissions models and emission factors. CalEEMod is available to the public and can be downloaded from the CalEEMod website at: [www.caleemod.com](http://www.caleemod.com).

## **2) Health Risk Screening/Assessment**

The City should evaluate the risk associated with the Project for sensitive receptors (residences, businesses, hospitals, day-care facilities, health care facilities, etc.) in the area and mitigate any potentially significant risk to help limit exposure of sensitive receptors to emissions.

To determine potential health impacts on surrounding receptors (residences, businesses, hospitals, day-care facilities, health care facilities, etc.) a Prioritization and/or a Health Risk Assessment (HRA) should be performed for the Project. These health risk determinations should quantify and characterize potential Toxic Air Contaminants (TACs) identified by the Office of Environmental Health Hazard Assessment/California Air Resources Board (OEHHA/CARB) that pose a present or potential hazard to human health.

Health risk analyses should include all potential air emissions from the project, which include emissions from construction of the project, including multi-year construction, as well as ongoing operational activities of the project. Note, two common sources of TACs can be attributed to diesel exhaust emitted from heavy-duty off-road earth moving equipment during construction, and from ongoing operation of heavy-duty on-road trucks.

Prioritization (Screening Health Risk Assessment):

A “Prioritization” is the recommended method for a conservative screening-level health risk assessment. The Prioritization should be performed using the California Air Pollution Control Officers Association’s (CAPCOA) methodology. Please contact the District for assistance with performing a Prioritization analysis.

The District recommends that a more refined analysis, in the form of an HRA, be performed for any project resulting in a Prioritization score of 10 or greater. This is because the prioritization results are a conservative health risk representation, while the detailed HRA provides a more accurate health risk evaluation.

Health Risk Assessment:

Prior to performing an HRA, it is strongly recommended that land use agencies/ project proponents develop and submit for District review a health risk modeling protocol that outlines the sources and methodologies that will be used to perform the HRA.

A development project would be considered to have a potentially significant health risk if the HRA demonstrates that the health impacts would exceed the District’s established risk thresholds, which can be found here:

<https://ww2.valleyair.org/permitting/ceqa/>.

A project with a significant health risk would trigger all feasible mitigation measures. The District strongly recommends that development projects that result in a significant health risk not be approved by the land use agency.

The District is available to review HRA protocols and analyses. For HRA submittals please provide the following information electronically to the District for review:

- HRA (AERMOD) modeling files
- HARP2 files
- Summary of emissions source locations, emissions rates, and emission factor calculations and methodologies.



For assistance, please contact the District's Technical Services Department by:

- E-Mailing inquiries to: [hramodeler@valleyair.org](mailto:hramodeler@valleyair.org)
- Calling (559) 230-5900

*Recommended Measure:* Development projects resulting in TAC emissions should be located an adequate distance from residential areas and other sensitive receptors to prevent the creation of a significant health risk in accordance to CARB's Air Quality and Land Use Handbook: A Community Health Perspective located at <https://ww2.arb.ca.gov/our-work/programs/resource-center/strategy-development/land-use-resources>.

### **3) Ambient Air Quality Analysis**

An Ambient Air Quality Analysis (AAQA) uses air dispersion modeling to determine if emissions increases from a project will cause or contribute to a violation of State or National Ambient Air Quality Standards. The District recommends an AAQA be performed for the Project if emissions exceed 100 pounds per day of any pollutant.

An AAQA uses air dispersion modeling to determine if emission increase from a project will cause or contribute to a violation of State or National Ambient Air Quality Standards. An acceptable analysis would include emissions from both project-specific permitted and non-permitted equipment and activities. The District recommends consultation with District staff to determine the appropriate model and input data to use in the analysis.

Specific information for assessing significance, including screening tools and modeling guidance, is available online at the District's website: <https://ww2.valleyair.org/permitting/ceqa/>.

### **4) Vegetative Barriers and Urban Greening**

There are residential units surrounding the Project. There are also schools near the Project, such as the Live Oak Middle School located west of the Project. The District suggests the City consider the feasibility of incorporating vegetative barriers and urban greening as a measure to further reduce air pollution exposure on sensitive receptors (e.g., residential units, schools).

While various emission control techniques and programs exist to reduce air quality emissions from mobile and stationary sources, vegetative barriers have been shown to be an additional measure to potentially reduce a population's exposure to air pollution through the interception of airborne particles and the uptake of gaseous pollutants. Examples of vegetative barriers include, but are not limited to the following: trees, bushes, shrubs, or a mix of these. Generally, a higher and thicker vegetative barrier with full coverage will result in greater reductions in downwind

pollutant concentrations. In the same manner, urban greening is also a way to help improve air quality and public health in addition to enhancing the overall beautification of a community with drought tolerant, low-maintenance greenery.

## **5) Clean Lawn and Garden Equipment in the Community**

Since the Project consists of residential development, gas-powered residential lawn and garden equipment have the potential to result in an increase of NOx and PM2.5 emissions. Utilizing electric lawn care equipment can provide residents with immediate economic, environmental, and health benefits. The District recommends the Project proponent consider the District's Clean Green Yard Machines (CGYM) program which provides incentive funding for replacement of existing gas powered lawn and garden equipment. More information on the District CGYM program and funding can be found at: <https://ww2.valleyair.org/grants/clean-green-yard-machines-residential/>.

## **6) District Rules and Regulations**

The District issues permits for many types of air pollution sources, and regulates some activities that do not require permits. A project subject to District rules and regulations would reduce its impacts on air quality through compliance with the District's regulatory framework. In general, a regulation is a collection of individual rules, each of which deals with a specific topic. As an example, Regulation II (Permits) includes District Rule 2010 (Permits Required), Rule 2201 (New and Modified Stationary Source Review), Rule 2520 (Federally Mandated Operating Permits), and several other rules pertaining to District permitting requirements and processes.

The list of rules below is neither exhaustive nor exclusive. Current District rules can be found online at: <https://ww2.valleyair.org/rules-and-planning/current-district-rules-and-regulations>. To identify other District rules or regulations that apply to future projects, or to obtain information about District permit requirements, the project proponents are strongly encouraged to contact the District's Small Business Assistance (SBA) Office at (559) 230-5888.

### **6a) District Rules 2010 and 2201 - Air Quality Permitting for Stationary Sources**

Stationary Source emissions include any building, structure, facility, or installation which emits or may emit any affected pollutant directly or as a fugitive emission. District Rule 2010 (Permits Required) requires operators of emission sources to obtain an Authority to Construct (ATC) and Permit to Operate (PTO) from the District. District Rule 2201 (New and Modified Stationary Source Review) requires that new and modified stationary sources

of emissions mitigate their emissions using Best Available Control Technology (BACT).

This Project may be subject to District Rule 2010 (Permits Required) and Rule 2201 (New and Modified Stationary Source Review) and may require District permits. Prior to construction, the Project proponent should submit to the District an application for an ATC. For further information or assistance, the project proponent may contact the District's SBA Office at (559) 230-5888.

#### **6b) District Rule 9510 - Indirect Source Review (ISR)**

The Project is subject to District Rule 9510 because it will receive a project-level discretionary approval from a public agency and will equal or exceed 50 residential dwelling units.

The purpose of District Rule 9510 is to reduce the growth in both NO<sub>x</sub> and PM emissions associated with development and transportation projects from mobile and area sources; specifically, the emissions associated with the construction and subsequent operation of development projects. The ISR Rule requires developers to mitigate their NO<sub>x</sub> and PM emissions by incorporating clean air design elements into their projects. Should the proposed development project clean air design elements be insufficient to meet the required emission reductions, developers must pay a fee that ultimately funds incentive projects to achieve off-site emissions reductions.

Per Section 5.0 of the ISR Rule, an Air Impact Assessment (AIA) application is required to be submitted no later than applying for project-level approval from a public agency. As of the date of this letter, the District has not received an AIA application for this Project. Please inform the project proponent to immediately submit an AIA application to the District to comply with District Rule 9510 so that proper mitigation and clean air design under ISR can be incorporated into the Project's design.

Information about how to comply with District Rule 9510 can be found online at: <https://ww2.valleyair.org/permitting/indirect-source-review-rule-overview>

The AIA application form can be found online at: <https://ww2.valleyair.org/permitting/indirect-source-review-rule-overview/forms-and-applications/>

District staff is available to provide assistance and can be reached by phone at (559) 230-5900 or by email at [ISR@valleyair.org](mailto:ISR@valleyair.org).

### **6c) District Rule 4601 (Architectural Coatings)**

The Project may be subject to District Rule 4601 since it may utilize architectural coatings. Architectural coatings are paints, varnishes, sealers, or stains that are applied to structures, portable buildings, pavements or curbs. The purpose of this rule is to limit VOC emissions from architectural coatings. In addition, this rule specifies architectural coatings storage, cleanup and labeling requirements. Additional information on how to comply with District Rule 4601 requirements can be found online at:  
<https://ww2.valleyair.org/media/tkgjeusd/rule-4601.pdf>

### **6d) District Regulation VIII (Fugitive PM10 Prohibitions)**

The project proponent may be required to submit a Construction Notification Form or submit and receive approval of a Dust Control Plan prior to commencing any earthmoving activities as described in Regulation VIII, specifically Rule 8021 – *Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities*.

Should the project result in at least 1-acre in size, the project proponent shall provide written notification to the District at least 48 hours prior to the project proponents intent to commence any earthmoving activities pursuant to District Rule 8021 (Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities). Also, should the project result in the disturbance of 5-acres or more, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials, the project proponent shall submit to the District a Dust Control Plan pursuant to District Rule 8021 (Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities). For additional information regarding the written notification or Dust Control Plan requirements, please contact District Compliance staff at (559) 230-5950.

The application for both the Construction Notification and Dust Control Plan can be found online at: <https://ww2.valleyair.org/media/fm3jrbsq/dcp-form.docx>

Information about District Regulation VIII can be found online at:  
<https://ww2.valleyair.org/dustcontrol>

### **6e) District Rule 4901 - Wood Burning Fireplaces and Heaters**

The purpose of this rule is to limit emissions of carbon monoxide and particulate matter from wood burning fireplaces, wood burning heaters, and outdoor wood burning devices. This rule establishes limitations on the installation of new wood burning fireplaces and wood burning heaters. Specifically, at elevations below 3,000 feet in areas with natural gas service, no

person shall install a wood burning fireplace, low mass fireplace, masonry heater, or wood burning heater.

Information about District Rule 4901 can be found online at:  
<https://ww2.valleyair.org/compliance/residential-wood-smoke-reduction-program/>

#### **6f) Other District Rules and Regulations**

The Project may also be subject to the following District rules: Rule 4102 (Nuisance) and Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations).

#### **7) District Comment Letter**

The District recommends that a copy of the District's comments be provided to the Project proponent.

If you have any questions or require further information, please contact Dylan Casares by e-mail at [Dylan.Casares@valleyair.org](mailto:Dylan.Casares@valleyair.org) or by phone at (559) 230-6574.

Sincerely,

Tom Jordan  
Director of Policy and Government Affairs



For: Mark Montelongo  
Program Manager



## NATIVE AMERICAN HERITAGE COMMISSION

August 29, 2024

Steven Sopp  
City of Tulare  
411 E. Kern Avenue  
Tulare CA 93274

CHAIRPERSON  
Reginald Pagaling  
Chumash

VICE-CHAIRPERSON  
Buffy McQuillen  
Yokayo Pomo, Yuki,  
Nomlaki

SECRETARY  
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Pauma-Yuima Band of  
Luiseño Indians

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NAHC HEADQUARTERS  
1550 Harbor Boulevard  
Suite 100  
West Sacramento,  
California 95691  
(916) 373-3710  
[nahc@nahc.ca.gov](mailto:nahc@nahc.ca.gov)

Re: 2024080904 FNC Farming Annexation Subdivision Project, Tulare County

Dear Mr. Sopp:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015. If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). Both SB 18 and AB 52 have tribal consultation requirements. If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

**1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project:**

Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

- a. A brief description of the project.
- b. The lead agency contact information.
- c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
- d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

**2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report:** A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subs. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).

- a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

**3. Mandatory Topics of Consultation If Requested by a Tribe:** The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

- a. Alternatives to the project.
- b. Recommended mitigation measures.
- c. Significant effects. (Pub. Resources Code §21080.3.2 (a)).

**4. Discretionary Topics of Consultation:** The following topics are discretionary topics of consultation:

- a. Type of environmental review necessary.
- b. Significance of the tribal cultural resources.
- c. Significance of the project's impacts on tribal cultural resources.
- d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

**5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process:** With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

**6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document:** If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:

- a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
- b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

- 7. Conclusion of Consultation:** Consultation with a tribe shall be considered concluded when either of the following occurs:
- a.** The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
  - b.** A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).
- 8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document:** Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).
- 9. Required Consideration of Feasible Mitigation:** If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).
- 10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:**
- a.** Avoidance and preservation of the resources in place, including, but not limited to:
    - i.** Planning and construction to avoid the resources and protect the cultural and natural context.
    - ii.** Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
  - b.** Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
    - i.** Protecting the cultural character and integrity of the resource.
    - ii.** Protecting the traditional use of the resource.
    - iii.** Protecting the confidentiality of the resource.
  - c.** Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
  - d.** Protecting the resource. (Pub. Resource Code §21084.3 (b)).
  - e.** Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).
  - f.** Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).
- 11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource:** An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:
- a.** The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.
  - b.** The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
  - c.** The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: [http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation\\_CalEPAPDF.pdf](http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf)



SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: [https://www.opr.ca.gov/docs/09\\_14\\_05\\_Updated\\_Guidelines\\_922.pdf](https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf).

Some of SB 18's provisions include:

- 1. Tribal Consultation:** If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe. (Gov. Code §65352.3 (a)(2)).
- 2. No Statutory Time Limit on SB 18 Tribal Consultation.** There is no statutory time limit on SB 18 tribal consultation.
- 3. Confidentiality:** Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
- 4. Conclusion of SB 18 Tribal Consultation:** Consultation should be concluded at the point in which:
  - a.** The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
  - b.** Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: <http://nahc.ca.gov/resources/forms/>.

#### NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

- 1.** Contact the appropriate regional California Historical Research Information System (CHRIS) Center ([https://ohp.parks.ca.gov/?page\\_id=30331](https://ohp.parks.ca.gov/?page_id=30331)) for an archaeological records search. The records search will determine:
  - a.** If part or all of the APE has been previously surveyed for cultural resources.
  - b.** If any known cultural resources have already been recorded on or adjacent to the APE.
  - c.** If the probability is low, moderate, or high that cultural resources are located in the APE.
  - d.** If a survey is required to determine whether previously unrecorded cultural resources are present.
- 2.** If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
  - a.** The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
  - b.** The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
  - a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
  - b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.
4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
  - a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
  - b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
  - c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address:  
[Cameron.Vela@NAHC.ca.gov](mailto:Cameron.Vela@NAHC.ca.gov).

Sincerely,

*Cameron Vela*

Cameron Vela  
Cultural Resources Analyst

cc: State Clearinghouse



State of California – Natural Resources Agency  
DEPARTMENT OF FISH AND WILDLIFE  
Central Region  
1234 East Shaw Avenue  
Fresno, CA 93710  
(559) 243 - 4005  
[www.wildlife.ca.gov](http://www.wildlife.ca.gov)

**GAVIN NEWSOM, Governor**  
**CHARLTON H. BONHAM, Director**



September 24, 2024

Steven Sopp, Principal Planner  
City of Tulare  
411 East Kern Ave.  
Tulare, California 93274  
(559) 684-4216  
[ssopp@tulare.ca.gov](mailto:ssopp@tulare.ca.gov)

**Subject: FNC Farming Annexation Project (Project)**  
**Notice of Preparation (NOP)**  
**State Clearinghouse No.: 2024080904**

Dear Steven Sopp:

The California Department of Fish and Wildlife (CDFW) received a NOP from City of Tulare, as Lead Agency, for the above-referenced Project pursuant the California Environmental Quality Act (CEQA) and CEQA Guidelines.<sup>1</sup>

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the Project that may affect California fish and wildlife. Likewise, CDFW appreciates the opportunity to provide comments regarding those aspects of the Project that CDFW, by law, may be required to carry out or approve through the exercise of its own regulatory authority under the Fish and Game Code.

## **CDFW ROLE**

CDFW is California's **Trustee Agency** for fish and wildlife resources and holds those resources in trust by statute for all the people of the State (Fish & G. Code, §§ 711.7, subd. (a) & 1802; Pub. Resources Code, § 21070; CEQA Guidelines § 15386, subd. (a)). CDFW, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species (Id., § 1802.). Similarly, for purposes of CEQA, CDFW is charged by law to provide, as available, biological expertise during public

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<sup>1</sup> CEQA is codified in the California Public Resources Code in section 21000 et seq. The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

Steven Sopp, Principal Planner  
City of Tulare  
September 24, 2024  
Page 2

agency environmental review efforts, focusing specifically on projects and related activities that have the potential to adversely affect fish and wildlife resources.

CDFW is also submitting comments as a **Responsible Agency** under CEQA (Pub. Resources Code, § 21069; CEQA Guidelines, § 15381). CDFW expects that it may need to exercise regulatory authority as provided by the Fish and Game Code. As proposed, for example, reasonably foreseeable future projects may be subject to CDFW's lake and streambed alteration regulatory authority (Fish & G. Code, § 1600 et seq.). Likewise, to the extent implementation of reasonably foreseeable future projects may result in "take" as defined by State law of any species protected under the California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.), related authorization as provided by the Fish and Game Code will be required.

**Nesting Birds:** CDFW has jurisdiction over actions with potential to result in the disturbance or destruction of active nest sites or the unauthorized take of birds. Fish and Game Code sections that protect birds, their eggs and nests include, sections 3503 (regarding unlawful take, possession or needless destruction of the nest or eggs of any bird), 3503.5 (regarding the take, possession or destruction of any birds-of-prey or their nests or eggs), and 3513 (regarding unlawful take of any migratory nongame bird).

**Unlisted Species:** Species of plants and animals need not be officially listed as Endangered, Rare, or Threatened on any State or federal list pursuant to CESA and/or the federal Endangered Species Act (ESA) to be considered Endangered, Rare, or Threatened under CEQA. If a species can be shown to meet the criteria specified in the CEQA Guidelines (Cal. Code Regs., tit. 14, Chapter 3, § 15380), it should be fully considered in the environmental analysis for the Project.

## **PROJECT DESCRIPTION SUMMARY**

**Proponent:** San Joaquin Valley Homes

**Objective:** The Project proposes to construct 556 single-family residential units and a 5.47-acre central park and pond. The Project also includes annexation of 140.32 acres into the City of Tulare. Onsite and offsite infrastructure improvements for the Project will include new and relocated utilities, new residential streets, including the extension of North Oakmore Street. Morrison Street and Prosperity Avenue will be widened to their full planned right-of-way and curb, gutter, and sidewalk will be installed. The Project also proposes the zoning of a 7.8-acre parcel as Rural Residential, but the parcel will remain undeveloped at this time.

**Location:** The Project site is located approximately a half mile to the east of North Mooney Boulevard. It is immediately south of Prosperity Avenue, and immediately east of Morrison Street. The Project is located on approximately 140.32 acres on Assessor's Parcel Numbers (APNs): 172-010-021, 184-020-010, and 172-010-022.

Steven Sopp, Principal Planner  
City of Tulare  
September 24, 2024  
Page 3

**Timeframe:** Project construction is anticipated to begin in 2025.

## **COMMENTS AND RECOMMENDATIONS**

CDFW offers the following comments and recommendations to assist the City of Tulare in adequately identifying and/or mitigating the Project's significant, or potentially significant, direct and indirect impacts on fish and wildlife (biological) resources. Editorial comments or other suggestions may also be included to improve the CEQA document prepared for this Project.

Aerial imagery of the Project site and its surroundings show the area contains agricultural lands comprised of row crops and regularly tilled and fallowed land. A pump pond is also located within the eastern portion of the Project site. The Project site is bordered by residential housing to the north, a single-family subdivision that is currently under construction to the west, and agricultural lands to the east and south. A review of the California Natural Diversity Database (CNDDDB) (CDFW 2024) shows the Project site is within the geographic range of several special-status species, including: the State threatened Swainson's hawk (*Buteo swainsoni*) and tricolored blackbird (*Agelaius tricolor*), and the State species of special concern burrowing owl (*Athene cunicularia*).

### **Swainson's Hawk**

Swainson's hawks (SWHA) are known to breed within the Central Valley of California and prefer to nest and forage in alfalfa, fallow fields, field crops, and grassland habitats with a sufficient source of small mammals (CDFG 1994). Based on aerial imagery, the Project site contains suitable habitat for SWHA foraging. In addition, there are trees located in the surrounding area that may provide suitable nesting habitat. There are numerous SWHA observations in the Project vicinity including the most recent being approximately 4.4-miles northwest in 2016 and another approximately 5.9-miles to the southeast in 2021 per CNDDDB records. Therefore, CDFW recommends that a qualified biologist conduct surveys for nesting SWHA following the entire survey methodology developed by the SWHA Technical Advisory Committee (SWHA TAC 2000) as part of the biological technical studies conducted in support of the CEQA document. If surveys indicate the presence or potential presence of SWHA, consultation with CDFW is recommended for guidance on the development of mitigation measures such as take avoidance, minimization, and mitigation. If take cannot be avoided, take authorization through the acquisition of an Incidental Take Permit (ITP), pursuant to Fish and Game Code section 2081 subdivision (b) is necessary to comply with CESA.

### **Tricolored blackbird**

The Project site is within the known geographic range of tricolored blackbird (TRBL), and, based on aerial imagery and the information provided, there is a pump pond within the Project site and agricultural fields within the vicinity of the Project site that could

Steven Sopp, Principal Planner  
City of Tulare  
September 24, 2024  
Page 4

contain habitat suitable for TRBL nesting and foraging. TRBL breed within the vicinity of fresh water, primarily in marshy areas. Important sites for nesting colonies include heavy growths of cattails, tules, thistles, willows, blackberries, mustard, nettles, and salt cedar (Grinnel and Miller 1944). TRBL are also known to breed in alfalfa, wheat, and other low agricultural crop fields, and these fields are becoming an increasingly important nesting habitat type, particularly in the San Joaquin Valley (Beedy et al. 2023).

As TRBL have the potential to use the Project site, CDFW recommends that a qualified biologist conduct a habitat assessment for TRBL within the Project site as part of the biological studies conducted in support of the CEQA document. If suitable TRBL nesting or foraging habitat is identified during this assessment, CDFW recommends that a qualified biologist conduct surveys for nesting TRBL as part of the biological studies conducted in support of the CEQA document. If surveys indicate the presence or potential presence of TRBL, consultation with CDFW is recommended for guidance on the development of mitigation measures such as take avoidance, minimization, and mitigation. If take cannot be avoided, take authorization through the acquisition of an ITP, pursuant to Fish and Game Code section 2081 subdivision (b) is necessary to comply with CESA.

## **Burrowing Owl**

The Project site is within the known geographic range of burrowing owl (BUOW) and there are documented historical occurrences within five miles from the Project site. BUOW typically inhabit open grasslands containing small mammal burrows, but are also known to occupy fallowed agricultural fields, canal banks, vacant lots, etc. containing small mammal burrows, a requisite habitat feature used for nesting and cover. BUOW may also attempt to use “man-made burrows” such as pipes or culverts. As noted in the Project’s Initial Study document, these habitat features are present within the Project vicinity, and as such, CDFW recommends assessing presence/absence of BUOW by having a qualified biologist conduct surveys following the California Burrowing Owl Consortium’s (CBOC) “Burrowing Owl Survey Protocol and Mitigation Guidelines” (CBOC 1993) and CDFW’s “Staff Report on Burrowing Owl Mitigation” (CDFG 2012) as part of the biological studies conducted in support of the CEQA document. If surveys indicate the presence or potential presence of BUOW, consultation with CDFW is recommended for guidance on the development of mitigation measures such as take avoidance, minimization, and mitigation.

## **Editorial Comments and/or Suggestions**

**Nesting birds:** CDFW encourages that Project ground-disturbing activities occur during the bird non-nesting season; however, if ground-disturbing or vegetation-disturbing activities must occur during the nesting season (February 1st through September 15th), the Project applicant is responsible for ensuring that implementation of the Project does

Steven Sopp, Principal Planner  
 City of Tulare  
 September 24, 2024  
 Page 5

not result in violation of the Migratory Bird Treaty Act or relevant Fish and Game Code sections as referenced above.

CDFW further recommends that a qualified biologist conduct a pre-construction survey for active nests no more than 10 days prior to the start of ground or vegetation disturbance to maximize the probability that nests that could potentially be impacted are detected. CDFW also recommends that surveys cover a sufficient area around the Project site to identify nests and determine their status. A sufficient area means any area potentially affected, either directly or indirectly, by the Project. In addition to direct impacts (i.e., nest destruction), noise, vibration, and movement of workers or equipment could also affect nests. CDFW recommends that a qualified biologist establish a behavioral baseline of all identified nests. Once Project activities begin, CDFW recommends having a qualified biologist continuously monitor nests to detect behavioral changes resulting from the Project. If behavioral changes occur, CDFW recommends halting the work causing that change and consulting with CDFW for additional avoidance and minimization measures.

If continuous monitoring of identified nests by a qualified biologist is not feasible, CDFW recommends a minimum no-disturbance buffer of 250 feet around active nests of non-listed bird species and a 500-foot no-disturbance buffer around active nests of non-listed raptors. These buffers are advised to remain in place until the breeding season has ended or until a qualified biologist has determined the birds have fledged and are no longer reliant upon the nest or on-site parental care for survival. Variance from these no-disturbance buffers is possible when there is a compelling biological or ecological reason to do so, such as when the Project site would be concealed from a nest site by topography. CDFW recommends that a qualified biologist advise and support any variance from these buffers and notify CDFW in advance of implementing a variance.

**Lake and Streambed Alteration:** Project activities that substantially change the bed, bank, and channel of any river, stream, or lake are subject to CDFW's regulatory authority pursuant Fish and Game Code section 1600 et seq. Fish and Game Code section 1602 requires an entity to notify CDFW prior to commencing any activity that may (a) substantially divert or obstruct the natural flow of any river, stream, or lake; (b) substantially change or use any material from the bed, bank, or channel of any river, stream, or lake (including the removal of riparian vegetation); (c) deposit debris, waste or other materials that could pass into any river, stream, or lake. "Any river, stream, or lake" includes those that are ephemeral or intermittent as well as those that are perennial and may include those that are highly modified such as canals and retention basins.

CDFW is required to comply with CEQA in the issuance of a Lake or Streambed Alteration Agreement (LSAA); therefore, if the CEQA document approved for the Project does not adequately describe the Project and its impacts to lakes or streams, a subsequent CEQA analysis may be necessary for LSAA issuance. For information on

Steven Sopp, Principal Planner  
City of Tulare  
September 24, 2024  
Page 6

notification requirements, please refer to CDFW's website (<https://wildlife.ca.gov/Conservation/LSA>) or contact CDFW staff in the Central Region Lake and Streambed Alteration Program at (559) 243-4593.

**CNDDDB:** Please note that the CNDDDB is populated by records through voluntary submissions of species detections. As a result, species may be present in locations not depicted in the CNDDDB but where there is suitable habitat and features capable of supporting species. A lack of an occurrence record in the CNDDDB does not mean a species is not present. In order to adequately assess any potential Project related impacts to biological resources, surveys conducted by a qualified biologist during the appropriate survey period(s) and using the appropriate protocol survey methodology are warranted in order to determine whether or not any special-status species are present at or near the Project site.

## **ENVIRONMENTAL DATA**

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a database, which may be used to make subsequent or supplemental environmental determinations (Pub. Resources Code, § 21003, subd. (e)). Accordingly, please report any special-status species and natural communities detected during Project surveys to the CNDDDB. The CNDDDB field survey form can be found at the following link:

<https://www.wildlife.ca.gov/Data/CNDDDB/Submitting-Data>. The completed form can be mailed electronically to the CNDDDB at the following email address: [CNDDDB@wildlife.ca.gov](mailto:CNDDDB@wildlife.ca.gov). The types of information reported to the CNDDDB can be found at the following link: <https://www.wildlife.ca.gov/Data/CNDDDB/Plants-and-Animals>.

## **FILING FEES**

If it is determined that the Project has the potential to impact biological resources, an assessment of filing fees is necessary. Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW. Payment of the fee is required in order for the underlying project approval to be operative, vested, and final (Cal. Code Regs, tit. 14, § 753.5; Fish & G. Code, § 711.4; Pub. Resources Code, § 21089).

## **CONCLUSION**

CDFW appreciates the opportunity to comment on the NOP to assist the City of Tulare in identifying and mitigating Project impacts on biological resources.


More information on survey and monitoring protocols for sensitive species can be found at CDFW's website (<https://www.wildlife.ca.gov/Conservation/Survey-Protocols>). If you have any questions regarding this letter or further coordination, please contact Marile



Steven Sopp, Principal Planner  
City of Tulare  
September 24, 2024  
Page 7

Colindres, Environmental Scientist, at the address provided on this letterhead, by telephone at (559) 974-3452, or by electronic mail at [marile.colindres@wildlife.ca.gov](mailto:marile.colindres@wildlife.ca.gov).

Sincerely,

DocuSigned by:  


FA83F09FE08945A...  
Julie A. Vance  
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ec: State Clearinghouse  
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Steven Sopp, Principal Planner  
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September 24, 2024  
Page 8

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# Appendix A2

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## Initial Study

# Initial Study for the FNC Farming Residential Project

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August 2024

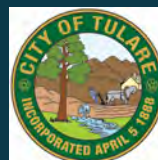


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411 East Kern Ave  
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## **TABLE OF CONTENTS**

<b>Initial Study</b>	<b>1</b>
Purpose	1
Initial Study	3
Evaluation of Environmental Impacts	11
Environmental Factors Potentially Affected	13
Environmental Analysis	14
I.    Aesthetics	14
II.   Agriculture and Forest Resources	19
III.  Air Quality	28
IV.   Biological Resources	38
V.    Cultural Resources	55
VI.   Energy	66
VII.  Geology and Soils	71
VIII. Greenhouse Gas Emissions	80
IX.   Hazards and Hazardous Materials	87
X.    Hydrology and Water Quality	94
XI.   Land Use and Planning	103
XII.  Mineral Resources	110
XIII. Noise	112
XIV.  Population and Housing	118
XV.   Public Services	121
XVI.  Recreation	128
XVII. Transportation	131
XVIII. Tribal Cultural Resources	137
XIX.  Utilities and Service Systems	148
XIX.  Wildfire	154
XX.   Mandatory Findings of Significance	157
Mitigation Monitoring and Reporting Program	159
Supporting Information and Sources	171
 <b>List of Figures</b>	
Figure 1 – Vicinity Map	3
Figure 2 – Regional Location Map	10
Figure 3 – Conceptual Site Plan	11
Figure 4 – Important Farmlands Map	25

Figure 5 – Soils Map	75
Figure 6 – Distance to Schools and Airports Map	91
Figure 7 – General Plan Land Use Map	107
Figure 8 – Zoning Map	108
Figure 9 – Construction Related Noise Levels – Exterior	116
Figure 10 – Construction Related Noise Levels – Interior	117

### **List of Tables**

Table 1 – San Joaquin Valley Attainment Status	29
Table 2 – Ambient Air Quality Standards	32
Table 3 – SJVAPCD Thresholds of Significance for Criteria Pollutants	35
Table 4 – Projected Construction Emissions for Criteria Pollutants	36
Table 5 – Projected Operational Emissions for Criteria Pollutants	37
Table 6 – Special Status Species Potentially on Project Site	42
Table 7 – 2019 SCE and 2020 State Power Resources	67
Table 8 – On-Road Mobile Fuel Use Generated by Construction Activities	69
Table 9 – On-Road Mobile Fuel Use Generated by Operational Activities	70
Table 10 – Greenhouse Gases	82
Table 11 – Noise Levels of Noise-Generating Construction Equipment	115
Table 12 – Vibration Levels Generated by Construction Equipment	118
Table 13 – Project Trip Generation	135
Table 14 – Future Intersection Improvements	135

### **Appendices**

Appendix A: CalEEMod Report & 2005 BAU CalEEMod Report
Appendix B: Biological Resources Assessment
Appendix C: Cultural Resources Assessment
Appendix D: Energy Calculations
Appendix E: Traffic Study
Appendix F: Water Supply Assessment



## **City of Tulare**

411 East Kern Ave  
Tulare, CA 93274

## **Initial Study**

### ***Project Title: FNC Farming Annexation Project***

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This document is the Initial Study for the proposed construction and operation of 556-units of low-density residential development, a community park, and a 7.8-acre rural residential remainder parcel on approximately 140.32 gross acres of land within the unincorporated area of the County of Tulare. The Project will also include the annexation of the subject property into the City limits of the City of Tulare, A General Plan Amendment, pre-zoning of the property and a subdivision map. The City of Tulare will act as Lead Agency for this Project pursuant to the California Environmental Quality Act (CEQA) and the CEQA Guidelines.

#### **PURPOSE**

The purpose of this environmental document is to implement the California Environmental Quality Act (CEQA). Section 15002(a) of the CEQA Guidelines describes the basic purposes of CEQA as follows.

- (1) Inform governmental decision-makers and the public about the potential significant environmental effects of proposed activities.*
- (2) Identify the ways that environmental damage can be avoided or significantly reduced.*
- (3) Prevent significant, avoidable damage to the environment by requiring changes in Projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.*
- (4) Disclose to the public the reasons why a governmental agency approved the Project in the manner the agency chose if significant environmental effects are involved.*

This Initial Study of environmental impacts has been prepared to conform to the requirements of the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000 et seq.) and the State CEQA Guidelines (California Code of Regulations Section 15000 et seq.). According to Section 15063, a public agency must prepare an EIR, use a previously prepared EIR or utilize another tiering process to appropriately address all significant environmental effects resulting from the proposed Project.

- (1) If the agency determines that there is substantial evidence that any aspect of the Project, either individually or cumulatively, may cause a significant effect on the environment, regardless of whether the overall effect of the Project is adverse or beneficial, the lead agency shall do one of the following:*

- a. *Prepare an EIR or*
- b. *Use a previously prepared EIR which the lead agency determines would adequately analyze the Project at hand, or*
- c. *Determine, pursuant to a program EIR, tiering, or another appropriate process, which of a Project's effects were adequately examined by an earlier EIR or negative declaration. Another appropriate process may include, for example, a master EIR, a master environmental assessment, approval of housing and neighborhood commercial facilities in urban areas, approval of residential Projects pursuant to a specific plan as described in section 15182, approval of residential Projects consistent with a community plan, general plan or zoning as described in section 15183, or an environmental document prepared under a State certified regulatory program. The lead agency shall then ascertain which effects, if any, should be analyzed in a later EIR or negative declaration.*



## INITIAL STUDY

1. **Project Title:** FNC Farming Subdivision
2. **Lead Agency:** City of Tulare, Planning Department  
Contact Person: Steven Sopp, Principal Planner  
411 East Kern Ave  
Tulare, CA 93274  
Phone Number: (559) 684-4216
3. **Applicant:** San Joaquin Valley Homes  
5607 Avenida de los Robles  
Visalia, CA 93291  
Phone Number: (559) 732-2660
4. **Project Location:** The proposed Project site is located on the Southeast corner of Prosperity Avenue and Morrison Street within the City of Tulare Urban Development Boundary and Sphere of Influence and the unincorporated area of Tulare County. The site is West of Road 126, East of Morrison Street, and South of Prosperity Avenue. The site is approximately 2.87 miles Northeast of the Tulare downtown. The Project involves construction on approximately 140.32 gross acres on APNs 172-010-021, 184-020-010, and 172-010-022. The site is topographically flat and is bounded by agricultural uses to the South and East, single-family housing to the North, and a single-family subdivision that is currently under construction to the West. The property was used for irrigated row crops until recently. Currently the Project Area is partially covered with a tarp or is bare ground after row crop removal, with annual grasses and herbaceous weeds in portions where there is no tarp cover. A small portion of the property is used for potted blueberry cultivation. The site also contains an on-site irrigation water supply, which includes a 0.5-acre pump station pond.
5. **General Plan Designation:** The proposed Project site is designated as Residential Estate (2.1-3 D.U./acre) and Rural Residential (0-2 D.U./acre) by the City of Tulare General Plan. A General Plan Amendment is proposed to change the land use designation for the majority of the site to Low Density Residential with an approximately 7.8-acre portion remaining designated as Rural Residential.
6. **Zoning Designation:** The site is zoned Exclusive Agriculture, 20-Acres (AE-20) and Exclusive Agriculture, 40-Acres (AE-40) by Tulare County. However, the site is within the City's Urban Development Boundary and planned for annexation by the City of Tulare. The majority of the Project site is proposed to be pre-zoned to the R-1-5 (Single-family Residential, 5,000 sq. ft. minimum lot area) zoning designation with an approximately 7.8-acre portion being pre-zoned to the Rural Residential zoning designation. The pre-zone will become effective upon annexation into the City of Tulare.

**Project Description:** The Project proposes the construction of 556 single-family residential units and a 5.47-acre central park and pond on parcels 172-010-021, 172-010-022, and 184-020-010 as well as annexation of the 140.32-acre site into the City of Tulare. The Project also proposes the zoning of 7.8-acres of the site as Rural Residential, but the parcel will remain undeveloped at this time. The 140.32-acre Project site is currently under Tulare County jurisdiction but has been included in the City of Tulare's Sphere of Influence according to the 2035 City of Tulare General Plan. The County has zoned the site as Exclusive Agriculture 20-Acre and 40-Acre minimum (AE-20, AE-40), and the City of Tulare has designated the site as Residential Estate (2.1-3 D.U./acre) and Rural Residential (0-2 D.U./acre). The applicant is proposing to pre-zone the majority of the subject property to R-1-5 Single-Family Residential, 5,000 sq. ft. minimum lot area zoning designation with an approximately 7.8-acre remainder to be zoned Rural Residential. The proposed pre-zoning will become effective upon annexation of the Project site into the City of Tulare.

The Project would result in onsite and offsite infrastructure improvements including new and relocated utilities, new residential streets, including the extension of North Oakmore Street. Morrison Street and Prosperity Avenue will be widened to their full planned right-of-way and curb, gutter, and sidewalk will be installed. The Project would require no demolition of any anchored structure, but there are approximately 33.9 acres of agricultural high tunnels that will be removed prior to construction. The construction of the Project will be in five phases.

Additionally, several roadway improvements to intersections surrounding the Project site may result which may include the installation of traffic signals, realignment or addition of traffic lanes, and/or addition of turn-lanes. Further analysis on potential traffic improvements and the potential impact of traffic delays is discussed in more detail in the Focused Environmental Impact Report (EIR) prepared for the proposed Project.

## 7. **Surrounding Land Uses and Settings:**

Properties to the north, south and east of the Project site are subject to the Tulare County General Plan and Zoning but are within the City's Urban Development Boundary. The property to the west is under Tulare County jurisdiction but is not within the City's Urban Development Boundary.

North: Rural Residential (City of Tulare General Plan) and Rural Residential (Tulare County Zoning Code) currently Single-Family Housing.

South: Rural Residential (City of Tulare General Plan) and Exclusive Agriculture, 20-Acre Minimum (Tulare County Zoning Code) currently under agricultural use.

East: Exclusive Agriculture 40-Acre Minimum (Tulare County Zoning Code) currently under agricultural use.

West: Low and Medium-Density Residential (City of Tulare General Plan) currently vacant.

8. **Required Approvals:** The following discretionary actions are required from the City of Tulare for the proposed Project:

- Consideration and certification of EIR
- Approval of City of Tulare General Plan Amendment
- Approval of City of Tulare Pre-Zone Application
- Approval of City of Tulare Annexation Application
- Upon completion of the annexation of the Project site into City limits, a parcel map detailing site development per the approved land use and zoning designations would be submitted to the City of Tulare for review and approval prior to the start of construction.
- Approval for water and sewer infrastructure
- Approval for surrounding roadway and perimeter improvements such as sidewalks, curbs, gutters and a traffic signal
- Tulare County Local Formation Commission (LAFCO) – Reorganization (Annexation) Application.
- Central Valley Regional Water Quality Control Board, SWPPP. The proposed Project site is within the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB). The Central Valley RWQCB will require a Storm Water Pollution Prevention Plan (SWPPP) to prevent impacts related to stormwater because of Project construction.

The following ministerial approvals are required from the City of Tulare for the proposed Project:

- City of Tulare Grading Permits
- City of Tulare Building and Encroachment Permits
- San Joaquin Valley Air Pollution Control District (SJVAPCD). The proposed Project is within the jurisdiction of the SJVAPCD and will be required to comply with Rule VIII, 3135, 4101, 9510 and several others (see Air Quality section).

9. **Native American Consultation:** The State requires lead agencies to consider the potential effects of proposed Projects and consult with California Native American tribes during the local planning process for the purpose of protecting Traditional Tribal Cultural Resources through the California Environmental Quality Act (CEQA) Guidelines. Pursuant to PRC Section 21080.3.1, the lead agency shall begin consultation with the California Native American tribe that is traditionally and culturally affiliated with the geographical area of the proposed Project. Such significant cultural resources are either sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a tribe which is either on or eligible for inclusion in the California Historic Register or local historic register, or, the lead agency, at its discretion, and support by substantial evidence, choose to treat the resources as a Tribal Cultural Resources (PRC Section 21074(a) (1-2)). According to the most recent census data, California is home to 109 currently recognized Native American tribes. Tribes in California currently have nearly 100 separate reservations or Rancherias. Tulare County has several Rancherias. Through formal consultation letters, the City has

noticed the Santa Rosa Rancheria Tachi Yokut Tribe, Tule River Indian Tribe, and the Wuksachi Indian Tribe/Eshom Valley Band as part of AB 52 and SB 18. Under these California laws, each tribe is given a 90-day response period in which they have the opportunity to review the letter and determine if they have additional concerns related to a project. No responses were received regarding the proposed Project.

Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and Project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See PRC Section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per PRC Section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that PRC Section 21082.3(c) contains provisions specific to confidentiality.

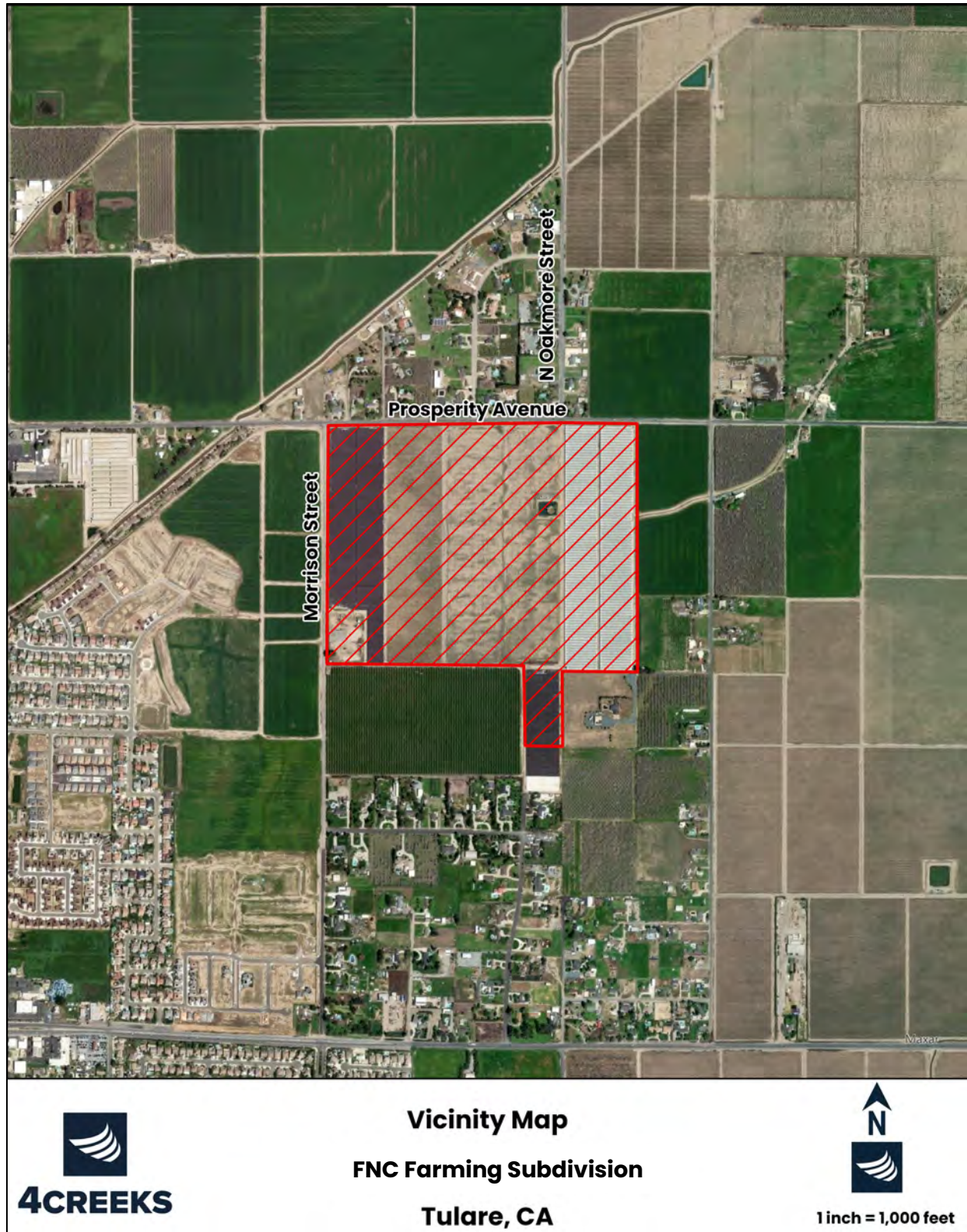
10. **Parking and access:** Vehicular access to the Project is available via Morrison Street and Prosperity Avenue. The Project includes new streets and courts that provide full access to the Project site. During construction, workers will utilize existing parking areas and/or temporary construction staging areas for parking vehicles and equipment. Additionally, temporary emergency access will be added during early construction.
11. **Landscaping and Design:** The landscape and design plans will be required during building permit and final map submittal for any areas maintained by a landscape and lighting district. All landscaping, including landscaping established for each single-family residential home will be required to be consistent with the WELO (Water Efficient Landscape Ordinance) Ordinance.
12. **Utilities and Electrical Services:** The Project would result in onsite and offsite infrastructure improvements including new and relocated utilities. Water and sewer services will be provided by the City of Tulare once new lines are created on the Project site. Electricity will be provided by Southern California Edison (SCE). All stormwater produced from Project operations will be directed to the 5.47-acre joint use park and storm water retention pond planned for the site.

The Project would include improvements to the surrounding streets. The Right of Way (ROW) of Oakmore Street will be built to a width of 128' and include new sidewalks, landscaping, and a Class I Bike Trail. The Project proposes improvements to Morrison Street to include sidewalks, Class I Bike Trail, landscaping, as well as roadway improvements. Castlerock Avenue, a new roadway, is proposed to have a ROW of 68', a Class I bike path, sidewalks, and landscaping. Castle Rock Avenue will connect the eastern and western portions of the residential development and is located in the central portion of the Project area. Another

new local roadway proposed as part of the Project is Monarch Dunes Avenue, which will have a ROW of 68' and include landscaping, sidewalks, and a Class I Bike Trail. All local roads in the Project area will include a 6.0' section for on-street parking.

### **Acronyms**

BMP	Best Management Practices
BAU	Business as Usual
CAA	Clean Air Act
CBC	California Building Code
CCAP	Climate Change Action Plan
CCR	California Code of Regulation
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CRHR	California Register of Historic Places
CWA	California Water Act
DHS	Department of Health Services
FEIR	Final Environmental Impact Report
FMMP	Important Farmland Mapping and Monitoring Program
IS/MND	Initial study
ISR	Indirect Source Review
MCL	Maximum Contaminant Level
MEIR	Master Environmental Impact Report
NOI	Notice of Intent
ND	Negative Declaration
NAC	Noise Abatement Criteria
RCRA	Resource Conservation and Recovery Act of 1976
ROW	Right-of-Way
RWQCB	Regional Water Quality Control Board
SCE	Southern California Edison
SHPO	State Historic Preservation Office
SJVAPCD	San Joaquin Valley Air Pollution Control District
SSJVIC	Southern San Joaquin Information Center
SWPPP	Storm Water Pollution Prevention Plan
TCR	Tribal Cultural Resource
UWMP	Urban Water Management Plan



*Figure 1. Vicinity Map*





Figure 2. Regional Location Map





Figure 3: Conceptual Site Plan

## EVALUATION OF ENVIRONMENTAL IMPACTS

1. A brief explanation is required for all answers except “no Impact” answers that are adequately supported by the information sources a lead agency cites, in the parentheses following each question. A “No Impact” answer is adequately supported if the reference information sources show that the impact simply does not apply to Projects like the one involved (e.g., the Project falls outside a fault rupture zone). A “No Impact” answer should be explained where it is based on Project-specific factors as well as general standards (e.g., the Project will not expose sensitive receptors to pollutants, based on a Project-specific screening analysis).
2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as Project-level, indirect as well as direct, and construction as well as operational impacts.
3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. “Potentially Significant Impact” is appropriate if there is substantial evidence that an effect may be significant. If there are one or more “Potentially Significant Impact” entries when the determination is made, an EIR is required.
4. “Negative Declaration: Less Than Significant With Mitigation Incorporated” applies where the incorporation of mitigation measures has reduced an effect from “Potentially Significant Impact” to a “Less Than Significant Impact.” The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from “Earlier Analyses,” as described in (5) below, may be cross-referenced).
5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c) (3)(D). In this case, a brief discussion should identify the following.
  - Earlier Analysis Used. Identify and state where they are available for review.
  - Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
  - Mitigation Measures. For effects that are “Less than Significant with Mitigation Measures Incorporated.” Describe and mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the Project.

6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

## ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this Project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> Aesthetics                                | <input type="checkbox"/> Greenhouse Gas Emissions               | <input type="checkbox"/> Public Services                               |
| <input checked="" type="checkbox"/> Agriculture & Forest Resources | <input type="checkbox"/> Hazards & Hazardous Materials          | <input type="checkbox"/> Recreation                                    |
| <input type="checkbox"/> Air Quality                               | <input checked="" type="checkbox"/> Hydrology and Water Quality | <input type="checkbox"/> Transportation                                |
| <input checked="" type="checkbox"/> Biological Resources           | <input type="checkbox"/> Land Use and Planning                  | <input checked="" type="checkbox"/> Tribal Cultural Resources          |
| <input checked="" type="checkbox"/> Cultural Resources             | <input type="checkbox"/> Mineral Resources                      | <input type="checkbox"/> Utilities & Service System                    |
| <input type="checkbox"/> Energy                                    | <input type="checkbox"/> Noise                                  | <input type="checkbox"/> Wildfire                                      |
| <input checked="" type="checkbox"/> Geology & Soils                | <input type="checkbox"/> Population                             | <input checked="" type="checkbox"/> Mandatory Findings of Significance |

**DETERMINATION:** (To be completed by the Lead Agency) Where potential impacts are anticipated to be significant, mitigation measures will be required, so that impacts may be avoided or reduced to insignificant levels.

On the basis of this initial evaluation:

- ☐ I find that the proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION WILL BE PREPARED.
- ☐ I find that although the proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the Project have been made by or agreed to by the Project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- ☒ I find that the proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- ☐ I find that the proposed Project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. A Negative Declaration is required, but it must analyze only the effects that remain to be addressed.
- ☐ I find that although the proposed Project could have a significant effect on the environment because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed Project, nothing further is requested.

-----  
SIGNATURE

\_\_\_\_\_  
DATE

Steven Sopp  
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PRINTED NAME

City of Tulare  
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AGENCY

## ENVIRONMENTAL ANALYSIS

The following section provides an evaluation of the impact categories and questions contained in the checklist and identify mitigation measures, if applicable.

### I. AESTHETICS

Except as provided in Public Resource Code Section 210999, would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the Project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### **Environmental Setting**

There are no aesthetic resources identified in the City of Tulare General Plan; however, the views of the Sierra Nevada Mountains are considered to be an important scenic vista in Tulare County.

**Sierra Nevada Mountains:** The Sierra Nevada Mountain range and its foothills stretch along the east area of the county and are a valuable aesthetic resource. Additionally, Sequoia National Park is located within the stretch of the Sierra Nevada Mountains located in Tulare County. Sequoia National Forest is a U.S. National Forest known for its mountain scenery and natural resources. Located directly north of Sequoia National Park is Kings Canyon National Park, a U.S. National Park also known for its towering sequoia trees and scenic vistas. The Sierra Nevada

Mountains are approximately 17 miles east of the proposed Project site, but views of the mountains are not visible on most days due to poor air quality. The following photos demonstrate the aesthetic character of the Project area. As shown, the proposed Project site is on a relatively flat area with agriculture, surrounded by residential and agriculture uses. The Sierra Nevada Mountains are slightly visible facing east.

### **Existing Visual Character**

The following photos demonstrate the aesthetic character of the Project area. As shown, the proposed Project site area is in a relatively flat area characterized by agricultural uses.



*Photo 1: Northwest Site Boundary (View Southeast) Source: Google Maps 2022*



*Photo 2: Western Site Boundary (View East) Source: Google Maps 2022*



*Photo 3: Northern Site Boundary (View South) Source: Google Maps 2022*

## **Regulatory Setting**

### **Scenic Roadways**

The California Scenic Highway Program was established in 1963 by the State Legislature for the purpose of protecting and enhancing the natural beauty of California highways and adjacent corridors through conservation strategies. The State Scenic Highway System includes a list of highways that have either been officially designated or are eligible for designation. State laws affiliated with governing the scenic highway program can be found in Sections 260–263 in The Street and Highways Code.

**State Scenic Highways:** The State Scenic Highway Program was implemented by Caltrans and was developed to preserve the aesthetic quality of certain highway corridors. Highways included in this program are designated as scenic highways. A highway is designated as scenic based on how much of the natural landscape is visible to travelers, the quality of that landscape, and the extent to which development obstructs views of the landscape. There are no designated State Scenic Highways or highways that are eligible for designation within the City of Tulare.

**City of Tulare General Plan:** The City of Tulare General Plan includes the following aesthetic goals and policies that are intended to protect the City’s aesthetic resources and are relevant to the proposed Project.

- **LU-P13.14 Scenic Features and Views.** The City shall preserve its scenic features and view corridors to the mountains.
- **LU-P13.2 City Image.** The City shall encourage a high level of design quality (architectural and landscape) for all new development in order to create a pleasant living environment, a source of community pride, and an improved overall City image.

### **Tulare County General Plan**

The 2030 Tulare County General Plan contains following goals and policies related to aesthetic resources that correlate to the proposed Project:

*SL-1.1 Natural Landscapes:* During review of discretionary approvals, including parcel and subdivision maps, the County shall, as appropriate, require new development to not significantly impact or block views of Tulare County’s natural landscapes.

1. Be sited to minimize obstruction of views from public lands and rights-of-ways,
3. Screen parking areas from view,
4. Include landscaping that screens the development,
5. Limit the impact of new roadways and grading on natural settings, and
6. Include signage that is compatible and in character with the location and building design

*SL-1.2 Working Landscapes:* The County shall require that new non-agricultural structures and infrastructure located in or adjacent to croplands, orchards, vineyards, and open rangelands be sited so as to not obstruct important viewsheds and to be designed to reflect unique relationships with the landscape.

1. Referencing traditional agricultural building forms and materials,
2. Screening and breaking up parking and paving with landscaping, and
3. Minimizing light pollution and bright signage.

*SL-3.2 Urban Expansion–Edges:* The County shall design and plan the edges and interface of communities with working and natural landscapes to protect their scenic qualities by:

1. Maintaining urban separators between cities and communities,
2. Encouraging cities to master plan mixed-density neighborhoods at their edges, locating compatible lower density uses adjacent to working and natural landscapes, and
3. Protecting important natural, cultural, and scenic resources located within areas that may be urbanized in the future

### **City of Tulare Zoning Ordinance**

The Tulare Zoning Ordinance governs the distribution and intensity of land uses, sets the principles for evaluating development and guides the development and growth of the City. The Zoning Ordinance establishes specific development criteria for each zoning district (i.e., parking requirements, walls, fencing, setbacks, building height, etc.).

### **Discussion**

#### **a) Would the Project have a substantial adverse effect on a scenic vista?**

**Less than Significant Impact:** A scenic vista is defined as a viewpoint that provides expansive views of highly valued landscape for the benefit of the general public. The Sierra Nevada mountains to the East and agricultural lands surrounding the city are the primary scenic vista within this region and the Land Use Element of the City's General Plan states that view corridors to the mountains should be preserved. The site is surrounded by agricultural uses while the Sierra Nevada foothills are approximately 17 miles east of the Project site, and not visible on most days due to poor air quality. The Project would obstruct some views of agricultural uses. However, the Project would not significantly alter views overall from the surrounding community. There is *a less than significant impact*.



**b) Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within state scenic highway?**

**No Impact:** There are no officially designated State Scenic Highways located in the City of Tulare. Highway 198 is the nearest Eligible State Scenic Highway and is located approximately 8 miles north of the Project site. The proposed Project would not damage any scenic resources within a state scenic highway and there is *no impact*.

**c) In non-urbanized areas, would the Project substantially degrade the existing visual character or quality of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the Project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality?**

**No Impact:** The proposed Project site is adjacent to an urbanized area with single-family residences existing to the north and being constructed to the west. There are also rural residential properties existing within approximately 1,000 feet to the south. The materials, signage, fencing, landscaping, and building materials used in the construction of the Project will be selected based on their ability to improve the overall visual character of the area. The proposed Project will comply with all applicable zoning and other regulations governing scenic quality. There is *no impact*.

**d) Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?**

**Less than Significant Impact:** The proposed Project would result in new lighting sources on the Project site consistent with adjacent residential development. New lighting sources would include interior lighting from residences, street lighting, and security lighting. All street and landscape lighting will be consistent with the City's lighting standards, which are developed to minimize impacts related to excessive light and glare. Additionally, the Project would comply with the City's General Plan Policies LU-P13.24 and LU-P13.25 to prevent excess spillover lighting that could otherwise occur within the vicinity of the Project area. Although the Project will introduce new light sources to the area, all lighting will be consistent with adjacent residential land uses and the City's lighting standards. The impacts are *less than significant*.

## II. AGRICULTURE AND FOREST RESOURCES:

<p><b>In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland.</b></p> <p><b>In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and forest carbon measurement methodology provided in the Forest Protocols adopted by the California Air Resources Board. Would the Project:</b></p>	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act Contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

timberland Production (as defined by Government Code section 51104(g))?				
d) Result in the loss of forestland or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forestland to non-forest use?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### **Environmental Setting**

Agriculture is a vital component of the City of Tulare's economy and is a significant source of the City's cultural identity. As such, preserving the productivity of agricultural lands is integral to maintaining the City's culture and economic viability.

The proposed Project site is not under the Williamson Act Contract but is designated as Prime Farmland under the Important Farmland Mapping and Monitoring Program (FMMP). The Project site is currently used for row-crop agriculture and is bounded by agricultural activities to the North, South and East.

### **Regulatory Setting**

#### **California Land Conservation Act of 1965**

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, allows local governments to enter into contracts with private landowners to restrict the activities on specific parcels of land to agricultural or open space uses. The landowners benefit from the contract by receiving greatly reduced property tax assessments. The California Land Conservation Act is overseen by the California Department of Conservation; however local governments are responsible for determining specific allowed uses and enforcing the contract.

#### **Right to Farm Ordinance**

Tulare County adopted a "Right to Farm Ordinance," to protect the rights of commercial farming operations, while promoting a "good neighbor policy" between these uses. Under this ordinance, property owners and residents are made aware that they may experience inconveniences due to commercial agricultural operations.

## California Farmland Mapping and Monitoring Program (FMMP)

The FMMP is implemented by the California Department of Conservation (DOC) to conserve and protect agricultural lands within the State. Land is included in this program based on soil type, annual crop yields, and other factors that influence the quality of farmland. The FMMP mapping categories for the most important statewide farmland are as follows:

- **Prime Farmland** has the ideal physical and chemical composition for crop production. It has been used for irrigated production in the four years prior to classification and can produce sustained yields. 51% of the Tulare Planning Area is classified as Prime Farmland.
- **Farmland of Statewide Importance** has also been used for irrigated production in the four years prior to classification and is only slightly poorer quality than Prime Farmland. 11% of the Tulare Planning Area is classified as Farmland of Statewide Importance.
- **Unique Farmland** has been cropped in the four years prior to classification and does not meet the criteria for Prime Farmland or Farmland of Statewide Importance but has produced specific crops with high economic value. Less than 1% of the Tulare Planning Area is classified as Unique Farmland.
- **Farmland of Local Importance** encompasses farmland that does not meet the criteria for the previous three categories. These may lack irrigation, produce major crops, be zoned as agricultural, and/or support dairy. 2% of the Tulare Planning Area is classified as Farmland of Local Importance.

## City of Tulare Code of Ordinances – Chapter 10.222: Farmland Mitigation

The objectives set forth in § 10.222.020 are as follows:

- “A) Protect agriculture as a crucial component of Tulare's economy and cultural heritage;
- B) Protect and preserve agricultural lands from the effects of urban encroachment;
- C) Balance the need for agricultural land conservation with other public goals in Tulare, including the need for housing, commercial, industrial, and infrastructure development; and
- D) Foster coordination and cooperation by the City of Tulare with the County of Tulare, Local Agency Formation Commission, and neighboring cities, including the City of Visalia, to facilitate an integrated and comprehensive regional approach to agricultural land conservation.”

(Ord. 2020-03, passed 2-18-2020)

§ 10.22.050 outlines the “Mitigation Obligations”, which apply to the conversion of one or more acres of Critical Farmland (Prime, Farmland of Statewide Importance, Unique Farmland, Grazing Land) into a non-agricultural use. The mitigation policy is as follows:

- “A) As mitigation for the conversion of critical farmland, the applicant shall arrange for the imposition of an agricultural conservation easement on no less than one acre of mitigation

land for each acre of land proposed for conversion. The applicant shall convey, or arrange for the conveyance of, such agricultural conservation easement to a qualified entity. The mitigation land shall be comparable to the land proposed for conversion, as provided in § 10.222.070 of this chapter.”

### **City of Tulare General Plan**

The 2035 General Plan includes the policies related to agricultural resources that correlate to the proposed Project:

- **COS-P3.1 Protect Interim Agricultural Activity.** The City shall protect the viability of existing interim agricultural activity in the UDB to the extent possible.
- **COS-P3.3 Agricultural Disclosures.** The City shall require that developers of residential Projects, which are within general proximity of agricultural operations in the city, to provide notification to new homeowners within their deeds of the City’s right to farm ordinance.
- **COS-P3.12 Mitigation for Agricultural Land Conversion.** The City shall create and adopt a mitigation program to address the conversion of Prime Farmland & Farmland of Statewide Importance within the UDB and outside the city limits to non-agricultural uses. This mitigation program shall:
  - Require a 1:1 ratio of agricultural land preserved for every acre of land converted.
  - Require land to be preserved be equivalent to the land converted, e.g. Prime Farmland, and further require that the land to be preserved has adequate existing water supply to support agricultural use, is designated and zoned for agriculture, is located outside of a city UDB, and is within the southern San Joaquin Valley.
  - Require mitigation prior to or at time of impact.
  - Allow mitigation to be provided either by purchase of agricultural easements or by payment of agricultural mitigation fees, but state that purchase of conservation easements is the preferred form of mitigation. Both purchase of easements and payment of mitigation fees should cover not only the cost of an agricultural easement, but additional costs of transactional fees and administering, monitoring, and enforcing the easement.
  - Require easements to be held by and/or mitigation fees to be transferred to a qualifying entity, such as a local land trust with demonstrated experience administering, monitoring and enforcing agricultural easements.
  - Require the qualifying entity to submit annual status and monitoring reports to the City and to Tulare County.

- Allow stacking of conservation and agricultural easements if habitat needs of species on conservation easement are compatible with agricultural activities/use on agricultural easement.
- Allow exemptions for conversion of land to agricultural tourism uses, agricultural processing uses, agricultural buffers, public facilities, and roadways.

### **Tulare County General Plan**

The 2030 Tulare County General Plan contains following goals related to agricultural resources that correlate to the proposed Project:

- Promote the long-term preservation of productive and potentially productive agricultural lands and to accommodate agricultural-support services and agriculturally related activities that support the viability of agriculture and further the County's economic development goals;
- Support increased viability of agriculture production and promote high-value, employment-intensive, and diverse agricultural production, and processing in Tulare County;
- Support the reasonable development and economic viability of animal confinement facilities.

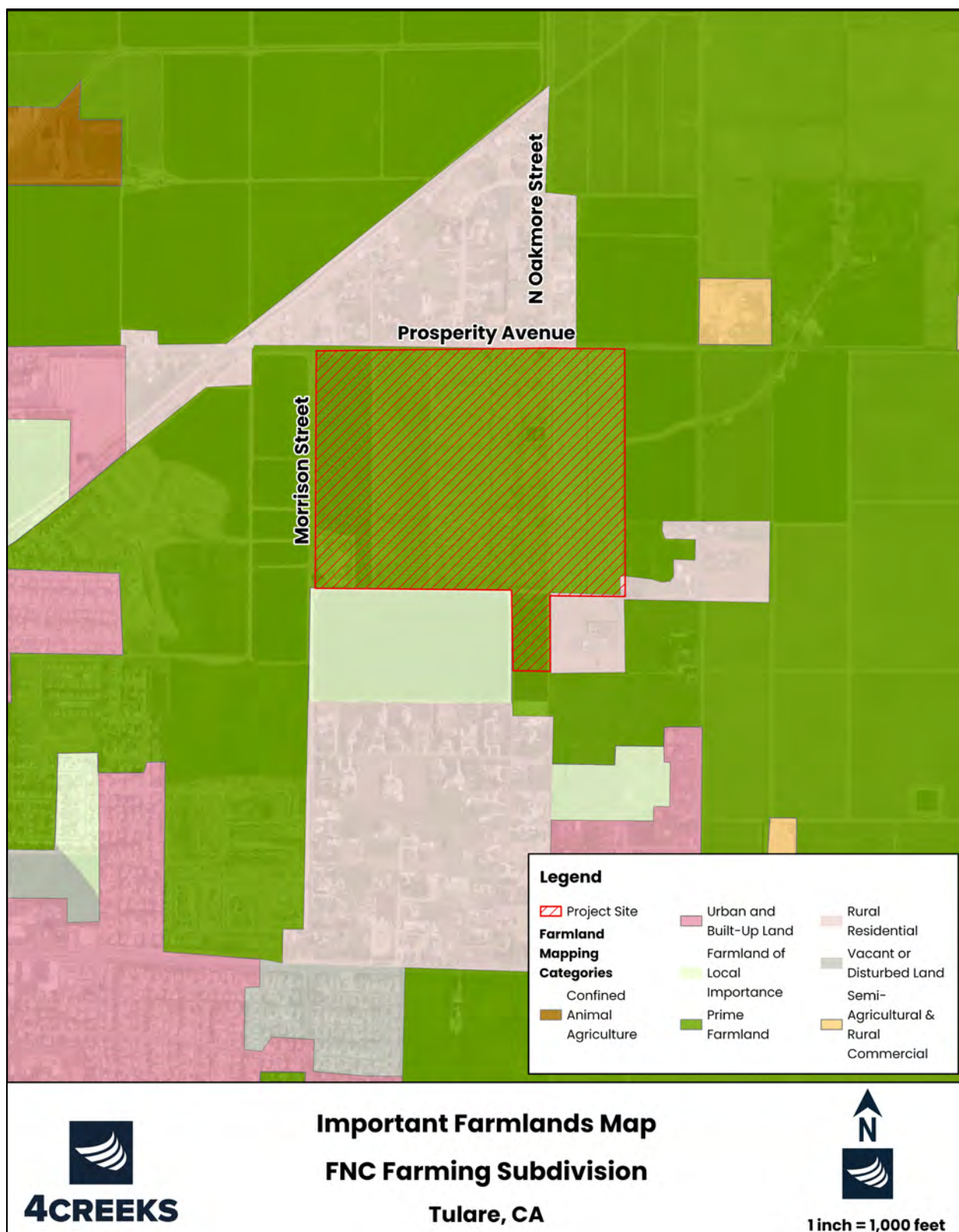


Figure 4: Important Farmlands Map

## **Discussion**

**a) Would the Project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?**

**Potentially Significant Impact:** The Project site is currently occupied by agricultural land with field crops. Implementation of the proposed Project would result in the permanent conversion of approximately 140.32 acres of Prime Farmland as classified by the California Department of Conservation Farmland Mapping and Reporting Program to non-agricultural uses. The Project would include the development of Single-Family Residences and a small community park/pond. The Project site is actively utilized for the agricultural production of millet-rice and blueberries. The site also contains an on-site irrigation water supply, which includes a 0.5-acre pump station stock pond.

Although the proposed site is located on Prime Farmland, the conversion of the site to non-agricultural land is in accordance with the City's 2035 General Plan. The site is within the 2035 Urban Development Boundary and is designated as Residential Estate (2.1-3 D.U./acre) and Rural Residential (0-2 D.U./acre) by the General Plan. Although the amount of "Prime Farmland" lost to this development represents only a fraction of a percent of the 366,136 acres of Prime Farmland available within Tulare County, the direct loss of this farmland is considered significant, even with implementation of Mitigation Measure AG-1.

Mitigation Measure AG-1 would require the Project proponent to mitigate the loss of agricultural land according to the requirements set forth in the City of Tulare Code of Ordinances, Chapter 10.222. Mitigation Measure AG-1 requires the acquisition of agricultural conservation easements of no less than one acre for every acre of critical farmland being converted to non-agricultural uses. Although Mitigation Measure AG-1 will preserve farmland that may be converted to non-agricultural use in the future, it does not provide additional farmland to replace the 140.32 acres lost as a result of the proposed Project. Although the proposed Project would constitute a small portion of the County's overall Prime Farmland, the conversion of the site to non-agricultural uses could result in *potentially significant* impacts even with incorporation of Mitigation Measure AG-1.

**b) Would the Project conflict with existing zoning for agricultural use, or a Williamson Act Contract?**

**Less Than Significant Impact:** The site is currently zoned for Exclusive Agriculture 20-Acres and 40-Acres (AE-20, AE-40) by Tulare County. Although the site is currently under Tulare County jurisdiction, it is within the City of Tulare's Urban Development Boundary and is proposed to be annexed into the City. The Project site currently has a City of Tulare General Plan designation of Residential Estate and Rural Residential which would allow the



conversion of farmland to residential development on larger lots. The applicant is proposing to change the General Plan land use designation to low-density residential to accommodate the proposed development of the Project. The Project site is also proposed to be pre-zoned to the R-1-5 (Single-Family Residential, 5,000 sq. ft. minimum lot area zoning designation). This action, if approved would make the Project consistent. The Project site is not subject to a Williamson Act Contract. There is *a less than significant impact*.

- c) Would the Project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned timberland Production (as defined by Government Code section 51104(g))?**

**No Impact:** The Project site is not zoned for forest or timberland production. Therefore, *no impacts* would occur.

- d) Would the Project result in the loss of forestland or conversion of forest land to non-forest use?**

**No Impact:** No conversion of forestland, as defined under Public Resource Code or General Code, will occur as a result of the Project and there would be *no impacts*.

- e) Would the Project involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forestland to non-forest use?**

**Potentially Significant Impact:** As described above, the Project proposes the permanent conversion of approximately 140.32-acres of agricultural land to non-agricultural land use. Although the Project proponent will be required to mitigate the loss of agricultural land at a ratio of 1:1 through implementation of conservation easements per Mitigation Measure AG-1, the Project will result in the conversion of Farmland to non-agricultural uses. Additionally, the implementation of 140.32 acres of residential development may further promote the conversion of nearby agricultural sites to non-agricultural land uses. This may occur as a result of population growth and the resource needs associated with a growing population, resulting in the development of commercial land uses adjacent to the proposed residential development. Since agricultural lands would be converted to non-agricultural uses, there would be *potentially significant* impacts to this resource, which will be analyzed more closely in the EIR prepared for this Project. The Project does not include any features which could result in the conversion of forestland to non-forest use.

## **Mitigation Measure**

**Mitigation Measure AG-1:** Prior to issuance of a grading or building permit, whichever occurs first, the Project proponent shall provide written evidence of completion of one or more of the following measures, consistent with Tulare General Plan Policy COS-P3.12 to mitigate the loss of agricultural land at a ratio of 1:1 for net acreage before conversion:

- Funding and/or purchasing agricultural conservation easements which shall be managed and maintained by an appropriate entity;
- Purchasing credits from an established agricultural farmland mitigation bank;
- Contributing agricultural land or equivalent funding to an organization that provides for the preservation of farmland in California; or
- Participating in any agricultural land mitigation program adopted by Tulare County provides equal or more effective mitigation than the measures listed above.

The net acreage calculation used to determine mitigation lands shall exclude the existing roads and areas already developed with structures on the Project site. A site plan shall be submitted to the City of Tulare Community Development Department to substantiate the net acreage calculation, along with written evidence of compliance. Mitigation land shall meet the definition of Prime Farmland and be of similar agricultural quality or higher, as established by the Department of Conservation. Completion of the selected measure or a combination of selected mitigation measures can occur on qualifying land within the southern San Joaquin Valley (Kings, Tulare, or Kern County) that is located outside of a City's UDB and shall be approved by the City of Tulare Community Development Department Director.

### III. AIR QUALITY

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Expose sensitive receptors to substantial pollutant concentrations?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### **Environmental Setting**

Air pollution is directly related to regional topography. Topographic features can either stimulate the movement of air or restrict air movement. California is divided into regional air basins based on topographic air drainage features. The proposed Project site is within the San Joaquin Valley Air Basin, which is bordered by the Sierra Nevada Mountains to the East, Coastal Ranges to the West, and the Tehachapi Mountains to the South.

The mountain ranges surrounding the San Joaquin Valley Air Basin (SJVAB) serve to restrict air movement and prevent the dispersal of pollution. As a result, the SJVAB is highly susceptible to pollution accumulation over time. As shown in Table 1, the SJVAB is in nonattainment for several pollutant standards. The primary pollutants of concern in the San Joaquin Valley are ozone (O<sub>3</sub>) and PM<sub>10</sub>.

Pollutant	Designation/Classification	
	Federal Standards	State Standards
Ozone – One hour	No Federal Standard <sup>f</sup>	Nonattainment/Severe
Ozone – Eight hour	Nonattainment/Extreme <sup>e</sup>	Nonattainment
PM 10	Attainment <sup>c</sup>	Nonattainment
PM 2.5	Nonattainment <sup>d</sup>	Nonattainment
Carbon Monoxide	Attainment/Unclassified	Attainment/Unclassified
Nitrogen Dioxide	Attainment/Unclassified	Attainment

Sulfur Dioxide	Attainment/Unclassified	Attainment
Lead (Particulate)	No Designation/Classification	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified
Vinyl Chloride	No Federal Standard	Attainment
<p><sup>a</sup> See 40 CFR Part 81</p> <p><sup>b</sup> See CCR Title 17 Sections 60200–60210</p> <p><sup>c</sup> On September 25, 2008, EPA redesignated the San Joaquin Valley to attainment for the PM10 National Ambient Air Quality Standard (NAAQS) and approved the PM10 Maintenance Plan.</p> <p><sup>d</sup> The Valley is designated nonattainment for the 1997 PM2.5 NAAQS. EPA designated the Valley as nonattainment for the 2006 PM2.5 NAAQS on November 13, 2009 (effective December 14, 2009).</p> <p><sup>e</sup> Though the Valley was initially classified as serious nonattainment for the 1997 8-hour ozone standard, EPA approved Valley reclassification to extreme nonattainment in the Federal Register on May 5, 2010 (effective June 4, 2010).</p> <p><sup>f</sup> Effective June 15, 2005, the U.S. Environmental Protection Agency (EPA) revoked the federal 1-hour ozone standard, including associated designations and classifications. EPA had previously classified the SJVAB as extreme nonattainment for this standard. EPA approved the 2004 Extreme Ozone Attainment Demonstration Plan on March 8, 2010 (effective April 7, 2010). Many applicable requirements for extreme 1-hour ozone nonattainment areas continue to apply to the SJVAB.</p>		

Table 1. San Joaquin Valley Attainment Status; Source: SJVAPCD

### Valley Fever

Valley Fever is an illness caused by a fungus (*Coccidioides immitis* and *C. posadasii*) that grows in soils under certain conditions. Favorable conditions for the Valley Fever fungus include low rainfall, high summer temperatures, and moderate winter temperatures. In California, the counties with the highest incident of Valley Fever are Fresno, Kern and Kings counties. When soils are disturbed by wind or activities like construction and farming, Valley Fever fungal spores can become airborne. The spores present a potential health hazard when inhaled. Individuals in occupations such as construction, agriculture, and archaeology have a higher risk of exposure due to working in areas of disturbed soils which may have the Valley Fever fungus.

## **Regulatory Setting**

### **City of Tulare General Plan (2035)**

The 2035 General Plan includes the following goals and policies related to air quality that correlate to the proposed Project:

**Goal AQ-1:** To promote better air quality conditions locally and regionally.

- **AQ-P1.2 Cumulative Air Quality Impacts.** The City shall require developments to be located, designed, and constructed in a manner that would minimize cumulative air quality impacts. Developers shall be required to present alternatives that reduce air emissions and enhance, rather than harm, the environment.
- **AQ-P2.7 Mixed Land Uses.** The City shall encourage the mixing of land uses that generate high trip volumes, especially when such uses can be mixed with support services and where they can be served by public transportation.

### **Federal Clean Air Act**

The 1977 Federal Clean Air Act (CAA) authorized the establishment of the National Ambient Air Quality Standards (NAAQS) and set deadlines for their attainment. The Clean Air Act identifies specific emission reduction goals, requires both a demonstration of reasonable further progress and an attainment demonstration, and incorporates more stringent sanctions for failure to meet interim milestones. The U.S. EPA is the federal agency charged with administering the Act and other air quality-related legislation. EPA's principal functions include setting NAAQS; establishing minimum national emission limits for major sources of pollution; and promulgating regulations. Under CAA, the NCCAB is identified as an attainment area for all pollutants.

### **California Clean Air Act**

California Air Resources Board coordinates and oversees both state and federal air pollution control programs in California. As part of this responsibility, the California Air Resources Board monitors existing air quality, establishes California Ambient Air Quality Standards, and limits allowable emissions from vehicular sources. Regulatory authority within established air basins is provided by air pollution control and management districts, which control stationary-source and most categories of area-source emissions and develop regional air quality plans. The Project is located within the jurisdiction of the San Joaquin Valley Air Pollution Control District.

The state and federal standards for the criteria pollutants are presented in Section 8.4 of The San Joaquin Valley Unified Air Pollution Control District's 2015 "Guidance for Assessing and Mitigating Air Quality Impacts". These standards are designed to protect public health and

welfare. The “primary” standards have been established to protect the public health. The “secondary” standards are intended to protect the nation’s welfare and account for air pollutant effects on soils, water, visibility, materials, vegetation, and other aspects of general welfare. The U.S. EPA revoked the national 1-hour ozone standard on June 15, 2005, and the annual PM<sub>10</sub> standard on September 21, 2006, when a new PM<sub>2.5</sub> 24-hour standard was established.

Pollutant	Averaging Time	California Standards <sup>1</sup>		National Standards <sup>2</sup>		
		Concentration <sup>3</sup>	Method <sup>4</sup>	Primary <sup>3,5</sup>	Secondary <sup>3,6</sup>	Method <sup>7</sup>
<b>Ozone (O<sub>3</sub>)</b>	1 Hour	0.09 ppm (180 µg/m <sup>3</sup> )	Ultraviolet Photometry	--	Same as Primary Standard	Ultraviolet 8 Hour Photometry
	8 Hour	0.070 ppm (137 µg/m <sup>3</sup> )		0.075 ppm (147 µg/m <sup>3</sup> )		
<b>Respirable Particulate Matter (PM<sub>10</sub>)</b>	24 Hour	50 µg/m	Gravimetric or Beta Attenuation	150 µg/m <sup>3</sup>	Same as Primary Standard	Inertial Separation and Gravimetric Annual Analysis
	Annual Arithmetic Mean	20 µg/m <sup>3</sup>		--		
<b>Fine Particulate Matter (PM<sub>2.5</sub>)</b>	24 Hour		Gravimetric or Beta Attenuation	35 µg/m <sup>3</sup>	Same as Primary Standard	Inertial Separation and Gravimetric Annual Analysis
	Annual Arithmetic Mean	12 µg/m <sup>3</sup>		15 µg/m <sup>3</sup>		
<b>Carbon Monoxide (CO)</b>	1 Hour	20 ppm (23 mg/m <sup>3</sup> )	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m <sup>3</sup> )	--	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m <sup>3</sup> )		9 ppm (10 mg/m <sup>3</sup> )	--	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m <sup>3</sup> )		--	--	
<b>Nitrogen Dioxide (NO<sub>2</sub>)<sup>8</sup></b>	1 Hour	0.18 ppm (339 µg/m <sup>3</sup> )	Gas Phase Chemiluminescence	100 ppb (188 µg/m <sup>3</sup> )	--	Gas Phase Annual Chemiluminescence
	Arithmetic Mean	0.030 ppm (57 µg/m <sup>3</sup> )		53 ppb (100 µg/m <sup>3</sup> )	Same as Primary Standard	
<b>Sulfur Dioxide</b>	1 Hour	0.25 ppm (655 µg/m <sup>3</sup> )	Ultraviolet Fluorescence	75 ppb (196 µg/m <sup>3</sup> )	--	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	--		--	0.5 ppm (1300 µg/m <sup>3</sup> )	

Pollutant	Averaging Time	California Standards <sup>1</sup>		National Standards <sup>2</sup>		
		Concentration <sup>3</sup>	Method <sup>4</sup>	Primary <sup>3,5</sup>	Secondary <sup>3,6</sup>	Method <sup>7</sup>
	24 Hour	0.04 ppm (105 µg/m³)		0.14 ppm (for certain areas)9	--	
	Annual Arithmetic Mean	--		0.030 ppm (for certain areas)9	--	
Lead <sup>10,11</sup>	30 Day Average	1.5 µg/m³	Atomic Absorption	--	--	High Volume Sampler and Atomic Absorption
	Calendar Quarter	--		1.5 µg/m3 (for certain areas)11	Same as Primary Standard	
	Rolling 3-Month Average	--		0.15 µg/m³		
Visibility Reducing Particles <sup>12</sup>	8 Hour	See footnote 12	Beta Attenuation and Transmittance through Filter Tape	No National Standard		
Sulfates	24 Hour	25 µg/m³	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m³)	Ultraviolet Fluorescence			
Vinyl Chloride <sup>10</sup>	24 Hour	0.01ppm (26 µg/m³)	Gas Chromatography			

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM<sub>10</sub>, PM<sub>2.5</sub>, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM<sub>10</sub>, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m<sup>3</sup> is equal to or less than one. For PM<sub>2.5</sub>, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air

Pollutant	Averaging Time	California Standards <sup>1</sup>		National Standards <sup>2</sup>		
		Concentration <sup>3</sup>	Method <sup>4</sup>	Primary <sup>3,5</sup>	Secondary <sup>3,6</sup>	Method <sup>7</sup>
<p>quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.</p> <p>4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.</p> <p>5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.</p> <p>6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.</p> <p>7. Reference method as described by the U.S. EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the U.S. EPA.</p> <p>8. To attain the 1-hour national standard, the 3-year average of the annual 98<sup>th</sup> percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national standards are in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national standards to the California standards the units can be converted from ppb to ppm. In this case, the national standards of 53 ppb and 100 ppb are identical to 0.053 ppm and 0.100 ppm, respectively.</p> <p>9. On June 2, 2010, a new 1-hour SO<sub>2</sub> standard was established, and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99<sup>th</sup> percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO<sub>2</sub> national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved. Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.</p> <p>10. The ARB has identified lead and vinyl chloride as ‘toxic air contaminants’ with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.</p> <p>11. The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 µg/m<sup>3</sup> as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.</p> <p>12. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are “extinction of 0.23 per kilometer” and “extinction of 0.07 per kilometer” for the statewide and Lake Tahoe Air Basin standards, respectively.</p>						

*Table 2. Ambient Air Quality Standards; Source: SJVAPCD*



### San Joaquin Valley Air Pollution Control District (SJVAPCD)

The SJVAPCD is responsible for enforcing air quality standards in the Project area. To meet state and federal air quality objectives, the SJVAPCD adopted the following thresholds of significance for Projects:

Pollutant/Precursor	Construction Emissions	Operational Emissions	
		Permitted Equipment and Activities	Non-Permitted Equipment and Activities
	Emissions (tpy)	Emissions (tpy)	Emissions (tpy)
<b>CO</b>	100	100	100
<b>Nox</b>	10	10	10
<b>ROG</b>	10	10	10
<b>SOx</b>	27	27	27
<b>PM10</b>	15	15	15
<b>PM2.5</b>	15	15	15

*Table 3. SJVAPCD Thresholds of Significance for Criteria Pollutants; Source: SJVAPCD*

The following SJVAPCD rules and regulations may apply to the proposed Project:

- **Rule 3135:** Dust Control Plan Fee. All Projects which include construction, demolition, excavation, extraction, and/or other earth moving activities as defined by Regulation VIII (Described below) are required to submit a Dust Control Plan and required fees to mitigate impacts related to dust.
- **Rule 4101:** Visible Emissions. District Rule 4101 prohibits visible emissions of air contaminants that are dark in color and/or have the potential to obstruct visibility.
- **Rule 9510:** Indirect Source Review (ISR). This rule reduces the impact PM10 and NOX emissions from growth on the SJVB. This rule places application and emission reduction requirements on applicable development Projects in order to reduce emissions through onsite mitigation, offsite SJVAPCD administered Projects, or a combination of the two. This Project will submit an Air Impact Assessment (AIA) application in accordance with Rule 9510's requirements.
- **Regulation VIII:** Fugitive PM10 Prohibitions. Regulation VIII is composed of eight rules which together aim to limit PM10 emissions by reducing fugitive dust. These rules contain required management practices to limit PM10 emissions during construction, demolition, excavation, extraction, and/or other earth moving activities.

## Discussion

### a) Would the Project conflict with or obstruct implementation of the applicable air quality plan?

**Less Than Significant Impact:** The proposed Project is located within the boundaries of the San Joaquin Valley Air Pollution Control District (SJVAPCD) and would result in air pollutant emissions that are regulated by the air district during both its construction and operational phases. The SJVAPCD is responsible for bringing air quality in the Tulare Planning Area into compliance with federal and state air quality standards. The Air District has Particulate Matter (PM) plans, Ozone Plans, and Carbon Monoxide Plans that serve as the clean air plan for the basin. Together, these plans quantify the required emission reductions to meet federal and state air quality standards and provide strategies to meet these standards. The SJVAPCD adopted the Indirect Source Review (ISR) Rule in order to fulfill the District's emission reduction commitments in its PM10 and Ozone (NOx) attainment plans and has since determined that implementation and compliance with ISR would reduce the cumulative PM10 and NOx impacts anticipated in the air quality plans to a less than significant level. Included in the particulate matter category is diesel particulate matter (DPM), which is considered a toxic air contaminant (TAC) and is also monitored by the SJVAPCD. Further discussion concerning this pollutant is included in Threshold B as well as the EIR prepared for the Project.

**Construction Phase.** Project construction would generate pollutant emissions from the following construction activities: site preparation, grading, building construction, application of architectural coatings, and paving. The construction related emissions from these activities were calculated using CalEEMod. The full CalEEMod Report can be found in Attachment A1. As shown in Table 4 below, Project construction related emissions do not exceed the thresholds established by the SJVAPCD.

	CO (tpy)	ROG (tpy)	SOx (tpy)*	NOx (tpy)	PM10 (tpy)	PM2.5 (tpy)
<b>Emissions Generated from Project Construction</b>	<b>3.4420</b>	<b>3.4553</b>	<b>0.0085</b>	<b>3.5006</b>	<b>1.3955</b>	<b>0.6685</b>
<b>SJVAPCD Air Quality Thresholds of Significance</b>	<b>100</b>	<b>10</b>	<b>27</b>	<b>10</b>	<b>15</b>	<b>15</b>
*Threshold established by SJVAPCD for SOx, however emissions are reported as SO2 by CalEEMod.						

Table 4. Projected Construction Emissions for Criteria Pollutants; Source: SJVAPCD, CalEEMod (v. 2020.4.0) Analysis (Attachment A1)

**Operational Phase.** Implementation of the proposed Project would result in long-term emissions associated with area sources, such as natural gas consumption, landscaping, applications of architectural coatings, and consumer products, as well as mobile emissions. However, the emissions will not exceed the thresholds established by the SJVAPCD. Operational emissions from these factors were calculated using CalEEMod. The full CalEEMod report for the Project can be found in Attachment A1. See Table 5 for the estimated operational emissions resulting from the proposed Project.

	CO (tpy)	ROG (tpy)	SOx (tpy)*	NOx (tpy)	PM10 (tpy)	PM2.5 (tpy)
<b>Operational Emissions (Dry Years)</b>	<b>19.6762</b>	<b>5.8669</b>	<b>0.0391</b>	<b>2.2716</b>	<b>5.4895</b>	<b>1.4981</b>
<b>SJVAPCD Air Quality Thresholds of Significance</b>	<b>100</b>	<b>10</b>	<b>27</b>	<b>10</b>	<b>15</b>	<b>15</b>
*Threshold established by SJVAPCD for SOx, however emissions are reported as SO2 by CalEEMod.						

*Table 5. Projected Operational Emissions for Criteria Pollutants; Source: SJVAPCD, CalEEMod (v. 2020.4.0) Analysis (Attachment A1)*

Because the emissions from both construction and operation of the proposed Project would be at or below the thresholds of significance established by the SJVAPCD, the Project would not conflict with or obstruct implementation of an applicable air quality plan and there is *a less than significant impact*.

**b) Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard?**

**Less Than Significant Impact:** The SJVAPCD is responsible for bringing air quality in the Tulare Planning Area into compliance with federal and state air quality standards. The significance thresholds and rules developed by the SJVAPCD are designed to prevent Projects from violating air quality standards or significantly contributing to existing air quality violations. As discussed above, neither construction-related emissions nor operation-related emissions will exceed thresholds established by the SJVAPCD. The Project will comply with all applicable SJVAPCD rules and regulations, which will further reduce the potential for any significant impacts related to air quality as a result of Project implementation. Because these thresholds and regulations are designed to achieve and/or maintain federal and state air quality standards, and the Project is compliant with these thresholds and regulations, the Project will not violate an air

quality standard or significantly contribute to an existing air quality violation. The impact is *less than significant*.

**c) Would the Project expose sensitive receptors to substantial pollutant concentrations?**

**Potentially Significant Impact:** The single-family residences located to the North are the closest sensitive receptors. The construction phase of the Project would release diesel particulate matter (DPM) emissions which has been classified as a carcinogen. DPM is formally classified as a Toxic Air Contaminant by the EPA and the California Air Resources Board (CARB), and the sensitive receptors near the site may be negatively impacted by exposure to the pollutant. The impact on sensitive receptors is *potentially significant* and will be analyzed further in the Health Risk Assessment (Core Environmental Consulting) and the EIR prepared for the Project.

**d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?**

**Less Than Significant Impact:** The Project will create temporary localized odors during Project construction. The proposed Project will not introduce conflicting land uses (surrounding land includes residential neighborhoods) to the area and will not have any component that would typically emit odors. The Project would not create objectionable odors affecting a substantial number of people. Therefore, impacts would be *less than significant*.

### III. BIOLOGICAL RESOURCES

<b>Would the Project:</b>	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish & Game or U.S. fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through director removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion for this section originates from the Biological Resource Assessment (BRA) that was prepared for this Project by SOAR Environmental Consulting to identify biological resources present or potentially present on the Project site and assess the significance of Project impacts on such resources per provisions of the California Environmental Quality Act (CEQA), the Federal Clean Water Act (CWA), the state and federal endangered species acts (FESA and CESA respectively), the California Fish and Game Code, and the California Water Code. The research included the California Natural Diversity Database (CNDDB), the United States Fish

and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC), and the California Native Plant Society (CNPS) Online Rare Plant Inventory. The full document can be found in Attachment B.

### **Environmental Setting**

The site is topographically flat and is bounded by agricultural uses to the South and East, single-family housing to the North, and a single-family subdivision that is currently under construction to the West. The property was used for irrigated row crops until recently. Currently the Project Area is partially covered with a tarp or is bare ground after row crop removal, with annual grasses and herbaceous weeds in portions where there is no tarp cover. A small portion of the property is used for potted blueberry cultivation. The site also contains an on-site irrigation water supply, which includes a 0.5-acre pump station pond.

The Project Area is approximately 4.7 miles south of the City of Visalia and immediately east of the City of Tulare in the Central Valley near the Sierra Nevada foothills. The property was used for irrigated row crops until recently. Currently the Project Area is primarily bare ground after irrigated row crop removal, with limited disturbance tolerant annual grasses and herbaceous weeds in patches, and few landscaped shrubs. A portion of the site is covered with a tarp to prevent weeds and a small portion is used to cultivate potted blueberries. A buried underground ditch, the Tulare Colony Ditch, occurs along the northern boundary. The topography is relatively flat, ranging from 295 feet above sea level to the south, sloping up to 302 feet above sea level to the north.

The Central Valley is bordered to the east by the Sierra Nevada Mountain Range to the east and the Coast Ranges to the west. According to the USDA NRCS Soil Survey the Project Area is composed from two soil types: Hanford sandy loam, 0 to 2 percent slopes, and Nord fine sandy loam, 0 to 2 percent slopes. Like most of California, Tulare is considered a Mediterranean climate with warm, dry summers and moist, cold winters. Summer temperatures often reach above 90 degrees Fahrenheit, and the humidity is relatively low. Winter temperatures are often below 60 degrees Fahrenheit during the day and rarely exceed 70 degrees. On average, Tulare receives approximately 11 to 12 inches of precipitation in the form of rainfall yearly, most of which occurs between October and March.

### **Site Description**

The Project area is located on the corner of Morrison Street and Prosperity Avenue in Tulare County, California and is comprised of Assessor Parcel Numbers (APN) 172-080-002, 172-010-021, 172-010-022 and 184-020-010. The Project Area is in the eastern portion of the City of Tulare's Sphere of Influence, approximately 2 miles east of SR-99, 0.5 mile east of SR-65 and 0.45 mile north of SR-137. Although the site is currently under Tulare County jurisdiction, the 140.32-acre site is planned to be annexed into the City of Tulare as part of the proposed Project. A man-

excavated canal, the Tulare Colony Ditch, runs across east to west through the Project Area on the north side of the property near Prosperity Avenue.

The Project Area is located in the *Tulare* USGS 7.5-minute quadrangle in Township 20 South, Range 25 East, in the northeast quarter of Section 6 and in the northwest quarter of Section 5. Row crops surround the Project Area to the northeast and west, fallow fields to the immediate east but commercial and urban residential 0.5 miles east, urban residential to the north, and a mix of rural residential and orchards to the south. The Tulare Colony Ditch connects with Deep Creek 171 feet west, Outside Creek is 5.2 miles east, and Tulare Lake is 30 miles southwest to the Project Area. The irrigation system located on the north boundary of the Project Area has hydrologic connectivity to Tulare Lake, a seasonal lake and playa. A new subdivision including several city streets is being developed on the cleared properties to the east. The Project Area is fairly level and ranges from 295 to 302 feet elevation above mean sea level. The properties have functioned as active farmland with irrigated row crops, including a vegetated pump station irrigation pond. An underground irrigation drainage ditch is located along the northern boundary.

Prior to performing the Habitat Assessment, SOAR Environmental conducted a records search for threatened or endangered species that could potentially occur in the vicinity of the Project Area. The records search included a review of the California Natural Diversity Database (CNDDB), the United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC), and California Native Plant Society (CNPS) Online Rare Plant Inventory. A full list of special-status wildlife and vascular plant species with the potential to occur in the Project Area is included below in Table 6.

Results from the data records search found 25 special-status species, comprised of 12 wildlife and 13 plant species. An analysis of recent occurrences, habitat suitability and proximity within 5-miles to the Project Area showed that there is one special-status wildlife species with a high potential of occurrence and four special-status wildlife species with low potential for occurrence. Special-status species for which there are no regulatory implications (i.e., lack of suitable habitat or no record of historical occurrences within 5 miles) are excluded from further analysis.

**I. Species with High Potential for Occurrence:**

- Burrowing Owl (*Athene cunicularia*)

**II. Species with Low Potential for Occurrence:**

- San Joaquin Kit Fox (*Vulpes macrotis mutica*)
- Swainson's Hawk (*Buteo swainsonii*)
- Western Mastiff Bat (*Eumops perotis*)

- Western Pond Turtle (*Actinemys marmorata*)

Special-status species and sensitive habitats include plant and wildlife taxa, or other unique biological features afforded special protection by local land use policies, and/or state and federal regulations. Special-status plant and animal species are those listed as rare, threatened, or endangered under the state or federal Endangered Species Acts or those who are rare enough to become listed in the foreseeable future (Cal. Code Regs. Tit. 14 § 15380). Vegetation communities may call for special status if they are of limited distribution, have high wildlife value, or are particularly vulnerable to disturbance. Listed and special-status species are defined as:

- Listed or proposed for listing under the state or Federal Endangered Species acts.
- Protected under other regulations (e.g., Migratory Bird Treaty Act).
- California Department of Fish & Wildlife (CDFW) Species of Special Concern.
- Listed as species of concern by CNPS or USFWS; and/or
- Receive consideration during environmental review under CEQA.

All species from the search results are listed below including common and non-listed species. The analysis and following determination are based on Habitat Assessment results and the most recent occurrence and proximity to the Project Area (Table X, Table X).

- **Present:** Species known to occur on the site, based on CNDDDB records, and/or were observed on the site during the field survey.
- **High:** Species known to occur on or near the site (based on CNDDDB record within 5 miles), and/or there is suitable habitat on the site.
- **Low:** Species known to occur on or near the site (based on CNDDDB record within 5 miles), but there is no suitable habitat onsite.
- **None:** Species is not known to occur within 5 miles of the site and there is no suitable habitat on the site. -OR- Species was surveyed during the appropriate season with negative results.

Species Name	*Listing Status	Habitat Requirements	Potential for Occurrence on Project Site
<b>Amphibians</b>			
California tiger salamander ( <i>Ambystoma californiense</i> )	FT/ST	Grasslands, oak savannah riparian woodlands and lower elevations of coniferous forests, ditches, vernal pools, and wetlands.	<b>None.</b> Dependent on the presence of vernal pool habitat. Active agricultural land has no potential for the species.



Western Spadefoot Toad ( <i>Spea hammondi</i> )	FC/SSC	Occurs primarily in grassland habitats but can be found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.	<b>None.</b> Dependent on the presence of vernal pool habitat. Additionally, lacks food source due to heavy commercial use of pesticide for agriculture.
<b>Birds</b>			
Swainson's hawk ( <i>Buteo swainsoni</i> )	ST/SSC /BCC/MBTA	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	<b>Low:</b> Species known from a single occurrence over 5 miles from site to the west. Suitable habitat includes bird boxes situated on top of electrical poles and open foraging areas in the fallow fields of row crops.
Belding's Savannah Sparrow ( <i>Passerculus sandwichensis beldingi</i> )	SE/BCC/MBTA	Inhabits coastal salt marshes, from Santa Barbara south through San Diego County. Nests in Salicornia on and about margins of tidal flats.	<b>None.</b> No salt marsh or pickleweed nesting habitat occur in the Project area. No tidal flats.
Bullock's Oriole ( <i>Icterus bullockii</i> )	BCC/MBTA	Found in open broadleaf woods, foraging among leaves in trees.	<b>None.</b> Species is not known to occur on within 5 miles of the site and there is no suitable habitat on the site.
Burrowing Owl ( <i>Athene cunicularia</i> )	SSC/BCC/MBTA	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	<b>High.</b> Small mammal burrows between 2 and 3 inches in diameter were found in abundance providing suitable habitat for this species, and a was observed during the KCOK Habitat Assessment in March 2022.
California Gull ( <i>Larus californicus</i> )	CWL/BCC/MBTA	Littoral waters, sandy beaches, waters and shorelines of bays, tidal mudflats, marshes, lakes, etc. Colonial nesters on islets in large interior lakes, either fresh or strongly alkaline.	<b>None.</b> No habitat occurs for this aquatic bird species.
Marbled Godwit ( <i>Limosa fedoa</i> )	BCC/MBTA	Shortgrass prairies near wetlands.	<b>None.</b> The Project area lacks suitable wetland habitat for this species. The Project area lacks shortgrass prairies near wetlands.
Nuttall's Woodpecker ( <i>Picoides nuttallii</i> )	BCC/MBTA	Wooded canyons and foothills, river woods. In much of range almost always around oaks,	<b>None.</b> No habitat occurs for this woodland bird species.

		especially where oaks meet other trees along rivers, also in pine-oak woods in foothills.	
Oak Titmouse ( <i>Baeolophus inornatus</i> )	BCC/MBTA	Woodland dominated by oaks, riparian habitats, and coast live oak trees within, nests in tree cavities.	<b>None.</b> No habitat occurs for this oak woodland bird species.
<b>Invertebrates</b>			
American Bumble Bee ( <i>Bombus pensylvanicus</i> )	None (vulnerable)	Prefers habitats offered by farmlands and open fields where they nest below the grass or underground.	<b>None:</b> The Project area lacks the native wildflower field nectar habitat needed to support this species.
Monarch butterfly ( <i>Danaus plexippus</i> )	FC	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	<b>None:</b> No roosting, foraging (nectar-flowers) or reproductive host plant habitat (Milkweed, <i>Asclepias</i> sp.) is present in the Project area.
Vernal pool fairy shrimp ( <i>Branchinecta lynchi</i> )	FT	Endemic to the vernal pools in grasslands of the Central Valley, Central Coast mountains, and South Coast mountains, in astatic rain-filled pools. Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	<b>None:</b> No seasonal aquatic habitat for this species, such as vernal pools, occurs in the Project area.
<b>Mammals</b>			
Buena Vista Lake Ornate Shrew ( <i>Sorex ornatus relictus</i> )	FE/SSC	Found near water sources in protective groundcover like deep leaf litter, cattails and fallen logs. Found in grassland and desert scrub within a few hundred feet of water sources, or where water is close to the surface and their prey can be found. Also found in lake with a considerable inland body of standing water, rural environments influenced by humans such as agriculture, silviculture, or aquaculture, wetland areas such as marshes or swamps covered often	<b>None.</b> The irrigation pump pond is an open and exposed area. The Project area lacks a groundcover and is maintained regularly. Regular use of commercial grade pesticide for agriculture may also reduce prey such as snails and worms.

		intermittently or saturated soils, springs, or seeps.	
Western Mastiff Bat ( <i>Eumops perotis californicus</i> )	SSC	Many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, chaparral, etc. Roosts in crevices in cliff faces, high buildings, trees and tunnels.	<b>Low:</b> Limited day/feeding roosting to bird boxes. Open fallow fields provide foraging habitat for this species in the Project area. Species is known from one bat record 5 miles north of Project area.
San Joaquin kit fox ( <i>Vulpes macrotis mutica</i> )	FE/ST	Annual grasslands or grassy open stages with scattered shrubby vegetation. Need loose-textured sandy soils for burrowing, and suitable prey base.	<b>Low:</b> Site has dispersal, foraging and denning habitat and a previous record occurring within 5 miles surrounding the Project area.
Tipton kangaroo rat ( <i>Dipodomys nitratooides nitratooides</i> )	FE/SE	Saltbrush scrub and sink scrub communities in the Tulare Lake Basin of the southern San Joaquin Valley. Needs soft friable soils which escape seasonal flooding. Digs burrows in elevated soil mounds at bases of shrubs.	<b>None:</b> No alkali scrub or sink scrub habitat occurs in the Project area. No seed forage habitat occurs in the Project area. The Project area is an active agricultural field.
<b>Reptiles</b>			
Blunt-nosed leopard lizard ( <i>Gambelia sila</i> )	FE/SE/FP	Resident of sparsely vegetated alkali and desert scrub habitats, in areas of low topographic relief. Seeks cover in mammal burrows, under shrubs or structures such as fence posts; they do not excavate their own burrows.	<b>None:</b> No alkali scrub or desert scrub habitat occurs in the Project area. The Project area is an active agricultural field.
Western Pond Turtle ( <i>Actinemys marmorata</i> )	FPT/SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams, and irrigation ditches, usually with aquatic vegetation, below 6,000 feet of elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	<b>Low:</b> High quality potential habitat in the form of an open water vegetated irrigation pump pond in the middle of the Project area. The pond is lined with dirt and surrounded by fallow field of row crops providing basking habitat. No CNDDDB occurrence recorded.
<b>Plants</b>	<b>*Status Fed/CA/CNPS /Bloom Period</b>	<b>Habitat Description</b>	<b>Potential for Occurrence</b>
Alkali-sink Goldfields ( <i>Lasthenia chrysanthra</i> )	1B.1 Feb.-Apr	Vernal pools, alkaline microhabitat. Found at	<b>None:</b> No vernal pool habitat occurs in the Project Area.

		elevations between 0 and 655 feet.	
Brittlescale ( <i>Atriplex depressa</i> )	1B.2 Apr.-Oct.	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland, and vernal pools. Alkaline and clay microhabitat. Found at elevations between 5 and 1,050 feet.	<b>None:</b> No native habitat or vernal pool habitat occurs in the Project area.
California Alkali Grass ( <i>Puccinellia simplex</i> )	1B.2 Mar.-May	Chenopod scrub, meadows and seeps, valley and foothill grassland and vernal pools. Sinks, alkaline, flats, lake margins, and vernal mesic microhabitats. Found at elevations between 5 and 3,050 feet.	<b>None:</b> No vernal pool habitat or chenopod scrub occurs in the Project area.
San Joaquin adobe sunburst ( <i>Pseudobahia peirsonii</i> )	FT/CE/1B.1 Feb.-Apr.	Cismontane woodland, valley and foothill grassland. Adobe or clay microhabitat. Found at elevations between 295 and 2,625 feet.	<b>None:</b> The Project area is composed entirely from agricultural land and lacks a native seedbank.
California Jewelflower ( <i>Caulanthus californicus</i> )	FE/CE/1B.1 Feb.-May	Chenopod scrub, pinyon and juniper woodland, valley and foothill grassland. Found at elevations between 200 and 3,280 feet.	<b>None:</b> The Project area is composed entirely from agricultural land and lacks a native seedbank.
California Satintail ( <i>Imperata brevifolia</i> )	2B.1 Sep.-May	Chaparral, coastal scrub, Mojavean desert scrub, meadows and seeps (often alkali), and riparian scrub. Mesic microhabitat. Found at elevations between 0 and 3,985 feet.	<b>None:</b> No wetland habitat or shrub-dominated habitat occurs in the Project area.
Earlimart Orache ( <i>Atriplex cordulata</i> var. <i>erecticaulis</i> )	1B.2 Aug.-Sep. (Nov)	Valley and foothill grassland. Vernal mesic microhabitat. Found at elevations between 130 and 330 feet.	<b>None:</b> Though some grassland occurs in the Project area it is not within vernal pool or vernal swale habitat. Species not observed during current survey effort.
Ewan's Larkspur ( <i>Delphinium hansenii</i> ssp. <i>ewanianum</i> )	4.2 Mar.-May	Cismontane woodland, valley, and foothill grassland. Found at elevations between 195 and 1,970 feet.	<b>None:</b> The Project area is composed entirely from agricultural land and lacks a native seedbank.
Heartscale ( <i>Atriplex cordulata</i> var. <i>cordulata</i> )	1B.2 Apr.-Oct.	Chenopod scrub, meadows and seeps, valley, and foothill grassland. Microhabitats are sometimes saline, sometime	<b>None:</b> The Project area is composed entirely from agricultural land and lacks a native seedbank.

		alkaline. Found at elevations between 0 and 1,835 feet.	
Lesser Saltscale ( <i>Atriplex miniscula</i> )	1B.1 May–Oct.	Chenopod scrub, playas, valley and foothill grassland. Microhabitats are alkaline or sandy. Found at elevations between 50 and 655 feet.	<b>None:</b> The Project area is composed entirely from agricultural land and lacks a native seedbank.
Recurved Larkspur ( <i>Delphinium recurvatum</i> )	1B.2 Mar.–Jun.	Chenopod scrub, cismontane woodland, valley, and foothill grassland. Alkaline microhabitat. Found at elevations between 10 and 2,590 feet.	<b>None:</b> The Project area is composed entirely from agricultural land and lacks a native seedbank.
Spiny-sepaled Button-celery ( <i>Eryngium spinosepalum</i> )	1B.2 Apr.–Jun.	Vernal pools, valley, and foothill grassland. Found at elevations between 260 and 3200 feet.	<b>None:</b> No vernal pool habitat occurs in the Project area.
Subtle Orache ( <i>Atriplex subtilis</i> )	1B.2 (Apr) Jun.–Sep. (Oct)	Valley and foothill grassland. Found at elevations between 130 and 330 feet.	<b>None:</b> The Project area is composed entirely from agricultural land and lacks a native seedbank.

Table 6: Special Status Species Potentially on Project Site

### \*Listing Status Notes:

Federal: FE – Federally listed Endangered  
 FT – Federally listed Threatened  
 FC – Federal Candidate Species  
 FPT – Federal Proposed Threatened  
 FWL – USFWS Watch List  
 BCC – USFWS Bird of Conservation Concern  
 MBTA – Migratory Bird Treaty Act

State: CE – State Listed as Endangered  
 SE – State listed Endangered  
 ST – State listed Threatened  
 SC – State Candidate Species  
 SR – State Rare Species  
 SA – State Special Animal  
 FP – CDFW Fully Protected Species  
 SSC – CDFW Species of Special Concern  
 CWL – CDFW Watch List

CRPR: California Native Plant Society Rare Plant Rank  
 1A – Considered extirpated in CA  
 1B – Rare, threatened, or endangered in CA and elsewhere  
 2 – Rare, threatened, or endangered in CA but common elsewhere  
 4 – Limited distribution (Watch-list)

CRPR Extensions 0.1 – Seriously endangered in California  
 0.2 – Fairly endangered in California  
 0.3 – Not very endangered in California

### Regulatory Setting

**Federal Endangered Species Act (FESA):** defines an *endangered species* as “any species or subspecies that is in danger of extinction throughout all or a significant portion of its range.” A threatened species is defined as “any species or subspecies that is likely to become an

endangered species within the foreseeable future throughout all or a significant portion of its range.”

**The Federal Migratory Bird Treaty Act (FMBTA: 16 USC 703–712):** FMBTA prohibits killing, possessing, or trading in any bird species covered in one of four international conventions to which the United States is a party, except in accordance with regulations prescribed by the Secretary of the Interior. The name of the act is misleading, as it actually covers almost all birds native to the United States, even those that are non-migratory. The FMBTA encompasses whole birds, parts of birds, and bird nests and eggs. Although the USFWS and its parent administration, the U.S. Department of the Interior, have traditionally interpreted the FMBTA as prohibiting incidental as well as intentional “take” of birds, a January 2018 legal opinion issued by the Department of the Interior now states that incidental take of migratory birds while engaging in otherwise lawful activities is permissible under the FMBTA. However, the California Fish and Game Code makes it unlawful to take or possess any non-game bird covered by the FMBTA (Section 3513), as well as any other native non-game bird (Section 3800), even if incidental to lawful activities.

**Birds of Prey (CA Fish and Game Code Section 3503.5):** Birds of prey are protected in California under provisions of the Fish and Game Code (Section 3503.5), which states that it is unlawful to take, possess, or destroy any birds in the order Falconiformes (hawks and eagles) or Strigiformes (owls), as well as their nests and eggs. The bald eagle and golden eagle are afforded additional protection under the federal Bald and Golden Eagle Protection Act (16 USC 668), which makes it unlawful to kill birds or their eggs.

**Clean Water Act:** Section 404 of the Clean Water Act of (1972) is to maintain, restore, and enhance the physical, chemical, and biological integrity of the nation’s waters. Under Section 404 of the Clean Water Act, the US Army Corps of Engineers (USACE) regulates discharges of dredged and fill materials into “waters of the United States” (jurisdictional waters). Waters of the US including navigable waters of the United States, interstate waters, tidally influenced waters, and all other waters where the use, degradation, or destruction of the waters could affect interstate or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries.

**California Endangered Species Act (CESA):** prohibits the take of any state-listed threatened and endangered species. CESA defines *take* as “any action or attempt to hunt, pursue, catch, capture, or kill any listed species.” If the proposed Project results in a take of a listed species, a permit pursuant to Section 2080 of CESA is required from the CDFG.

**City of Tulare Oak Tree Ordinance:** The City of Tulare has an oak tree ordinance that protects valley oak trees with a diameter at breast height (dbh) of 2 inches or greater. Under this ordinance, removal, or encroachment within the dripline of or damage to valley oak trees is prohibited. Removal requires a permit from the city manager and mitigation either by replacement in-kind or payment of an in-lieu fee to be used for oak tree planting.

**City of Tulare General Plan (2035):** The City of Tulare General Plan contains the following policies related to the preservation of biological resources that may be considered relevant to the proposed Project's environmental review:

- **COS-P2.1 Protection of Rare and Endangered Species.** The City shall support preservation, restoration, and enhancement of designated habitats of State or federally listed rare, threatened, endangered and/or other sensitive and special status species.
- **COS-P2.2 Protection of Natural Areas.** The City shall support preservation, maintenance, restoration, and enhancement of natural systems, waterways, and open space.
- **COS-P2.3 Development in Environmentally Sensitive Areas.** The City shall require careful planning of new development in environmentally sensitive habitat areas and to avoid or otherwise mitigate potential significant impacts whenever feasible. The focus of efforts shall be on Project design to avoid impacts whenever feasible. Environmentally sensitive habitat shall include, at a minimum, the following:
  - Any habitat for a federally- or State-listed rare, threatened, or endangered animal or plant; and
  - Identifiable wildlife movement corridors, including, but not limited to, non-fragmented stream environment zones, and avian and mammalian migratory routes.
- **COS-P2.4 Site Planning.** The City shall encourage site planning that incorporates and protects creek and wetland edges.
- **COS-P2.6 Planting of Native Vegetation.** The City shall encourage the planting of native trees, shrubs, and grasslands in order to preserve the visual integrity of the landscape, provide habitat conditions suitable for native vegetation and wildlife, and ensure that a maximum number and variety of well-adapted plants are maintained.

## **Discussion**

- a) Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish & Game or U.S. fish and Wildlife Service?**

**Less Than Significant Impact with Mitigation Incorporation:** The Biological Resource Assessment (Attachment B) conducted for the proposed Project found that burrowing owl has a high potential to occur in the Project Area based on potential open ground with ground squirrel burrows present, abundant foraging field habitat, and previous CNDDDB occurrences near the Project area. San Joaquin kit fox, Swainson's hawk, western mastiff bat, and western pond turtle have low potential to occur in the Project area. During the site visit, there were no observations of special-status plant or wildlife species. All 140.32 acres of the Project area is a bare dirt fallow agricultural field dominated by non-native annual grasses or ruderal weeds as well as potted blueberries with farm laborers present on site, who were cultivating the fields during the Habitat Assessment. Three bird boxes were observed on power pole lines; two were outside the Project area and one was found in the middle of the Project area near the irrigation pump station. Several small mammal burrows were observed within the fallow field where millet-rice was harvested and along the unpaved dirt roads throughout the property. Most of the small mammal burrows were located on the south boundary of the Project area on the unpaved roads next to an orchard and single-family residential buildings. The ground is relatively flat and cleared to the surface.

The survey was conducted by a qualified biologist outside of the blooming period for most of the sensitive plant species listed in the CNPS query. However, no special-status plant species were seen within or in the vicinity of the Project area, and conditions for these species do not appear to be conducive, due to active agriculture uses and the loss of a native seed bank from regular agricultural activity over decades of time (since before the 1980's per Google Earth historic photos).

The Tulare Colony Ditch is shown aerially through Google Earth and is mapped in the National Wetland Inventory. This ditch is shown along the north boundary of the Project area, but during the Habitat Assessment, no visible sign of the Tulare Colony Ditch was seen. The only evidence of the Tulare Colony Ditch in the Project area is in the middle of the Project area where a mud-lined agricultural irrigation pump pond occurs. The pond held water and half of the pond was covered in broadleaf cattail. The presence of wetland vegetation may provide suitable habitat for the western pond turtle (*Actinemys marmorata*), but due to the level of disturbance of the surrounding area, the potential for occurrence is low.

Based on the findings of the site survey, historic aerial photos, and a review of the CNDDDB, the San Joaquin kit fox, Swainson's hawk, western mastiff bat, and the western pond turtle have a low potential of occurrence due to a lack of suitable habitat on the site. However,



there is a high potential of occurrence for the burrowing owl due to the presence of suitable habitat. In order to avoid and reduce impacts to special status species, Mitigation Measures BIO-1, BIO-1a, BIO-1b, and BIO-1c will be implemented and will ensure that impacts are rendered *less than significant with mitigation incorporation*.

**b) Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?**

**Less than Significant Impact:** There are no CNDDDB-designated “natural communities of special concern” recorded within the proposed Project area or surrounding lands. The Tulare County General Plan identifies Grasslands, Valley Oak Riparian Woodland, Valley Oak Woodland, Vernal Pools, and Wetlands as vegetation communities to protect in the region. The nearest sensitive natural community or riparian is the Elk Bayou, which is approximately 3.94 miles south of the Project site. The Elk Bayou contains various wetland habitats including riverine, freshwater forested/shrub wetland and freshwater emergent wetland. No large native oak trees, heritage trees or riparian community occur in the Project Area. The area has minimal landscape and ruderal vegetation and has been used for active agricultural purposes over a long period of time. The impact is *less than significant*.

**c) Would the Project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through director removal, filling, hydrological interruption, or other means?**

**No Impact:** A partially vegetated pump pond and maintained irrigation ditch, the Tulare Colony Ditch, occurs in the northern portion of the site. This agricultural ditch occurs on the property along a portion of the eastern side and the entire northern boundary, and it has been diverted underground. The irrigation pump pond associated with this ditch has open water and broadleaf cattail (*Typha latifolia*) vegetation in part of it which could provide basking areas for western pond turtle. The agricultural ditch connects and continues through the irrigation pump pond and connects to other irrigation water ditches offsite to the north and west. This agricultural ditch and the affiliated irrigation pump pond are not considered jurisdictional features under the Clean Water Act.

This agricultural ditch and the affiliated irrigation pump pond is not considered under the Clean Water Act, since both are artificial features that are used exclusively for agricultural activities, and their hydrologic presence is neither permanent nor continuous. The irrigation pump pond does not meet the significant nexus requirement for a connection to a larger navigable body of water, nor would it be considered Waters of the United States according to 33 CFR 328.3(b)(5). In order for a wetland to have a “significant nexus”, to a traditional navigable water, the wetland must, either alone or in combination with similarly situated lands, can significantly affect the chemical, physical, and biological integrity of traditional navigable waters. Additionally, the irrigation pump pond proposed to be filled is not

considered “Waters of the United States”. Therefore, the proposed activity is not prohibited or regulated under Section 404 of the Clean Water Act. Additionally, the qualified biologist found no evidence of marsh, vernal pool, or coastal communities. No potentially jurisdictional wetlands occur in the Project Area, the Project will have *no impact*.

**d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?**

**Less than Significant Impact:** The proposed Project area is surrounded by cultivated agricultural lands, residential development, and paved roads. Therefore, the proposed Project area does not contain features that would be likely to function as a wildlife movement corridor. The Project will, however, cause permanent impacts to active agricultural land in the Project Area. The Project Area contains a bird box, a fallow field of irrigated row crops and several unpaved dirt roads with numerous small mammal burrows. Potential wildlife resources the Project could impact would be aquatic species dependent on the proximity to land such as the western pond turtle, burrowing species such as burrowing owls, open foraging bird species such as Swainson’s hawk, and terrestrial species such as San Joaquin kit fox, that may forage and disperse over the property with its ground squirrel burrows. Impacts would include reduction in nesting, foraging and dispersal habitat due to the removal and loss of open agricultural land with its resources such as unpaved dirt roads and an irrigation pump pond.

Although some impacts may occur as a result of loss of habitat and foraging grounds, the movement of native resident or migratory fish or wildlife species will not be disrupted as a result of the Project. There are no waterways or areas that could service as a corridor for migratory fish or other aquatic species, and the site is too disturbed to serve as a terrestrial corridor for wildlife. Additionally, the area has not been considered an Essential Connectivity Area (ECA) by the California Department of Fish and Wildlife (CDFW Open Data 2021). The site is unsuitable as a native resident or migratory wildlife corridor or a native wildlife nursery site due to decades of intensive agricultural land use and the proximity to residential development.

Since there are no aquatic or terrestrial wildlife corridors or native wildlife nurseries on the Project site, the impact of the proposed Project on this resource is *less than significant*.

**e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?**

**No Impact:** No large oak trees or heritage trees occur in the cleared agricultural fields of the Project Area. The Project does not conflict with local policies or ordinances protecting biological resources. There will be *no impact*.

**f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?**

**No Impact:** There are no known habitat conservation plans or Natural Community Conservation Plans (NCCP) in the proposed Project area. There would be *no impact*.

**Mitigation Measures:**

**Mitigation Measure 1: Swainson's Hawk Nesting Habitat**

**A. Protocol Surveys:** If construction, grading, or project-related improvements are to commence between March 1 and September 15, a qualified biologist with expertise in Swainson's hawk shall conduct protocol surveys of potential nesting habitat within 0.5 mile of any ground disturbing activities prior to initiation of such activities. Protocol level surveys shall be conducted in conformance with the "Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures for Renewable Energy Projects in the Antelope Valley of Los Angeles and Kern," (<https://www.wildlife.ca.gov/conservation/survey-protocols#377281284-birds>) (June 2, 2010) hereby incorporated by references. This protocol prescribes minimum standards for survey equipment, mode of survey, angle and distance to tree, speed, visual and audible clues, distractions, notes and observations, and timing of surveys. If construction work begins after September 15 and ends before March 1 (outside of the breeding season), impacts to the Swainson's hawk would be avoided. Surveys would not be required for work conducted during this part of the year.

A written report with the pre-construction survey results must be provided to the Planning Department and CDFW within 30 days prior to commencement of construction-related activities. The report shall include: the date of the report, authors, and affiliations, contact information, introduction, methods, study location, including map, results, discussion, and literature cited.

**B. Nest Avoidance.** If the required protocol surveys show there are no active nests within 0.5-mile of construction activities, then no additional mitigation for nest disturbance will be required. If nesting Swainson's hawks are observed within 0.5-mile of the project site, the project applicant must implement CDFW pre-approved mitigation measures to avoid nest impacts during construction. These measures include:

1. All project-related activities with the potential to cause nest abandonment or forced fledging of young shall be avoided until the young have *fledged*.
2. If disturbances, habitat conversions, or other project-related activities, that may cause nest abandonment or forced fledging, are necessary, within the nest protection buffer zone (0.5-mile), monitoring of the nest site by a qualified raptor biologist, funded by the project applicant, shall be required, to determine if the nest is abandoned. If the nest is abandoned, but the nestlings are still alive, the project proponent is required to fund the recovery and hacking, that is the controlled release of captive reared young, of the nestling.
3. The project applicant shall be required to coordinate with CDFW to determine if project activities with the potential to cause disturbance to nesting Swainson's hawks within the 0.5-mile buffer may proceed with a reduced nest buffer and an approved biological monitor. CDFW may authorize a reduced nest buffer with the presence of a monitoring biologist during construction activities to ensure that the nest is not disturbed.
4. Routine disturbances such as agricultural activities, commuter traffic, and routine maintenance activities within 0.5-mile of an active nest are not prohibited.

**C. Foraging Impacts:** Generally, CDFW requires mitigation for foraging habitat based on the presence of active nests within 10 miles of the project. If an active nest site is identified within ten miles of the project site, the project proponent will be required by CDFW to provide off-site foraging habitat management lands at a specified Mitigation Ratio that is based on nest proximity to the project site.

**Mitigation Measure 2A: Nesting Bird, Roosting Bat, Burrowing Owl Survey, San Joaquin kit fox den Survey:** If project-related activities are scheduled between February 1 to August 31 (the typical nesting\_season), a focused survey for nests shall be conducted by a Designated Biologist within fourteen (14)\_calendar days prior to the beginning of Project-related activities. The Designated Biologist shall survey: a minimum radius of 500-feet for migratory birds around the\_Project Area, and for sign of roosting bats, active burrowing owl burrows or active San Joaquin kit fox\_dens. If no active nests, roosts, burrows or dens are found, project activities may proceed as scheduled.

**Mitigation Measure 2B: Active Nests or Roosts or Burrows or Dens**

If an active nest, roost or burrow or den is located, then active nests, roosts or burrows or dens should be avoided, and a no-disturbance or destruction buffer shall be determined and established by a Designated Biologist. The buffer shall be kept in place until after the breeding

nesting season or the Designated Biologist confirms the young have fledged, are foraging independently, and the nest or burrow is no longer active for the season. The extent of these buffers shall be determined by the Designated Biologist and will depend on the species present, the level of noise or construction disturbance, line of sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers.

If an occupied burrowing owl burrow is located the Biologist will consult with CDFW to install one-way doors over the burrow for an individual or an appropriate buffer distance for a nesting pair.

If an active San Joaquin kit fox den is located, then consultation with the USFWS would be required in order to document this federally listed species presence in the Project Area.

**Mitigation Measure 3: Project Delay**

If a lapse in project-related work of thirty (30) calendar days or longer occurs, the Designated Biologist shall complete another focused survey before Project work can be reinitiated.

#### IV. CULTURAL RESOURCES

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

A Phase 1 cultural resources assessment for the FNC Farming Housing Subdivision was conducted by SOAR Environmental (Attachment C). The Project proposes to construct 556 single-family housing units, a community park/pond and a rural residential zone (undeveloped) on a total of 140.32-acres: Accessor Parcel Numbers (APNs) 172-080-002, 172-010-021, 172-010-022 and 184-020-010.

##### **Environmental Setting**

The Project area is in the Southern Valley Yokuts ethnographic territory of the San Joaquin Valley and located between the Kings River and the north shore of Tulare Lake. The Yokuts were generally divided into three major groups, the Northern Valley Yokuts, the Southern Valley Yokuts, and the Foothill Yokuts. The Project area is likely within the Telamni Yokuts territory. The main village for this area was Waitatshuulul, which was approximately 7 miles north of the Project site along Packwood Creek.

The San Joaquin Valley did not experience contact with Europeans until the late 1700s. The earliest exploration of the San Joaquin Valley by Europeans was likely by the Spaniards when in the fall of 1772 a group known as the Catalanian Volunteers entered the valley through Tejon Pass in search of deserters from the Southern California Missions. However, the group only made it as far north as Buena Vista Lake in modern day Kern County before turning around due to the extensive swamps. The initial settlement within the valley by Europeans in the 1830s was largely either by trappers or horse thieves. With the end of the Mexican American War and the beginning of the gold rush in 1848, the San Joaquin Valley became more populated with ranchers and prospectors. By 1850, California became a state, and Tulare County was established in 1853. Visalia, founded in 1852, is one of the oldest cities in the Southern San Joaquin Valley. During the first few decades, Visalia was a supply center for nearby gold rushes, and had an agricultural economy based on livestock and some agriculture.

## **Cultural Records Search**

The Project area is located in the USGS Tulare 7.5' Series Quadrangle (USGS 2021). On December 5, 2023, SOAR Environmental submitted a records search request to the Southern San Joaquin Valley Information Center (SSJVIC) located at the California State University, Bakersfield (Attachment C). The records search included a 0.5-mile buffer around the Project area. The results from the records search indicate two (2) cultural resource studies have been conducted within the Project area, with one (1) negative result cultural resource study outside the edge of the far south-west corner of the Project area. According to the information on file, there are no resources within the Project area. There are two (2) recorded resources within the 0.5-mile record search radius. There were four (4) reports identified within a 0.5-mile radius of the Project area. There are no recorded cultural resources within the Project area or radius that are listed in the National Register of Historic Places, the California Register of Historical Resources, the California Points of Historical Interest, California Inventory of Historic Resources, or the California State Historic Landmarks. Both are historic-era structures, a railroad branch line and a district canal. In addition to the SSJVIC research, SOAR Environmental further reviewed the cultural resources 0.5-miles from the Project boundary. Using Google Earth aerial maps, the historic railroad branch was determined the majority of the track, ties, and ballast from the Atchison, Topeka, and Santa Fe Railway were removed from the branch lines on the east side of the San Joaquin Valley in the early 1990s.

## **Native American Consultation**

The State requires lead agencies to consider the potential effects of proposed Projects and consult with California Native American tribes during the local planning process for the purpose of protecting Traditional Tribal Cultural Resources through the California Environmental Quality Act (CEQA) Guidelines. Pursuant to PRC Section 21080.3.1, the lead agency shall begin consultation with the California Native American tribe that is traditionally and culturally affiliated with the geographical area of the proposed Project. Such significant cultural resources are either sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a tribe which is either on or eligible for inclusion in the California Historic Register or local historic register, or, the lead agency, at its discretion, and support by substantial evidence, choose to treat the resources as a Tribal Cultural Resources (PRC Section 21074(a) (1-2)).

In accordance with the Tribal Consultation Guidelines and SB 18, government to government consultation between local governments and Native American tribes prior to the adoption or amendment of a general plan is required. Additionally, California PRC § 5024 requires consultation with the Office of Historic Preservation (OHP) when a project may impact historical resources located on State-owned land. California State law (SB 18) requires cities and counties to notify and consult with California Native American Tribes about proposed local land use planning decisions for the purpose of protecting Traditional Tribal Cultural Places ("cultural places").

Pursuant to AB 52 guidelines, Native American Tribes that could potentially be impacted by the Project were contacted. The tribes that were formally noticed of this Project were the Santa Rosa Rancheria Tachi Yokut Tribe of the Southern Valley Yokut, Tule River Indian Tribe of the Yokut, and the Wuksachi Indian Tribe and Eshom Valley Band of the Foothill Yokut and Mono. These Rancherias are not located within the City limits.

Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See PRC Section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per PRC Section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that PRC Section 21082.3(c) contains provisions specific to confidentiality.

Soar Environmental did not receive comments from the Tulare County Native American groups or affiliated individuals regarding the proposed development at the project location.

### **Regulatory Setting**

In this report "cultural resources" are defined as prehistoric or historical archaeological sites as well as historical objects, buildings, or structures. In accordance with 30 Code of Federal Regulations (CFR) §60.4, "historical" in this report applies to cultural resources which are at least 50 years old. The significance or importance of a cultural resource is dependent upon whether the resource qualifies for inclusion at the local or state level in the California Register of Historical Resources (CRHR), or at the federal level in the National Register of Historic Places (NRHP). Cultural resources that are determined to be eligible for inclusion in the CRHR are called "historical resources" (California Code of Regulations [CCR] 15064.5[a]). Under this statute the determination of eligibility is partially based on the consideration of the criteria of significance as defined in 14 CCR 15064.5(a)(3). Cultural resources eligible for inclusion in the NRHP are deemed "historic properties."

### **National Historic Preservation Act**

The National Historic Preservation Act was adopted in 1966 to preserve historic and archeological sites in the United States. The Act created the National Register of Historic Places, the list of National Historic Landmarks, and the State Historic Preservation offices.

### **California Register of Historical Resources**

In California, the term "historical resource" includes "any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political,



military, or cultural annals of California” (California PRC § 5020.1[j]) (State of California 2021). In 1992, the California legislature established the California Register of Historical Resources (CRHR) “to be used by state and local agencies, private groups, and citizens to identify the state’s historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change” (California PRC § 5024.1(a)). The criteria for listing resources on the CRHR, enumerated in the following text, were developed to be in accordance with previously established criteria developed for listing in the NRHP. According to California PRC § 5024.1(c) (1– 4), a resource is considered historically significant if it (i) retains “substantial integrity,” and (ii) meets at least one of the following criteria:

- Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage.
- Is associated with the lives of persons important in our past.
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
- Has yielded, or may be likely to yield, information important in prehistory or history.

To understand the historic importance of a resource, sufficient time must have passed to obtain a scholarly perspective on the events or individuals associated with the resource. A resource less than 50 years old may be considered for listing in the CRHR if it can be demonstrated that sufficient time has passed to understand its historical importance (14 CCR 4852[d][2]).

The CRHR protects cultural resources by requiring evaluations of the significance of prehistoric and historic resources. The criteria for the CRHR are nearly identical to those for the National Register of Historic Places (NRHP), and properties listed or formally designated as eligible for listing in the NRHP are automatically listed in the CRHR, as are state landmarks and points of interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys.

### **Tulare County General Plan (2012)**

Chapter 8.6 of the Tulare County General Plan of 2012 promotes the preservation of cultural and historic resources through managing and protecting sites of cultural and archeological importance for the benefit of present and future generations (County of Tulare 2012).

The following policies are outlined for the preservation of cultural resources:

**ERM-6.1 Evaluation of Cultural and Archaeological Resources**

The County shall participate in and support efforts to identify its significant cultural and archaeological resources using appropriate State and Federal standards.

**ERM-6.2 Protection of Resources with Potential State or Federal Designations**

The County shall protect cultural and archaeological sites with demonstrated potential for placement on the National Register of Historic Places and/or inclusion in the California State Office of Historic Preservation's California Points of Interest and California Inventory of Historic Resources. Such sites may be of Statewide or local significance and have anthropological, cultural, military, political, architectural, economic, scientific, religious, or other values as determined by a qualified archaeological professional.

**ERM-6.3 Alteration of Sites with Identified Cultural Resources**

When planning any development or alteration of a site with identified cultural or archaeological resources, consideration should be given to ways of protecting the resources. Development can be permitted in these areas only after a site-specific investigation has been conducted pursuant to CEQA to define the extent and value of resource, and mitigation measures proposed for any impacts the development may have on the resource.

**ERM-6.4 Mitigation**

If preservation of cultural resources is not feasible, every effort shall be made to mitigate impacts, including relocation of structures, adaptive reuse, preservation of facades, and thorough documentation and archival records.

**ERM-6.5 Cultural Resources Education Programs**

The County should support local, State, and national education programs on cultural and archaeological resources.

**ERM-6.6 Historic Structures and Sites**

The County shall support public and private efforts to preserve, rehabilitate, and continue the use of historic structures, sites, and parks. Where applicable, preservation efforts shall conform to the current Secretary of the Interior's Standards for the Treatment of Historic Properties and Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings.

**ERM-6.7 Cooperation of Property Owners**

The County should encourage the cooperation of property owners to treat cultural resources as assets rather than liabilities and encourage public support for the preservation of these resources.

#### **ERM-6.8 Solicit Input from Local Native Americans**

The County shall continue to solicit input from the local Native American communities in cases where development may result in disturbance to sites containing evidence of Native American activity and/or to sites of cultural importance.

#### **ERM-6.9 Confidentiality of Archaeological Sites**

The County shall, within its power, maintain confidentiality regarding the locations of archaeological sites in order to preserve and protect these resources from vandalism and the unauthorized removal of artifacts.

#### **ERM-6.10 Grading Cultural Resources Sites**

The County shall ensure all grading activities conform to the County's Grading Ordinance and California Code of Regulations, Title 20, § 2501 et. seq.

### **City of Tulare 2035 General Plan**

Under Chapter 4, Conservation and Open Space Element, within the General Plan of the City of Tulare states "The General Plan seeks to balance the need for growth with the need for the conservation and enhancement of the area's natural and cultural resources, frequently in cooperation with other agencies." "Cultural resources provide the historical context for the city. The authentic remnants of the city's cultural legacy provide an irreplaceable tangible link to the past. These assets serve as material anchors and their preservation is vital to connecting the present-day community with its historical roots."

The following policies are outlined for the preservation of cultural resources:

#### **Section B.5. Cultural and Archaeological Resources**

**Goal COS-5** To manage and protect sites of cultural and archaeological importance for the benefit of present and future generations.

- **COS-P5.1 Archaeological Resources.** The City shall support efforts to protect and/or recover archaeological resources.
- **COS-P5.2 Evaluation of Historic Resources.** The City shall use appropriate State and Federal standards in evaluating the significance of historical resources that are identified in the city.
- **COS-P5.3 Historic Preservation.** The City shall encourage the preservation of historic residences and neighborhoods wherever appropriate.

- **COS-P5.4 Historic Buildings.** The City shall encourage the preservation and adaptive use of historic buildings, particularly downtown.
- **COS-P5.5 Historic Structures and Sites.** The City shall support public and private efforts to preserve, rehabilitate, and continue the use of historic structures, sites, and districts. Where applicable, preservation efforts shall conform to the current Secretary of the Interior's Standards for the Treatment of Historic Properties and Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Building.
- **COS-P5.6 Protection of Resources with Potential State or Federal Designations.** The City shall encourage the protection of cultural and archaeological sites with potential for placement on the National Register of Historic Places and/or inclusion in the California State Office of Historic Preservation's California Points of Interest and California Inventory of Historic Resources. Such sites may be of statewide or local significance and have anthropological, cultural, military, political, architectural, economic, scientific, religious, or other values.
- **COS-P5.7 State Historic Building Code.** The City shall utilize the State Historic Building Code for designated properties.
- **COS-P5.8 Design Compatibility with Historic Structures.** The City shall ensure design compatibility of new development within close proximity to designated historic structures and neighborhoods.
- **COS-P5.9 Discovery of Archaeological Resources.** In the event that archaeological/paleontological resources are discovered during site excavation, grading, or construction, the City shall require that work on the site be suspended within 100 feet of the resource until the significance of the features can be determined by a qualified archaeologist/paleontologist. If significant resources are determined to exist, an archaeologist shall make recommendations for protection or recovery of the resource. City staff shall consider such recommendations and implement them where they are feasible in light of Project design as previously approved by the City.
- **COS-P5.10 Discovery of Human Remains.** Consistent with Section 7050.5 of the California Health and Safety Code and CEQA Guidelines (Section 15064.5), if human remains of Native American origin are discovered during Project construction, it is necessary to comply with State laws relating to the disposition of Native American burials, which fall within the jurisdiction of the Native American Heritage Commission (Public Resources Code Sec. 5097). If any human remains are discovered or recognized in any location on the Project site, there shall be no further excavation or disturbance of the site, or any nearby area reasonably suspected to overlie adjacent human remains until:

- The Tulare County Coroner/Sheriff has been informed and has determined that no investigation of the cause of death is required; and
  - If the remains are of Native American origin, the descendants of the deceased Native Americans have made a timely recommendation to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains, and any associated grave goods as provided in Public Resources Code Section 5097.98.
  - The Native American Heritage Commission was unable to identify a descendant, or the descendant failed to make a recommendation within 24 hours after being notified by the commission, or
  - The landowner or his or her authorized representative rejects any timely recommendations of the descendent, and mediation conducted by the Native American Heritage Commission has failed to provide measures acceptable to the landowner.
- **COS-P5.11 Impact Mitigation.** If preservation of cultural/historical resources is not feasible, the City shall make every effort to mitigate impacts, including relocation of structures, adaptive reuse, preservation of facades, and thorough documentation and archival of records.
- **COS-P5.12 Mitigation Monitoring for Historical Resources.** The City shall develop standards for monitoring mitigation measures established for the protection of historical *resources* prior to development.
- **COS-P5.13 Alteration of Sites with Identified Cultural Resources.** When planning any development or alteration of a site with identified cultural or archaeological resources, consideration should be given to ways of protecting the resources. The City shall permit development in these areas only after a site-specific investigation has been conducted pursuant to CEQA to define the extent and value of re source, and mitigation measures proposed for any impacts the development may have on the resource.
- **COS-P5.14 Education Program Support.** The City shall support local, state, and national education programs on cultural and archaeological resources.
- **COS-P5.15 Solicit Input from Local Native Americans.** The City shall solicit input from the local Native American communities in cases where development may result in disturbance to sites containing evidence of Native American activity and/or to sites of cultural importance.
- **COS-P5.16 Confidentiality of Archaeological Sites.** The City shall, within its power, maintain confidentiality regarding the locations of archaeological sites in order to preserve and protect resources that are determined to exist. An archaeologist/paleontologist shall make recommendations for protection or recovery of the resource.

City staff shall consider such recommendations and implement them where they are feasible in light of Project design as previously approved by the City.

- **COS-P5.17 Cooperation of Property Owners.** The City shall encourage the cooperation of property owners to treat cultural resources as assets rather than liabilities and encourage public support for the preservation of these resources.
- **COS-P5.18 Archaeological Resource Surveys.** Prior to Project approval, the City shall require Project applicant to have a qualified archaeologist conduct the following activities: (1) conduct a record search at the Regional Archaeological Information Center located at California State University Bakersfield and other appropriate historical repositories, (2) conduct field surveys where appropriate, and (3) prepare technical reports, where appropriate, meeting California Office of Historic Preservation Standards (Archaeological Resource Management Reports).

## **Discussion**

### **a) Would the Project cause a substantial adverse change in the significance of a historical resource pursuant to in Section 15064.5?**

**Less Than Significant Impact with Mitigation:** A records search was conducted on behalf of the Applicant from the SSJVIC of the CHRIS at California State University in Bakersfield, California, to determine if historical or archaeological sites had previously been recorded within the study area, if the Project area had been systematically surveyed by archaeologists prior to the initial study, and/or whether the region of the field Project was known to contain archaeological sites and to thereby be archaeologically sensitive.

Soar Environmental conducted an intensive pedestrian survey of the Project site on December 16<sup>th</sup>, 2023. The Intensive Phase I pedestrian survey included parallel transects spaced at 50 feet (15-meter) intervals walked across the entire Project area. This field survey did not find evidence of surface archaeological resources within the Project area. According to the Project's current design, the proposed Project will not impact any known *in situ* archaeological sites or historical resources.

According to the SSJVIC records search, there have been two (2) previous cultural resource studies within the Project area. According to the information on file, there is no known cultural resources within the Project area.

Additionally, there are two (2) recorded resources and four (4) reports identified within the 0.5-mile radius of the Project area. However, there are no recorded cultural resources within the Project area or radius that are listed in the National Register of Historic Places, the California Register of Historical Resources, the California Points of Historical Interest,

California Inventory of Historic Resources, or the California State Historic Landmarks. Additionally, there are no recorded resources within the Project area that are eligible to be listed on any of the previously mentioned state and federal registers.

Although no significant cultural resources were identified on the site, the presence of remains or unanticipated cultural resources under the ground surface is also possible. Implementation of Mitigation Measures CUL-1 and CUL-2 will ensure that impacts to this checklist item will be *less than significant with mitigation* incorporation.

**b) Would the Project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?**

**Less Than Significant Impact with Mitigation:** An intensive Phase I pedestrian survey was conducted on December 16<sup>th</sup>, 2023, by Soar Environmental Consulting, with parallel transects spaced at 50-foot (15-meter) intervals and walked across the entire Project area. The survey found no evidence of surface archaeological resources or any other known cultural resources. Therefore, the proposed Project will not impact any known *in situ* archaeological sites or historical resources. However, there is always the potential to encounter previously undetected cultural resources. In the case that previously unknown cultural materials are unearthed during construction, implementation of Mitigation Measures CUL-1 and CUL-2 will ensure that potential impact to unknown archeological resources will be *less than significant with mitigation* incorporation.

**c) Would the Project disturb any human remains, including those interred outside of formal cemeteries?**

**Less Than Significant Impact with Mitigation:** There are no known human remains buried in the Project vicinity. If human remains are unearthed during Project construction, there is a potential for a significant impact. As such, implementation of Mitigation Measure CUL-2 will ensure that impacts remain *less than significant with mitigation* incorporation.

**Mitigation Measures for Impacts to Cultural Resources**

**Mitigation Measure CUL-1:** If previously unknown resources are encountered before or during grading activities, construction shall stop in the immediate vicinity of the find and a qualified historical resources specialist shall be consulted to determine whether the resource requires further study. The qualified historical resources specialist shall make recommendations to the City on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with Section 15064.5 of the CEQA Guidelines and the City's Historic Preservation Ordinance.

If the resources are determined to be unique historical resources as defined under Section 15064.5 of the CEQA Guidelines, measures shall be identified by the monitor and recommended to the Lead Agency. Appropriate measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these resources. Any historical artifacts recovered as a result of mitigation shall be provided to a City-approved institution or person who is capable of providing long-term preservation to allow future scientific study.

**Mitigation Measure CUL-2:** In the event that human remains are unearthed during excavation and grading activities of any future development Project, all activity shall cease immediately. Pursuant to Health and Safety Code (HSC) Section 7050.5, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98(a). If the remains are determined to be of Native American descent, the coroner shall within 24 hours notify the Native American Heritage Commission (NAHC). The NAHC shall then contact the most likely descendent of the deceased Native American, who shall then serve as the consultant on how to proceed with the remains. Pursuant to PRC Section 5097.98(b), upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment.



## V. ENERGY

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during Project construction or operation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### Environmental Setting

Southern California Edison (SCE) provides electricity services to the City of Tulare. SCE serves approximately 15 million people in a 50,000 square-mile area of Central, Coastal, and Southern California. SCE supplies electricity to its customers through a variety of renewable and nonrenewable sources. Table 7 below shows the proportion of each energy resource sold to California consumers by SCE in 2019 as compared to the statewide average.

Fuel Type		SCE Power Mix	California Power Mix
Coal		0%	2.7%
Large Hydroelectric		7.9%	12.2%
Natural Gas		16.1%	37%
Nuclear		8.2%	9.3%
Other (Oil/Petroleum Coke/Waste Heat)		0.1%	0.2%
Unspecified Sources of Power <sup>1</sup>		32.6%	5.4%
Eligible Renewables	Biomass	0.6%	2.5%
	Geothermal	5.9%	4.9%
	Small Hydro	1%	1.4%
	Solar	16%	13.2%
	Wind	11.5%	11.1%
	<b>Total Eligible Renewable</b>	<b>35.1%</b>	<b>33.1%</b>
1. "Unspecified sources of power" means electricity from transactions that are not traceable to specific generation sources.			

Table 7. 2019 SCE and 2020 State Power Resources; Source: SCE; California Energy Commission

SCE also offers Green Rate Options, which allow consumers to indirectly purchase up to 100% of their energy from renewable sources. To accomplish this, SCE purchases the renewable energy necessary to meet the needs of Green Rate participants from solar renewable developers. The Project will not use natural gas during its operational phase.

## **Regulatory Setting**

### **California Code of Regulations, Title 20**

Title 20 of the California Code of Regulations establishes standards and requirements for appliance energy efficiency. The standards apply to a broad range of appliances sold in California.

### **California Code of Regulations, Title 24**

Title 24 of the California Code of Regulations is a broad set of standards designed to address the energy efficiency of new and altered homes and commercial buildings. These standards regulate energy consumed for heating, cooling, ventilation, water heating, and lighting. Title 24 requirements are enforced locally by the City of Selma Building Department.

### **California Green Building Standards Code (CALGreen)**

CALGreen is a mandatory green building code that sets minimum environmental standards for new buildings. It includes standards for volatile organic compound (VOC) emitting materials, water conservation, and construction waste recycling.

### **SB 100**

SB 100, passed in 2018, set a deadline in 2045 for 100% of energy to be renewable. Additionally, by 2030, 60% of all energy must be renewable. California is targeting this goal through solar and other renewable sources.

### **AB 178**

For California to meet its renewable goals, AB 178 was passed in 2018. AB 178 states that starting in 2020 all new low rise residential buildings must be built with solar power.

### **City of Tulare General Plan**

The 2030 General Plan includes the policies related to energy use that correlate to the proposed Project:

- *T-P-4I*: Integrate the bicycle transportation system into new development and infill redevelopment. Development shall provide short term bicycle parking and long-term bicycle storage facilities, such as bicycle racks, stocks, and rental bicycle lockers. Development also shall provide safe and convenient bicycle and pedestrian access to high activity land uses such as schools, parks, shopping, employment, and entertainment centers.

- *T-P-53*: Develop flexible parking requirements in the zoning ordinance for development proposals based on “best practices” and the proven potential to reduce parking demand.

### **Discussion**

#### **a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during Project construction or operation?**

**Less Than Significant Impact:** The proposed Project includes the construction and operation of 556 units of single-family housing. During Project construction, there would be an increase in energy consumption related to worker trips and the operation of construction equipment. This increase in energy use would be temporary and limited to the greatest extent possible through compliance with local, state, and federal regulations. Vehicle fuel consumption during Project construction was estimated based on the assumed construction schedule, vehicle trip lengths, and the number of workers per construction phase as provided by CalEEMod, and Year 2024 gasoline/diesel MPG factors provided by the EMFAC2021 and EMFAC2017. Detailed energy calculations are provided in Attachment D. To simplify the estimation process, it was assumed that all worker vehicles used gasoline as a fuel source and all off-road equipment, hauling vehicles, and vendor vehicles used diesel as a fuel source. Table 8, below, provides gasoline and diesel fuel used by construction and on-road sources during each phase of Project construction.

Off-Road Equipment Fuel (Diesel)		On-Road Vehicle Fuel				Total MMBTU
		Diesel		Gasoline		
Gallons	MMBTU	Gallons	MMBTU	Gallons	MMBTU	
546,377	75,946	263,077	36,567	352,805	40,957	153,470
Total Construction Energy Use						153,470
Average Annual Construction Energy Use						102,313

*Table 8. On-Road Mobile Fuel Use Generated by Construction Activities. Source: CalEEMod (v. 2020.4.0); EMFAC2017 (See Attachment D)*

While construction of the proposed Project will result in additional energy consumption, this energy use is not unnecessary or inefficient. This energy use is justified by the energy-efficient nature of the proposed Project and would be limited to the greatest extent possible through compliance with local, state, and federal regulations. Once construction is complete, the Project is expected to achieve net zero energy consumption. The proposed Project is subject to the California New Residential Zero Net Energy Action Plan 2015–2020. This plan establishes a goal for all residential buildings built after January 1, 2020, to be zero net energy. The California Energy Commission is responsible for the development and enforcement of specific strategies to achieve this

goal. These strategies are implemented through Title 24, Part 6 of the California Building Code, which requires developers to include certain measures (including solar panels on all new residential buildings) to achieve required building efficiency standards.

Mobile Fuel Use	Gal/Year		MMBTU
	Gasoline	478,937	57,609
	Diesel	73,728	10,129
Electricity Use	kWh/Year		Total MMBTU
	8,349,990		28,490
Natural Gas Use	kBTU/Year		Total MMBTU
	0		0
Total Operational Energy Use			Total MMBTU
			96,228

Table 9. On-Road Mobile Fuel Use Generated by Operational Activities. Source CalEEMod (v. 2020.4.0); EMFAC2021 (See Attachment D)

As shown in Table 9, annual energy use associated with Project operations would total approximately 96,228 MMBTUs per year. Annual energy use is expected to decrease over time as a result of improvements in vehicle fuel efficiency standards. The proposed Project will be subject to energy conservation requirements in the California Energy Code (24 CCR Part 6, California's Energy Efficiency Standards for Residential and Nonresidential Buildings) and the California Green Building Standards Code (CALGreen) (24 CCR Part 11). Adherence to Title 24 requirements would ensure that the Project would not result in wasteful or inefficient use of non-renewable resources due to building operation or vehicle trips.

Because construction-related energy use would be temporary and limited to the greatest extent feasible through consistency with Federal, State, and local policies related to energy conservation, and operation of the Project will comply with all energy efficiency standards required under Title 24, Section 6, and these standards were specifically developed to achieve net zero energy for residential Projects, it can be presumed that the Project will achieve net zero energy. The proposed construction and operation of single-family homes and a community park would not result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources. The impact is *less than significant*.

**b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?**

**No Impact:** The proposed Project will not conflict with or obstruct any state or local plans for renewable energy or energy efficiency. The construction and operation of the Project will comply with applicable energy efficiency regulations included in CALGreen, Title 24, the CARB, and the Tulare General Plan. The proposed Project will comply with all state and local policies related to energy efficiency and there is *no impact*.

## VI. GEOLOGY AND SOILS

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct and indirect risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Environmental Setting

#### **Geologic Stability and Seismic Activity**

**Seismicity:** Tulare County is considered to be a low to moderate earthquake hazard area. The San Andreas Fault is the longest and most significant fault zone in California and is

approximately 40 miles west of the Tulare County Boundary. Owens Valley fault zone is the only active fault located within Tulare County. Section 5 of the 2017 Tulare Multi-Jurisdictional Local Hazard Mitigation Plan identifies the Project site as likely to experience low to moderate shaking from earthquakes and may experience higher levels if an earthquake were to occur in or near the County. Ground shaking can result in other geological impacts, including liquefaction, landslides, lateral spreading, subsidence, or collapse.

**Liquefaction:** Liquefaction is a phenomenon whereby unconsolidated and/or near-saturated soils lose cohesion and are converted to a fluid state as a result of severe vibratory motion. The relatively rapid loss of soil shear strength during strong earthquake shaking results in temporary, fluid-like behavior of the soil, which can result in landslides and lateral spreading. No specific countywide assessment of liquefaction has been performed; however, the 2017 Tulare Multi-Jurisdictional Local Hazard Mitigation Plan identifies the risk of liquefaction within the county as low because the soil types in the area either too coarse or too high in clay content to be suitable for liquefaction.

**Landslides:** Landslides refer to a wide variety of processes that result in the downward and outward movement of soil, rock, and vegetation under gravitational influence. Landslides can be caused by both natural and human-induced changes in slope stability and often accompany other natural hazard events, such as floods, wildfire, or earthquake. Eastern portions of the County are considered to be at a higher risk of landslides where steep slopes are present. However, the majority of the County, including the proposed Project site, is considered to be at low risk of landslides and mudslides because of its flat topography. The 2017 Tulare Multi-Jurisdictional Local Hazard Mitigation Plan states that occurrence of landslide events within populated areas of Tulare County is unlikely.

**Subsidence:** Land Subsidence refers to the vertical sinking of land as a result of either manmade or natural underground voids. Subsidence has occurred throughout the Central Valley at differing rates since the 1920's as a result of groundwater, oil, and gas withdrawal. During drought years, Tulare County is prone to accelerated subsidence, with some areas sinking up to 28 feet. Although western portions of the County show signs of deep and shallow subsidence, the majority of the County, including the proposed Project site, is not considered to be at risk of subsidence related hazards.

### **Soils Involved in Project**

The proposed Project involves construction on two soil types. The properties of the soil are described briefly below:

- **Nord Fine Sandy Loam (0 to 2 percent slopes):** The Nord Fine Sandy Loam series consists of very deep, well drained soils formed in mixed alluvium derived predominantly from granitic and sedimentary rock sources and has slopes of 0 to 2 percent. Nord soils occur on alluvial fans and flood plains. It is well drained; has negligible to low runoff; has moderate permeability but is moderately slow in saline and sodic soil conditions.

- **Hanford Sandy Loam (0 to 2 percent slopes):** The Hanford Sandy Loam series consists of very deep, well-drained soils that formed in moderately coarse textured alluvium and is derived predominantly from granite and has slopes of 0 to 2 percent. Hanford soils occur throughout the San Joaquin Valley and in the valleys of central and southern California. These soils are well drained, with negligible to low runoff, and moderately rapid permeability.



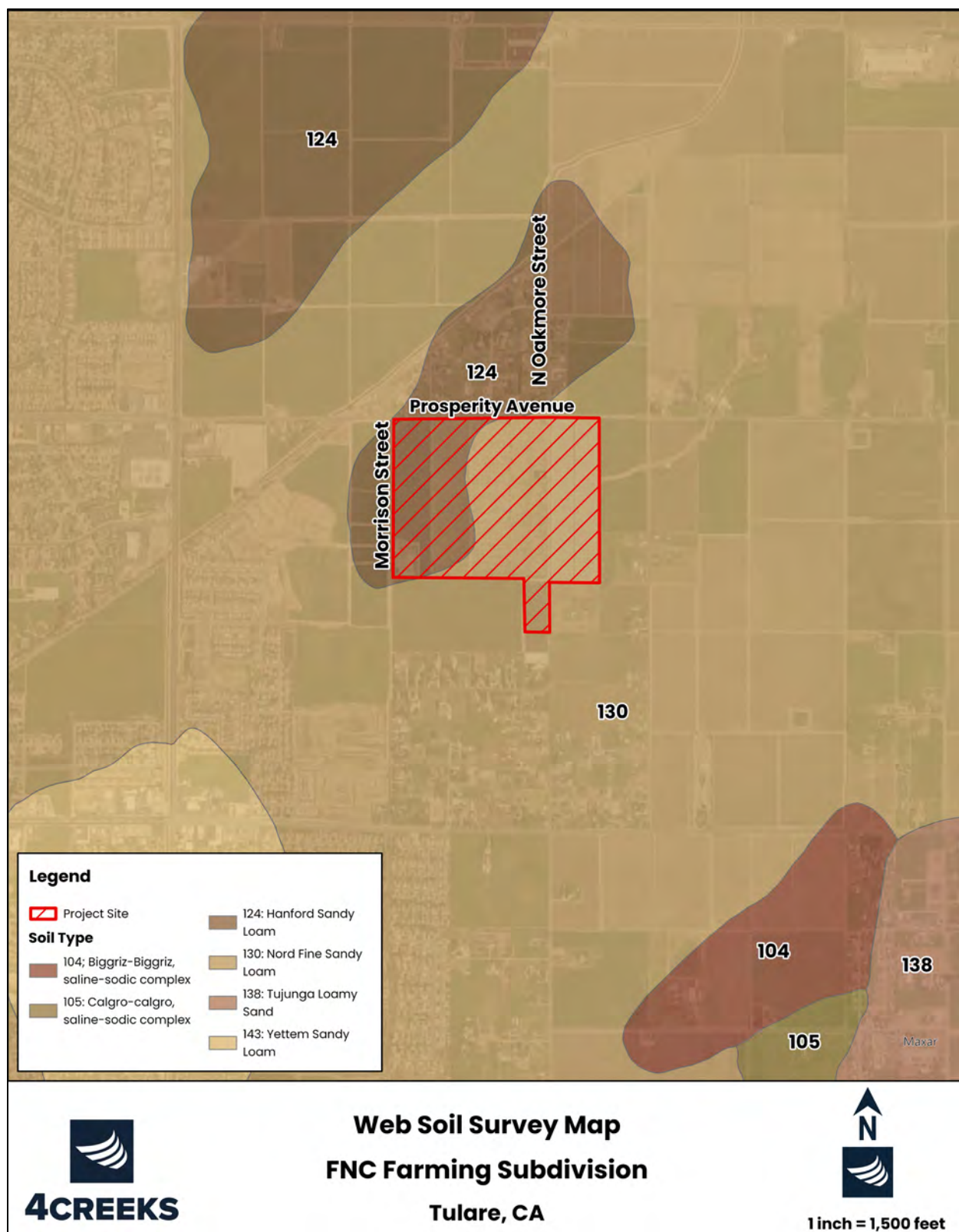


Figure 5: Soils Map

## **Regulatory Setting**

### **California Building Code**

The California Building Code (CBC) contains general building design and construction requirements relating to fire and life safety, structural safety, and access compliance. CBC provisions provide minimum standards to safeguard life or limb, health, property, and public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, location and maintenance of all buildings and structures and certain equipment.

### **City of Tulare Municipal Code (California Building Code)**

The City of Tulare Municipal Code has incorporated and adopted the CBC, 2013 Edition, as promulgated by the California Building Standards Commission, which incorporates the adoption of the 2012 edition of the of the International Building Code, as amended with necessary California amendments and the 2012 International Building Code of the International Code Council.

**City of Tulare General Plan:** The Safety Element of the City of Tulare General Plan includes the following goals and policies regarding soils and geology.

- SAF-P1.4 Building and Codes. Except as otherwise allowed by State law, the City shall ensure that all new buildings intended for human habitation are designed in compliance with the latest edition of the California Building Code, California Fire Code, and other adopted standards based on risk (e.g., seismic hazards, flooding), type of occupancy, and location (e.g., floodplain, fault).
- SAF-P1.7 Site Investigations. The City shall require applicants to conduct site investigations in areas planned for new development to determine susceptibility to landslides, subsidence/settlement, contamination, and/or flooding.

### **Goal SAF-4 To protect people and property from seismic and geotechnical hazards.**

- SAF-P4.4 Alquist-Priolo Act Compliance. The City shall not permit any structure for human occupancy to be placed within designated Earthquake Fault Zones (pursuant to and as determined by the Alquist-Priolo Earthquake Fault Zoning Act; Public Resources Code, Chapter 7.5) unless the specific provisions of the Act and Title 14 of the California Code of Regulations have been satisfied.
- SAF-P4.5 Subsidence. The City shall confirm that development is not located in any known areas of active subsidence. If urban development may be located in such an area, a special safety study will be prepared and needed safety measures implemented.

## **Discussion**

### **a) Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:**

- i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.**

**No Impact:** According to the Tulare County Multi-Hazard Mitigation Plan, no active faults underlay the Project site. Although the Project is located in an area of relatively low seismic activity, the Project could be affected by ground shaking from nearby faults. The potential for strong seismic ground shaking on the Project site is not a significant environmental concern due to the infrequent seismic activity of the area and distance to the faults. The Project has no potential to cause the rupture of an earthquake fault indirectly or directly. Therefore, the risk of loss, injury or death involving a rupture of a known earthquake fault would be *less than significant*.

- ii. Strong seismic ground shaking?**

**Less than Significant:** According to the Tulare County Multi-Jurisdictional Local Hazard Mitigation Plan, the Project site is located in an area of relatively low seismic activity. The proposed Project does not include any activities or components that would indirectly or directly result in loss, injury or death from strong seismic ground shaking, as the Project is in a low-risk area for seismic activity. The impact is *less than significant*.

- iii. Seismic-related ground failure, including liquefaction?**

**No Impact:** No specific countywide assessment of liquefaction has been performed; however, the Tulare County Multi-Hazard Mitigation Plan identifies the risk of liquefaction within the county as low because the soil types on the Project site are unsuitable for liquefaction. According to state soils maps, the Project site consists mostly of Nord Fine Sandy Loam and Hanford Sandy Loam which do not contain soils suitable for liquefaction. There is *no impact*.

- iv. Landslides?**

**No Impact:** The proposed Project site is generally flat and there are no hill slopes in the area. As a result, there is almost no potential for landslides. No geologic landforms exist on or near the site that would result in a landslide event. There is *no impact*.

**b) Would the Project result in substantial soil erosion or the loss of topsoil?**

**Less Than Significant Impact:** The Project site is relatively flat, so the potential for erosion is low. However, construction-related activities and the addition of impervious surfaces can increase the probability for increased soil erosion and stormwater runoff. Although the construction phase may involve some soil erosion/loss of topsoil, construction-related impacts related to erosion will be temporary and subject to best management practices (BMPs) required by SWPPP. These BMPs are developed to prevent significant impacts related to erosion from construction, so there will be minimal soil loss as a result of construction activities.

The operational phase of the Project is not expected to result in substantial soil erosion or the loss of topsoil. The Project would add impervious surfaces, but sufficient landscaping and a community park are proposed, which will intercept the stormwater runoff that will result from the Project. The planned park is 5.47-acres and includes a 2.64-acre pond. This Project feature as well as the overall Project design will divert all stormwater resulting from the Project to this park and pond, which will prevent substantial soil erosion near the Project site.

Because impacts related to erosion would be temporary and limited to construction, best management practices would prevent significant impacts related to erosion, and the Project proposes features that will intercept stormwater runoff, the impact will remain *less than significant*.

**c) Would the Project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?**

**No Impact:** The soils associated with the Project site are considered stable and have a low capacity for landslides, lateral spreading, subsidence, liquefaction, or collapse. Because the Project area is considered to be stable, and this Project would not result in a substantial grade change to the topography to the point that it would increase the risk of landslides, lateral spreading, subsidence, liquefaction or collapse, there is *no impact*.

**d) Would the Project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?**

**No Impact:** The proposed Project site is not in an area with expansive soils. Because the soils associated with the Project do not exhibit shrink swell behavior, implementation of the Project will pose no risk to life or property caused by expansive soils and there is *no impact*.

- e) **Would the Project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?**

**No Impact:** The proposed Project will have access to existing City wastewater infrastructure and would not require the use of septic tanks or alternative wastewater disposal systems. There is *no impact*.

- f) **Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?**

**Less Than Significant Impact with Mitigation:** A qualified archaeologist at Soar Environmental Consulting completed a Phase I Cultural Resources Assessment (Attachment C) which included an archival review, Native American consultation, and an intensive pedestrian survey. The archival review included a records search from the Southern San Joaquin Valley Information Center (SSJVIC) and NAHC's Sacred Lands File (SLF). Archival research, Native American consultation and the pedestrian survey did not indicate any known in situ archaeological sites, geological features, paleontological resources, historical resources, or sacred sites.

However, there is always the possibility that paleontological and geologic resources may exist below the ground surface. Implementation of Mitigation Measures CUL-1 and CUL-2 will ensure that any impacts resulting from Project implementation remain *less than significant with mitigation incorporation*.

### **Mitigation Measures for Impacts to Geological Resources**

**Mitigation Measure CUL-1:** If previously unknown resources are encountered before or during grading activities, construction shall stop in the immediate vicinity of the find and a qualified historical resources specialist shall be consulted to determine whether the resource requires further study. The qualified historical resources specialist shall make recommendations to the City on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with Section 15064.5 of the CEQA Guidelines and the City's Historic Preservation Ordinance.

If the resources are determined to be unique historical resources as defined under Section 15064.5 of the CEQA Guidelines, measures shall be identified by the monitor and recommended to the Lead Agency. Appropriate measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these resources. Any historical artifacts recovered as a result of mitigation shall be provided to a City-approved institution or person who is capable of providing long-term preservation to allow future scientific study.

**Mitigation Measure CUL-2:** In the event that human remains are unearthed during excavation and grading activities of any future development Project, all activity shall cease immediately. Pursuant to Health and Safety Code (HSC) Section 7050.5, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98(a). If the remains are determined to be of Native American descent, the coroner shall within 24 hours notify the Native American Heritage Commission (NAHC). The NAHC shall then contact the most likely descendent of the deceased Native American, who shall then serve as the consultant on how to proceed with the remains. Pursuant to PRC Section 5097.98(b), upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment.

## VII. GREENHOUSE GAS EMISSIONS

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### **Environmental Setting**

Natural processes and human activities emit greenhouse gases, which drive climate change processes. The presence of GHGs in the atmosphere affects the earth's temperature and overall climate through a process known as the "greenhouse effect". The greenhouse effect is the process through which heat is trapped near the Earth's surface due to the build-up of greenhouse gases in the atmosphere. Greenhouse gases absorb infrared radiation from the sun in the form of heat, with certain gaseous compounds having a higher heat-holding capacity than others, which is known as its global warming potential (GWP). Without the natural heat-trapping effect of GHGs, the earth's surface would be about 33°C cooler. However, it is believed that emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations, driving climate change processes. Climate change refers to a significant change in measures of climate, including temperature, precipitation, or wind patterns, which last for an extended period of time. (British Geological Survey, n.d.)

Common GHGs include water vapor, carbon dioxide, methane, nitrous oxide, ozone, chlorofluorocarbons, hydrochlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur, and hexafluoride. The Global Warming Potential (GWP) has been calculated for each greenhouse gas to reflect how long it remains in the atmosphere, on average, and how strongly it absorbs energy. Gases with a higher GWP absorb more energy, per pound, than gases with a lower GWP, and thus contribute more to global warming. For example, one pound of methane is equivalent to twenty-one pounds of carbon dioxide.

GHGs as defined by AB 32 include the following gases: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. GHGs as defined by AB 32 are summarized in Table 10. Each gas's effect on climate change depends on three main factors.

The first being the quantity of these gases are in the atmosphere, followed by how long they stay in the atmosphere and finally how strongly they impact global temperatures.

Greenhouse Gas	Description and Physical Properties	Lifetime	GWP	Sources
Methane (CH <sub>4</sub> )	Flammable gas; main component of natural gas	12 years	21	Emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
Carbon dioxide (CO <sub>2</sub> )	An odorless, colorless, natural greenhouse gas.	30-95 years	1	Enters the atmosphere through burning fossil fuels (coal, natural gas, and oil), solid waste, trees, and wood products, and also as a result of certain chemical reactions (e.g., manufacturing of cement). Carbon dioxide is removed from the atmosphere (or "sequestered") when it is assimilated by plants and soil as part of the biological carbon cycle.
Chloro-fluorocarbons	Gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. They are non-toxic nonflammable, insoluble and chemically unreactive in the troposphere.	55-140 years	3,800 to 8,100	Were synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone and have been phased out of production.
Hydro-fluorocarbons	A man-made greenhouse gas. It was developed to replace ozone-depleting gases found in a variety of appliances. Composed of a group of greenhouse gases containing carbon, chlorine and at least one hydrogen atom.	14 years	140 to 11,700	Powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for stratospheric ozone-depleting substances. These gases are typically emitted in smaller quantities because they are potent greenhouse gases.



Greenhouse Gas	Description and Physical Properties	Lifetime	GWP	Sources
Nitrous oxide (N <sub>2</sub> O)	Commonly known as laughing gas, is a chemical compound with the formula N <sub>2</sub> O. It is an oxide of nitrogen. At room temperature, it is a colorless, non-flammable gas, with a slightly sweet odor and taste. It is used in surgery and dentistry for its anesthetic and analgesic effects.	120 years	310	Emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
Pre-fluorocarbons	Has a stable molecular structure and only breaks down by ultraviolet rays about 60 kilometers above Earth's surface.	50,000 years	6,500 to 9,200	Two main sources of pre-fluorocarbons are primary aluminum production and semiconductor manufacturing.
Sulfur hexafluoride	An inorganic, odorless, colorless, and nontoxic nonflammable gas.	3,200 years	23,900	This gas is manmade and used for insulation in electric power transmission equipment, in the magnesium industry, in semiconductor manufacturing and as a tracer gas.

*Table 10. Greenhouse Gases; Source: EPA, Intergovernmental Panel on Climate Change*

The quantity of a particular gas present in the air is known as its concentration, or abundance, which is measured in parts per million, parts per billion, and parts per trillion. One part per million is equivalent to one drop of water diluted into approximately 13 gallons of water, which is roughly equivalent to a full tank of gas in a compact car. Therefore, it can be assumed larger emissions of greenhouse gases lead to a higher concentration in the atmosphere. Each of the greenhouse gases described above can reside in the atmosphere for varying amounts of time, ranging from a few years to thousands of years. All these gases remain in the atmosphere long enough to become well mixed, meaning that the amount that is measured in the atmosphere is roughly the same all over the world regardless of the source of the emission.

## **Regulatory Setting**

### **Senate Bill (SB) 32**

Governor Brown signed Senate Bill (SB) 32 on September 8, 2016, which contains the goal to reduce the State's carbon emissions by 40 percent below 1990 levels by the year 2030. The California Air Resources Board (CARB) adopted the target set by SB 32 and provided a comprehensive strategy towards achieving the 2030 target and new emission inventories in their newly adopted 2017 Scoping Plan.

### **SB 1078, SB 107, and Executive Order S-14-08**

SB 1078, SB 107, and Executive Order S-14-08 require California to generate 20% of its electricity from renewable energy by 2017. SB 107 then changes the 2017 deadline to 2010. Executive Order S-14-08 required that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020.

### **San Joaquin Valley Air Pollution Control District**

SJVAPCD adopted a Climate Change Action Plan (CCAP) in August 2008. While the plan does not have regulatory powers, it directs SJVAPCD to develop guidance to assist District staff, valley businesses, land-use agencies, and other permitting agencies in addressing GHG emissions as part of the CEQA process.

### **Tulare County Climate Action Plan (CAP) (2018)**

The Tulare County Climate Action Plan (CAP) includes a baseline and future year GHG emissions inventories to incorporate the County's strategy to address the 2030 target outlined in SB 32. The 2030 target requires the State to reduce emissions by 40% below 1990 levels. The CAP identifies the County's reduction measures that are required to maintain consistency with the State's target. The plan includes Tulare County's GHG inventory, emission reduction targets to demonstrate alignment with AB 32 and the CARB Scoping Plan, the CAP strategy for achieving emissions reduction targets, and a plan for tracking and monitoring progress in implementing the CAP.

### **City of Tulare Climate Action Plan (2011)**

The City of Tulare Climate Action Plan (Plan) demonstrates the City's commitment to reducing GHG emissions and remaining consistent with the State's GHG emission reduction targets. The City aims to achieve the State-recommended GHG emission reduction target of 15% from baseline by the year 2020 as well as achieve the 2050 state targets associated with Governor's Order S-03-05. In 2010, a GHG emissions inventory was prepared to quantify the amount of GHG emissions produced from government operations and community-wide activities which includes transportation, waste, agriculture, energy, and aircraft related activities. The Plan also outlines GHG reduction measures in the energy use, water use, transportation, land use, solid waste, and agriculture sectors. In addition to reduction measures, the Plan includes long-term adaptations to the risks associated with climate change to mitigate the impacts of climate change on the community.

## **Discussion**

### **a) Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.**

#### **Less than Significant Impact:**

##### *Construction:*

Greenhouse gases would be generated during construction from activities including site preparation, grading, building construction, application of architectural coatings, and paving. The CalEEMod Emissions report predicts that this Project will create a maximum of 786.15 MT of CO<sub>2</sub>e emissions per year during construction. Because the SJVAPCD does not have numeric thresholds for assessing the significance of construction related GHG emissions, predicted emissions from Project construction were compared to SCAQMD thresholds for construction related GHG emissions. The SCAQMD currently has a threshold of 10,000 metric tons of CO<sub>2</sub>e per year for construction emissions amortized over a 30-year Project lifetime. Because Project construction would generate less GHG emissions than this threshold, impacts related to GHG emissions during Project construction would be *less than significant*.

##### *Operation:*

The proposed Project would have the following operational emissions:

- CO<sub>2</sub>: 6,564 metric tons per year
- CH<sub>4</sub>: 8.39 metric tons per year
- N<sub>2</sub>O: 0.3014 metric tons per year
- CO<sub>2</sub>e: 6,863 metric tons per year (combined CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O emissions)

The SJVAPCD has not formally provided guidance on how to analyze GHG emissions impacts for projects within their San Joaquin Valley Air Basin (SJVAB). Until such time as SJVAPCD provides formal guidance, the following alternative metrics used by air districts in California to assess GHG emissions impacts have been identified:

**Bright-Line Numeric Threshold:** The bright-line significance threshold is a numeric, mass emissions threshold. In general, the bright-line threshold identifies the point at which additional analysis of project-related GHG emissions impacts is necessary. Projects below the established bright-line significance criteria have a de minimis contribution to the local, regional, and/or statewide GHG emissions inventory and have less than significant impacts. Projects above this threshold may result in a substantial increase in GHG emissions.

The bright-line threshold is based on the methodology identified in the 2008 CAPCOA white paper (CAPCOA 2008). It is a market capture approach, reflecting the amount of emissions that 90 percent of development projects surveyed in four cities within California would generate. CAPCOA identified that a bright-line threshold set at 900 metric tons of CO<sub>2</sub>e per year would capture 90 percent of projects. In general, 900 metric tons of CO<sub>2</sub>e per year corresponds to (1) a residential development of 50 dwelling units; (2) 35,000 square feet of office space; (3) 11,000 square feet of retail space; and (4) 6,300 square feet of supermarket space.

The 900 metric tons of CO<sub>2</sub>e per year is used as it is the most conservative bright line threshold. Exceeding the bright-line significance criterion does not necessarily indicate that the project generates a significant unavoidable impact. Consistent with how the bright-line threshold is applied in other air districts, this analysis utilizes the bright-line thresholds as a screening criterion to identify whether a full analysis of GHG emissions is warranted. If the project exceeds the screening threshold, the second level of analysis will compare the project to the efficiency metric discussed below.

**Efficiency-Based Threshold for Residential Projects:** The efficiency metric identified by some air districts in California in the absence of a county-wide GHG reduction plan is derived from CARB's Scoping Plan. Residential projects that are over the bright line threshold would not be considered significant if their overall GHG efficiency is less than 6.7 MT CO<sub>2</sub>e/yr/capita. However, it is noted that this threshold is based, in part, on the GHG reducing target established for the year 2020 under AB 32, but the Project would be implemented after the year 2020. Statewide goals for GHG reductions in the years beyond 2020 were codified into state law with the passage of SB 32, which as described previously mandates that California achieve a statewide GHG emission reduction of at least 40 percent below 1990 levels by no later than December 31, 2030. This equates to 40 percent below the statewide GHG reduction target for the year 2020. Therefore, a 40% reduction would be: 6.7 MT CO<sub>2</sub>e/yr/capita x 60% = 4.02 MT CO<sub>2</sub>e/yr/capita.

For this Project: The average household size in the City of Tulare is 3.2 persons (US Census Bureau 2024). The Project consists of up to 564 units, leading to an estimated population of:

$$564 \times 3.47 = 1,957 \text{ people.}$$

Using the efficiency-based threshold: The allowable emissions for this residential Project would be  $1,957 \times 4.02 = 7,867$  metric tons of CO<sub>2</sub>e per year.

The total operational GHG emissions amount to 6,863 metric tons of CO<sub>2</sub>e per year. Since the Project's emissions are below the efficiency-based threshold for residential projects (7,867 metric tons of CO<sub>2</sub>e per year), the Project's operational GHG emissions are considered *less than significant*.

**b) Would the Project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?**

**Potentially Significant Impact:** As the Project would have the potential to emit significant levels of GHGs, the EIR will include further evaluation of Project-related emissions and associated emissions reduction strategies to determine whether the Project conflicts with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. The impact is *potentially significant*.

## VIII. HAZARDS AND HAZARDOUS MATERIALS

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard or excessive noise to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard for people residing or working in the Project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Expose people or structures, either directly or indirectly, to significant risk of loss, injury or death involving wildland fires?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### Environmental Setting

The proposed Project site is located approximately 1.2 miles east of the nearest school (Live Oak Middle School), 3.35 miles northeast of the nearest private airstrip (SCE San Joaquin Heliport – 65C), and approximately 4.83 miles north of the nearest public airport (Mefford Field Airport). The Department of Toxic Substances Control's (DTSC's) Envirostor was used to identify

any sites known to be associated with releases of hazardous materials or wastes within the Project area. This research confirmed that the Project would not be located on or near a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.

### **Regulatory Setting**

#### **Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S. Code [U.S.C.] §9601 et seq.).**

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, or the Superfund Act) authorizes the President to respond to releases or threatened releases of hazardous substances into the environment.

#### **Occupational Safety and Health Administration**

The Occupational Safety and Health Administration (OSHA) sets and enforces Occupational Safety and Health Standards to assure safe working conditions. OSHA provides training, outreach, education, and compliance assistance to promote safe workplaces. The proposed Project would be subject to OSHA requirements during construction, operation, and maintenance.

#### **Toxic Substances Control Act of 1976 (15 U.S.C. §2601 et seq.).**

The Toxic Substance Control Act was enacted by Congress in 1976 and authorizes the EPA to regulate any chemical substances determined to cause an unreasonable risk to public health or the environment.

#### **Hazardous Waste Control Law, Title 26.**

The Hazardous Waste Control Law creates hazardous waste management program requirements. The law is implemented by regulations contained in Title 26 of the California Code of Regulations (CCR), which contains requirements for the following aspects of hazardous waste management:

- Identification and classification;
- Generation and transportation;
- Design and permitting of recycling, treatment, storage, and disposal facilities;
- Treatment standards;
- Operation of facilities and staff training; and
- Closure of facilities and liability requirements.

**California Code of Regulations, Title 22, Chapter 11.**

Title 22 of the California Code of Regulations contains regulations for the identification and classification of hazardous wastes. The CCR defines a waste as hazardous if it has any of the following characteristics: ignitability, corrosivity, reactivity, and/or toxicity.

**California Emergency Services Act**

The California Emergency Services Act created a multi-agency emergency response plan for the state of California. The Act coordinates various agencies, including CalEPA, Caltrans, the California Highway Patrol, regional water quality control boards, air quality management districts, and county disaster response offices.



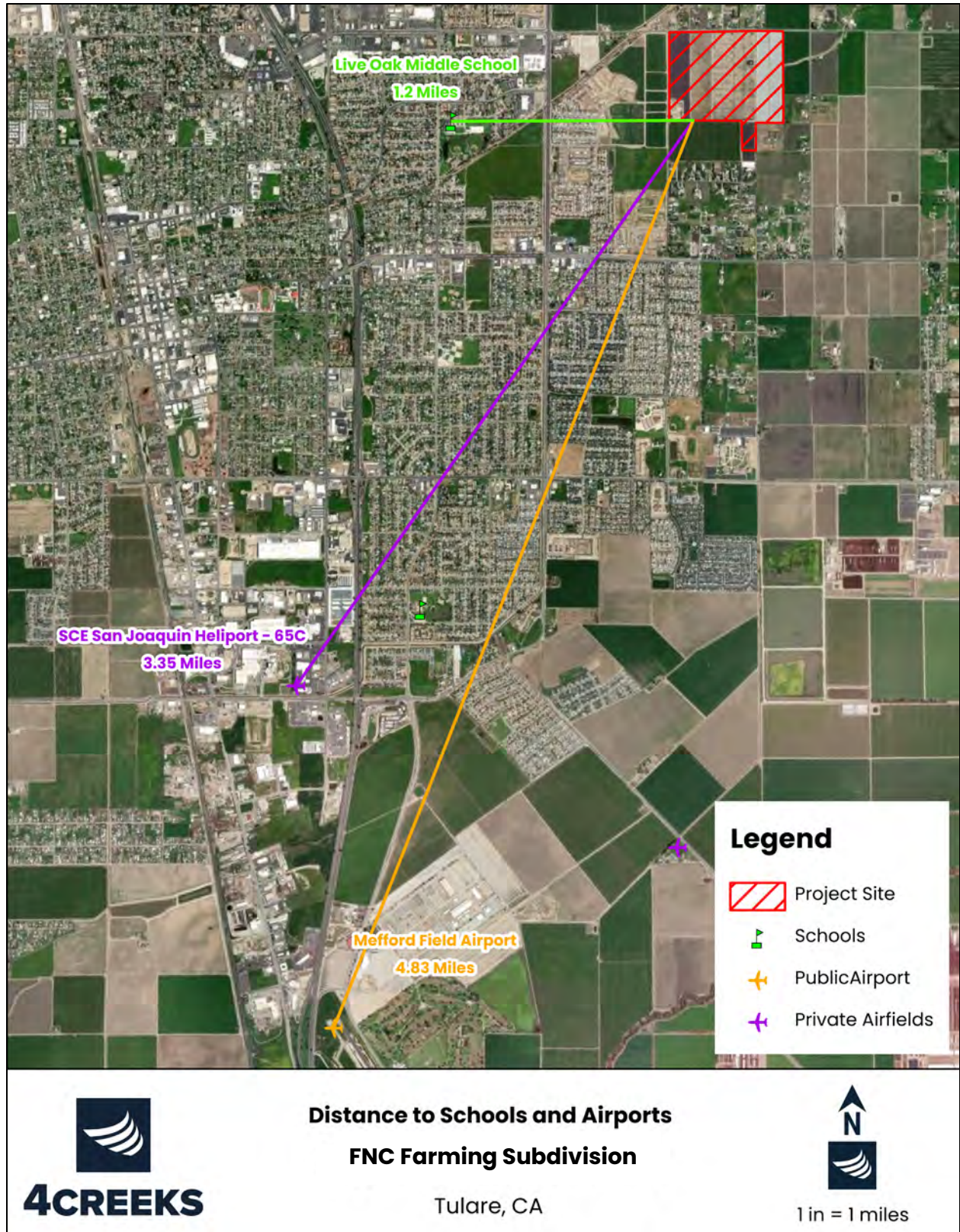


Figure 6: Distance to Schools and Airports Map

## **Discussion**

### **a) Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?**

**Less than Significant Impact with Mitigation:** Project construction activities may involve the use, storage, and transport of hazardous materials. During construction, the contractor will use fuel trucks to refuel onsite equipment and may use paints and solvents to a limited degree. The storage, transport, and use of these materials will comply with Local, State, and Federal regulatory requirements. There is the potential for small leaks due to refueling of construction equipment, however standard construction Best Management Practices (BMPs) included in the SWPPP will reduce the potential for the release of construction related fuels and other hazardous materials by controlling runoff from the site and requiring proper disposal or recycling of hazardous materials.

Additionally, the Department of Toxic Substances Control (DTSC) has identified various types of pesticides that may be categorized as hazardous waste on sites that have been used for agricultural purposes. Therefore, soils on the Project site may be contaminated with pesticides that may be harmful to future residents. Implementation of Mitigation Measure HAZ-1 will ensure that soils are properly analyzed prior to Project construction and that hazardous wastes are not unintentionally transported during Project construction. The impact is *less than significant with mitigation*.

### **b) Would the Project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?**

**Less than Significant Impact:** There is no reasonably foreseeable condition or incident involving the Project that could result in release of hazardous materials into the environment, other than any potential accidental releases of standard fuels, solvents, or chemicals encountered during typical construction of a residential subdivision. Should an accidental hazardous release occur or should the Project encounter hazardous soils, existing regulations for handling hazardous materials require coordination with the California Department of Toxic Substances Control for an appropriate plan of action, which can include studies or testing to determine the nature and extent of contamination, as well as handling and proper disposal. Therefore, potential impacts are *less than significant*.

### **c) Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?**

**No Impact:** The Project is located approximately 1.2 miles from an existing middle school (Live Oak Middle School). The Project does not involve the use or storage of hazardous

substances other than insignificant amounts of pesticides, fertilizers, and cleaning agents required for normal maintenance of structures and landscaping. The Project would not emit hazardous emissions or involve the handling of hazardous materials or waste. Therefore, there would be *no impact*.

**d) Would the Project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?**

**No Impact:** The Project site is not listed as a hazardous materials site pursuant to Government Code Section 65962.5 and is not included on a list compiled by the Department of Toxic Substances Control. There would be *no impact*.

**e) For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the Project area?**

**Less Than Significant Impact:** The proposed Project is located approximately 4.83 miles north of the nearest public airport (Mefford Field Airport). However, according to the Tulare County Airport Master plan, the Project site would not be impacted by the airport. Noise contours developed for 2019 show that the airport would produce less than 65 dB. All land uses located outside of the 65 dB contours are considered less than significant. Implementation of the proposed Project would not result in a safety hazard for people residing or working in the Project area, as the Project is outside of the airport influence area. There is *a less than significant impact*.

**f) Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?**

**No Impact:** The City's site plan review and environmental review procedures shall ensure compliance with emergency response and evacuation plans. In addition, the site plan will be reviewed by the Fire Department per standard City procedure to ensure consistency with emergency response and evacuation needs. Therefore, the proposed Project would have *no impact* on emergency evacuation.

**g) Would the Project expose people or structures, either directly or indirectly, to significant risk of loss, injury or death involving wildland fires?**

**No Impact:** The land surrounding the Project site is developed with urban uses and farmlands which are not considered to be wildlands. Additionally, the City of Tulare General

Plan finds that fire hazards within the Planning Area, including the proposed Project site, have low frequency, limited extent, limited magnitude, and low significance. The proposed Project would not expose people or structures to significant risk of loss, injury or death involving wildland fires and there is *no impact*.

**Mitigation Measures:**

**HAZ-1 Soil Sampling:** Prior to the commencement of construction activities, the Project site must undergo soil sampling conducted by a qualified environmental consultant. A Soil Sampling and Analysis Plan (SSAP) will be developed and approved by the relevant regulatory agency. Soil samples will be collected and analyzed for contaminants, and the results will be compared to DTSC thresholds. If contamination is found, a Remediation Plan will be implemented to address the issue before construction begins. All activities will be documented and clearance from the regulatory agency must be obtained before proceeding with construction.

## IX. HYDROLOGY AND WATER QUALITY

<b>Would the Project:</b>	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise sustainably degrade surface or ground water quality?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner, which would:				
(i) result in substantial erosion or siltation on- or off-site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iv) impede or redirect flood flows?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) In flood hazard, tsunami, or seiche zones risk the release of pollutants due to Project inundation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater movement plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### **Environmental Setting**

**Hydrologic System:** The proposed Project site is in the Tulare Lake Hydrologic Region, which covers 10.9 million acres south of the San Joaquin River. The proposed Project site lies within the San Joaquin Valley Groundwater Basin. The San Joaquin Valley Groundwater Basin is divided into seven sub-basins. The proposed Project site is located within the Kaweah Subbasin. The subbasin lies between the Kings Groundwater Subbasin on the north, the Tule Groundwater Subbasin on the south, the Tulare Lake subbasin on the west, and crystalline

bedrock of the Sierra Nevada foothills on the east. The area is comprised mostly of lands in the Kaweah Delta Water Conservation District. Major rivers in the subbasin include the St. Johns and lower Kaweah Rivers, although the Kaweah River is considered the primary surface water source for groundwater recharge.

**Groundwater:** The City of Tulare water system consists of 23 active wells, a 125,000-gallon water storage tower, two 2-million-gallon concrete storage tanks, one 1.5-million-gallon concrete storage tank, 7 well sites with granulated activated carbon (GAC) treatment filters, 277 miles of water transmission and distribution mains, and over 2,500 fire hydrants. The city's water supply comes from a series of deep groundwater wells scattered throughout the city and pumped into an interconnected water system. Additionally, the City of Tulare, City of Visalia, and the Tulare Irrigation District have joined a Joint Power Authority (JPA) Agreement to form the Mid-Kaweah Groundwater Sustainability Agency (GSA). The JPA states the Board of Directors is responsible for the development, adoption, and implementation of a Groundwater Sustainability Plan as required by the Sustainable Groundwater Management Act of 2014. There is an existing City well that borders the Project site.

**Surface Waters:** None of the City's potable water is supplied through surface water. However, the City of Tulare does purchase surface water from the Tulare Irrigation District to be used for groundwater recharge.

### **Regulatory Setting**

#### **Clean Water Act**

The Clean Water Act (CWA) is enforced by the U.S. EPA and was developed in 1972 to regulate discharges of pollutants into the waters of the United States. The Act made it unlawful to discharge any pollutant from a point source into navigable waters unless a National Pollution Discharge Elimination System (NPDES) Permit is obtained.

#### **National Flood Insurance Act**

The Federal Emergency Management Agency (FEMA) is tasked with responding to, planning for, recovering from, and mitigating against disasters. The Federal Insurance and Mitigation Administration within FEMA is responsible for administering the National Flood Insurance Program (NFIP) and administering programs that aid with mitigating future damages from natural hazards.

#### **California Water Quality Porter-Cologne Act**

California's primary statute leading water quality and water pollution concerns with respect to both surface waters and groundwater is the Porter-Cologne Water Quality Control Act of 1970 (Porter-Cologne Act). The Porter-Cologne Act grants the State Water Resource Control Board (SWRCB) and each of the nine Regional Water Quality Boards (RWQCB) power to protect water quality and further develop the Clean Water Act within California. The applicable RWQCB for the proposed Project is the Central Valley RWQCB.

### **Central Valley RWQCB**

The proposed Project site is within the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB). The Central Valley RWQCB requires a National Pollution Discharge Elimination System (NPDES) Permit and Stormwater Pollution Prevention Plan (SWPPP) for Projects disturbing more than one acre of total land area. Because the Project is greater than one acre, an NPDES Permit and SWPPP will be required.

**City of Tulare General Plan:** The City of Tulare 2035 General Plan contains the following policies related to water resources:

- **LU-P11.3 System Expansion.** The City shall require new development be responsible for expansion of existing facilities such as water systems, sewer systems, storm drainage systems, parks and other capital facilities made necessary to serve the new development.
- **LU-P11.4 Water Supply System.** The City shall require that water supply systems be adequate to serve the size and configuration of land developments. Standards as set forth in the subdivision ordinance shall be maintained and improved as necessary.
- **LU-P11.5 Water Supply for New Development.** For all new development, prior to the approval of any subdivision applications, the developers shall assure that there is sufficient available water supply to meet Projected buildout.
- **LU-P11.6 Adequate System Maintenance.** The City shall require maintenance funding for streets, storm drainage, and ponding basins for new development.
- **LU-P11.7 Adequate Infrastructure Capacity.** The City shall only approve new development when it can be demonstrated by the applicant that adequate system capacity in the service area is or will be available to handle increases related to the Project.
- **LU-P11.9 Adequate City Service Capacity.** The City shall only approve new development when it can be demonstrated by the applicant that adequate public service capacity in the area is or will be available to handle increases related to the Project. School capacity will be discussed in the review of each development, and the City will ensure early coordination with the school districts serving the site. School capacity will be addressed as allowed under State law.
- **LU-P11.17 Fair Share Improvements.** The City shall ensure new development is required to participate on a fair-share basis in the completion of improvements to the existing sewer system, and/or the construction of new sewer trunk lines as described in the City's adopted Sewer Master Plan.



- **COS-P1.1 Regional Groundwater Protection.** The City shall work with Tulare County and special districts to help protect groundwater resources from overdraft by promoting water conservation and groundwater recharge efforts.
- **COS-P1.8 Water Conservation.** The City shall promote efficient water use and reduced water demand by:
  - Requiring water-conserving design and equipment in new construction.
  - Encouraging water-conserving landscaping and other conservation measures; and
  - Encourage retrofitting existing development with water conserving devices.
  - Providing public education programs.
  - Distributing outdoor lawn watering guidelines.
  - Promoting water audit and leak detection programs.
  - Enforcing water conservation programs.
- **COS-P1.11 Water for Irrigation.** Whenever possible, the City shall require new development to use recycled or non-potable water for irrigation in landscaped areas.

### **Discussion**

#### **a) Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?**

**Less than Significant with Mitigation:** The Project will result in less than significant impacts to water quality due to potentially polluted runoff generated during construction and operation activities. Construction would include excavation, grading, and other earthwork across most of the 140.32-acre Project site. During storm events, exposed construction areas across the Project site may cause runoff to carry pollutants, such as chemicals, oils, sediment, and debris. Since the Project is greater than one acre in size, implementation of a Stormwater Pollution Prevention Plan (SWPPP) will be required for the Project. A SWPPP identifies all potential sources of pollution that could affect stormwater discharges from the Project site and identifies best management practices (BMPs) related to stormwater runoff. These BMPs and the implementation of Mitigation Measures HYD-1 and HYD-2 will ensure impacts from construction remain *less than significant with mitigation*.

During operation there may be chemicals or surfactants used for Project maintenance, so discharge in storm water runoff could impact water quality standards. The Project includes a 5.47-acre park including a 2.64-acre pond, which all stormwater runoff on the site will be diverted to during operation of the residential development. Therefore, potentially polluted surface runoff during normal operational activities is not expected to degrade surface or ground water quality off the Project site. To mitigate these potential operational and construction-related impacts, Mitigation Measures HYD-1 and HYD-2 will be implemented. Therefore, the impacts are *less than significant with mitigation*.



**b) Would the Project substantially decrease groundwater supplies or interfere with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?**

**Less than Significant Impact:** A Water Supply Assessment was prepared by 4Creeks, Inc. and the full report can be found in Attachment F.

The Central Valley is currently dealing with a decline in groundwater supply. To assist in mitigating groundwater decline, The City of Tulare has established fees that will fund groundwater recharge and other water resource Projects within the City.

The City's current sole source of water supply is groundwater, which is extracted from underground aquifers through 23 active groundwater wells. The City's water supplies are entirely from the Kaweah Groundwater Subbasin, and this groundwater supply has reliably met the City's water demands. The City anticipates to supply all its water demand from the Kaweah Subbasin through the year 2040. The actual water supply in 2015 was 9,055.4 AF, which includes groundwater, surface water, and recycled water. The City of Tulare Public Water System supplied approximately 16,938 acre-feet (AF) of drinking water for human consumption in 2020. The UWMP also states that there is an available supply of 20,371.8 AFY by 2040. In 2015, the recorded yearly water usage was 15,350 AF of water.

Using information from the City's adopted 2020 Urban Water Management Plan (UWMP) and the Water Supply Assessment prepared by 4Creeks, the Project is expected to demand a total water use of 265.89 AFY. This is based on the total residential and park water uses estimated for the proposed Project. The estimated dwelling units for the Rural Residential portion (8 units) was included in the water use estimations, despite it not being planned for development as part of the proposed Project. The total residential water demand is estimated to be 286 AFY. This is based on an estimated population of 1,957 (564 Dwelling Units, 3.47 Persons/Dwelling Unit per the US Census Bureau ). The Project also includes 5.47 acres of parks and open space. A conservative estimate would assume that the entire landscaping acreage will be irrigated lawn and will require five acre-feet of water per acre per year. This figure is based on information on water requirements for large, irrigated lawns such as golf courses in the region. This totals 27.35 AFY for the parks and open space. As stated previously, the total Project will require approximately 286 AFY.

In order to compare the water-use with and without implementation of the proposed Project, water demand factors from the Sacramento Valley Land Use/Water Supply Analysis Guidebook (2007) were used to make water use calculations. The Water Supply Analysis Guidebook suggests a water use of 3.5 acre-feet of water per acre, per year for row/field crops. Therefore, 127-acres of row crop agriculture would result in a water use of 444acre-feet of water per year.

The proposed residential development would require approximately 265.89 acre-feet of water per year. Therefore, the proposed Project would not increase water demand beyond existing conditions. The impact is *less than significant*.

**c) Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner, which would:**

**i. Result in substantial erosion or siltation on- or off-site?**

**Less than Significant with Mitigation:** The proposed Project would result in the addition of impervious surfaces and alter existing drainage patterns on approximately 132.5 acres of the 140.32-acre Project site which would have the potential to result in erosion or siltation on- or off-site. The disturbance of soils during construction could cause erosion, resulting in temporary construction impacts. However, this impact would be appropriately mitigated through implementation of a Stormwater Pollution Prevention Plan (SWPPP) which include mandated erosion control measures, which are developed to prevent significant impacts related to erosion caused by runoff during construction (Mitigation Measure HYD-1). The Project proponent will also be required to prepare drainage plans (Mitigation Measure HYD-2) and a Development Maintenance Manual (Mitigation Measure HYD-3) to ensure that existing drainage patterns are maintained during Project operations and that the Project would not result in substantial erosion or siltation on- or off-site. The impact is *less than significant with implementation of these mitigation measures*.

**ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?**

**Less than Significant with Mitigation:** The proposed Project would result in the addition of impervious surfaces on 132.5 acres of the total 140.32-acre Project site which would have the potential to increase surface runoff resulting in flooding on- or off-site. This impact would be appropriately mitigated through implementation of Mitigation Measure HYD-2, which requires the Project to submit drainage plans to the City Engineer prior to the issuance of grading permits. The drainage plans will include BMPs to ensure runoff from the Project will not result in flooding on- or off-site. Therefore, impacts are *less than significant with mitigation*.

**iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?**

**Less than Significant with Mitigation:** The proposed Project would result in the addition of impervious surfaces and alter existing drainage patterns on approximately 132.5 acres of the 140.32-acre Project site which would have the potential to impact existing stormwater drainage systems or provide additional sources of polluted runoff. The proposed Project would contain a storm drainage basin to collect all runoff from the site. The disturbance of soils during construction could cause erosion, resulting in temporary construction impacts. However, this impact would be appropriately mitigated through implementation of a Stormwater Pollution Prevention Plan (SWPPP) which include mandated erosion control measures, which are developed to prevent significant impacts related to erosion caused by runoff during construction (Mitigation Measure HYD-1). During Project operations, the proposed impervious surfaces, including roads, building pads, and parking areas, would collect automobile derived pollutants such as oils, greases, rubber, and heavy metals. This could contribute to point source and non-point source pollution if these pollutants were transported into waterways during storm events. The Project proponent will be required to prepare drainage plans (Mitigation Measure HYD-2) and a Development Maintenance Manual (Mitigation Measure HYD-3) to ensure that the Project would not overwhelm the planned stormwater drainage basin or result in discharges of polluted runoff into local waterways. The impact is *less than significant with implementation of these mitigation measures*.

**iv. Impede or redirect flood flows?**

**Less than Significant with Mitigation:** The Project site is generally flat and no significant grading or leveling will be required. The proposed Project site is not in proximity to a stream or river and will not alter the course of a stream or river. According to National Flood Hazard mapping by the Federal Emergency Management Agency, the proposed Project is not located within a 100-year flood hazard area.

The proposed Project would result in the addition of impervious surfaces on 132.5 acres of the 140.32-acre Project site which could affect drainage and flood patterns. This impact would be appropriately mitigated through implementation of Mitigation Measure HYD-2, which requires the Project to submit drainage plans to the City Engineer prior to the issuance of grading permits. The drainage plans will include BMPs to ensure the Project will

not impede or redirect flood flows. Therefore, impacts are *less than significant with mitigation*.

**d) Would the Project, in flood hazard, tsunami, or seiche zones, risk the release of pollutants due to Project inundation?**

**No Impact:** The proposed Project is located inland and not near an ocean or large body of water, therefore, would not be affected by a tsunami. The proposed Project is in a relatively flat area and would not be impacted by inundation related to mudflow. Since the Project is in an area that is not susceptible to inundation, the Project would not risk the release of pollutants due to Project inundation. As such, there is *no impact*.

**e) Would the Project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?**

**No Impact:** The Project would not conflict with or obstruct the implementation of a water quality control plan or sustainable groundwater management plan. The proposed Project is consistent with the Central Valley RWQCB. The Project will comply with all applicable rules and regulations regarding water quality and groundwater management and there is *no impact*.

**Mitigation Measures for Hydrology and Water Quality**

**Mitigation Measure HYD-1:** Prior to the issuance of any construction/grading permit and/or the commencement of any clearing, grading, or excavation, the Applicant shall submit a Notice of Intent (NOI) for discharge from the Project site to the California SWRCB Storm Water Permit Unit.

- Prior to issuance of grading permits for Phase 1 the Applicant shall submit a copy of the NOI to the City.
- The City shall review noticing documentation prior to approval of the grading permit. City monitoring staff will inspect the site during construction for compliance.

**Mitigation Measure HYD-2:** The Applicant shall require the building contractor to prepare and submit a Storm Water Pollution Prevention Plan (SWPPP) to the City 45 days prior to the start of work for approval. The contractor is responsible for understanding the State General Permit and instituting the SWPPP during construction. A SWPPP for site construction shall be developed prior to the initiation of grading and implemented for all construction activity on the Project site in excess of one (1) acre, or where the area of disturbance is less than one acre but is part of the Project's plan of development that in total disturbs one or more acres. The SWPPP shall identify potential pollutant sources that may affect the quality of discharges to storm water and shall include specific BMPs to control the discharge of material from the site. The following BMP methods shall include, but would not be limited to:

- Dust control measures will be implemented to ensure success of all onsite activities to control fugitive dust;
- A routine monitoring plan will be implemented to ensure success of all onsite erosion and sedimentation control measures;
- Provisional detention basins, straw bales, erosion control blankets, mulching, silt fencing, sand bagging, and soil stabilizers will be used;
- Soil stockpiles and graded slopes will be covered after two weeks of inactivity and 24 hours prior to and during extreme weather conditions; and
- BMPs will be strictly followed to prevent spills and discharges of pollutants onsite, such as material storage, trash disposal, construction entrances, etc.

**Mitigation Measure HYD-3:** A Development Maintenance Manual for the Project shall include comprehensive procedures for maintenance and operations of any stormwater facilities to ensure long-term operation and maintenance of post-construction stormwater controls. The maintenance manual shall require that stormwater BMP devices be inspected, cleaned, and maintained in accordance with the manufacturer's maintenance conditions. The manual shall require that devices be cleaned prior to the onset of the rainy season (i.e., mid-October) and immediately after the end of the rainy season (i.e., mid-May). The manual shall also require that all devices be checked after major storm events. The Development Maintenance Manual shall include the following:

- Runoff shall be directed away from trash and loading dock areas;
- Bins shall be lined or otherwise constructed to reduce leaking of liquid wastes;
- Trash and loading dock areas shall be screened or walled to minimize offsite transport of trash; and
- Impervious berms, trench catch basin, drop inlets, or overflow containment structures nearby docks and trash areas shall be installed to minimize the potential for leaks, spills or wash down water to enter the drainage system.

**X. LAND USE AND PLANNING**

<b>Would the Project:</b>	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Environmental Setting**

The proposed Project site is in the northeastern portion of the City of Tulare Urban Development Boundary, just outside of the city limits, and approximately 2.87 miles northeast of the City of Tulare downtown. The Project site is within the Urban Development Boundary and Sphere of Influence of the City of Tulare and is planned to be annexed into the City. Under the City's 2035 General Plan, the site is designated as Residential Estate (2.1-3 D.U./acre) and Rural Residential (0-2 D.U./acre). The site is currently under Tulare County jurisdiction, and it is zoned as Exclusive Agriculture AE-20 (20-acre minimum) and Exclusive Agriculture AE-40 (40-acre minimum) by the County of Tulare. The Project would involve a zoning amendment to pre-zone the Project area in preparation for annexation into the City limits to Single-Family Residential (R-1-5, R-1-6) under the City of Tulare Code of Ordinances. The site will also require a General Plan Amendment to change the existing land use designation from Residential Estate (2.1-3 D.U./acre) and Rural Residential (0-2 D.U./acre) to Low-Density Residential (3.1-7 D.U./acre) and Rural Residential under the City of Tulare General Plan. The Project proposes two different residential lot sizes, ranging from 5,000 square feet to 6,600 square feet per lot.

The property was used for irrigated row crops until recently. Currently the Project Area is partially covered with a tarp or is bare ground after row crop removal, with annual grasses and herbaceous weeds in portions where there is no tarp cover. A small portion of the property is used for potted blueberry cultivation. The site also contains an on-site irrigation water supply, which includes a 0.5-acre pump station pond.

**Regulatory Setting**

**City of Tulare General Plan:** Approximately 130.52 acres of the Project site are designated as Residential Estate (2.1-3 D.U./acre), and approximately 9.8 acres are designated Rural Residential (0-2 D.U./acre) under the City of Tulare General Plan. The Project would re-designate the Residential Estate to Low Density Residential (3.1-7 D.U./acre). The Rural

Residential portion of the site would be subdivided, with one portion being changed to the designation of Low-Density Residential, and the remaining 7.8-acre portion will retain its Rural Residential land use designation and remain undeveloped. The following goals and policies in the City of Tulare General Plan are applicable to the Project site's residential land use designation:

**Goal LU-3 To designate, protect, and provide land to ensure sufficient residential development capacity and variety to meet community needs and Projected population growth.**

- **LU-P3.1 Neighborhood Housing Mix.** The City shall encourage mixed use neighborhoods to have a variety of housing types and densities to help create an overall healthy, balanced community.
- **LU-P3.2 Executive Housing.** The City shall encourage the development of "upper end" housing to better accommodate the local market for "executive housing."
- **LU-P3.3 Neighborhood Protection.** The City shall seek to prevent residential blight and promote healthy neighborhoods through public and private resources/programs (e.g. enforcement of all codes, neighborhood rehabilitation programs, and redevelopment actions).
- **LU-P3.4 Jobs-Housing Balance.** The City shall consider the effects of city land use proposals and decisions on the Tulare County area and the efforts to maintain a regional jobs housing balance.
- **LU-P3.5 Future Residential Development.** The City shall direct future residential development to areas adjacent or in close proximity to existing and future neighborhoods and neighborhood commercial areas to further Tulare as a self-sufficient, full-service city.
- **LU-P3.6 High Density Residential Locations.** The City shall encourage the development of higher density housing including near commercial services, employment centers, principal arterial routes, and public transportation.
- **LU-P3.7 Neighborhood Noise Abatement.** The City shall require the abatement of significant noise intrusion into existing and proposed new residential developments from the freeway, major arterials, the railroad, the airport, and other significant noise sources. The burden for mitigation shall be on the new user.
- **LU-P3.8 Incompatible Uses.** The City shall protect existing residential neighborhoods from the encroachment of incompatible activities and land uses (i.e. traffic, noise, odors, or fumes) and environmental hazards (i.e. flood, soil instability).
- **LU-P3.9 Planned Development.** The City shall encourage the use of planned development provisions in residential developments to provide flexibility, to meet

various socio-economic needs, and to address environmental and site design constraints.

- **LU-P3.10 Affordable Housing.** The City shall encourage the development of affordable housing to ensure that a variety of housing options are available to all income, age, and cultural groups.

### **City of Tulare Code of Ordinances**

The Project proposes residential land uses in place of agricultural uses to accommodate housing needs in the City. The Small Lot Residential provides compact development of Single-Family housing. This designation typically has a density range of 6-8 DU/acre with a lot size between 3,200 and 4,000 square feet. The Single-Family Residential land use mainly provides low-density, Single-Family housing. This designation has a density range of 3.1-7.0 DU/acre with a minimum lot size of 5,000 square feet.

**Chapter 10.32:** Additionally, the entire Project site will be re-zoned to R-1-5 and R-1-6. The purpose of the Single-Family Residential (R-1) Districts are to provide living areas within the city where development is limited to low density concentrations of one-family dwellings. The R-1-5 designation requires a minimum lot size of 5,000 sq.ft, and the R-1-6 designation requires a minimum lot size of 6,000 sq. ft.



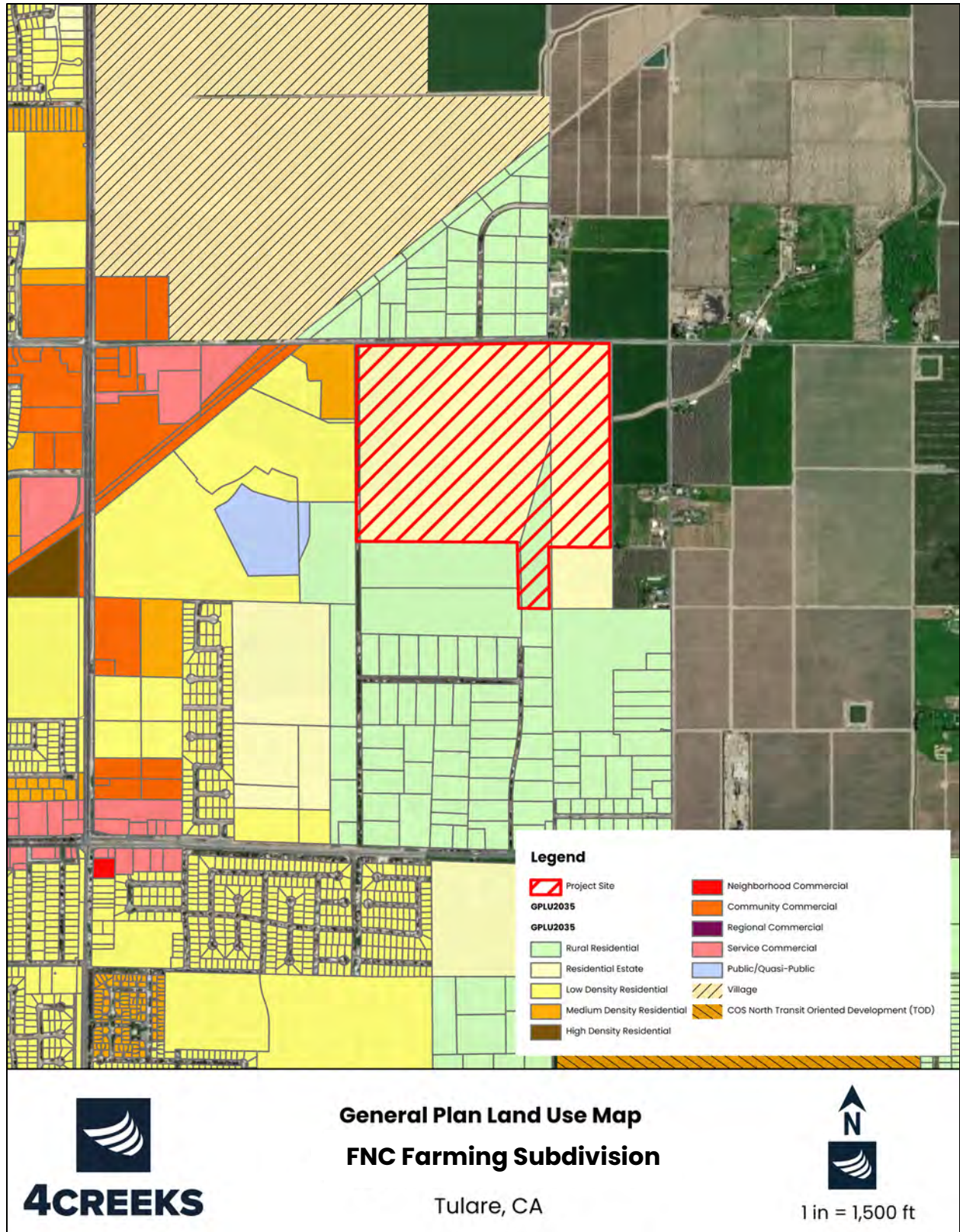


Figure 7: General Plan Land Use Map

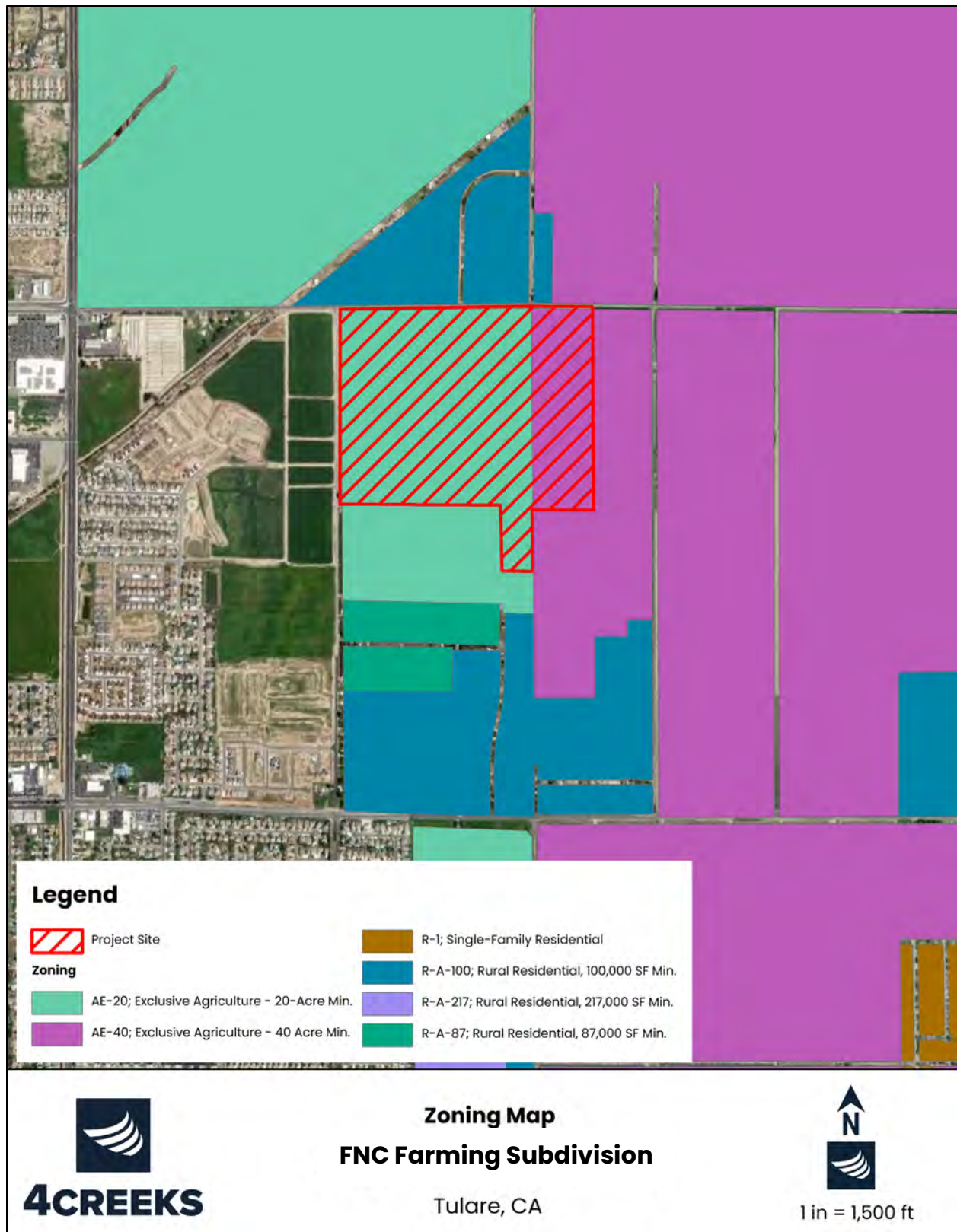


Figure 8: Zoning Map



## **Discussion**

### **a) Would the Project physically divide an established community?**

**No Impact:** The approximate 140.32-acre Project site was used for irrigated row crops until recently. Currently the Project Area is primarily bare ground after irrigated row crop removal, with limited disturbance tolerant annual grasses and herbaceous weeds in patches, and few landscaped shrubs. The remainder of the property to the west, east and south contains potted blueberries, and the ground is covered with a tarp to prevent other plants from occupying the area. The site contains no permanent structures and would not require the removal of any existing residences or businesses. The Project is bordered by rural residences to the north, and agriculture to the east, south and west of the site. However, single-family residences are planned to occur adjacent to Morrison Street on the western edge of the Project site. Upon completion, the proposed Project would result in a new land use that would increase connectivity by providing new sidewalks, new local roads, and a Class I bike path for residences along Castle Rock Avenue, Monarch Dunes Avenue, and Oakmore Street. The proposed Project would not physically divide the existing land uses or areas or any other established community. The Project site is currently under agricultural use, and not a publicly accessible/usable site that would promote connectivity of the surrounding land uses.

The proposed Project is surrounded by existing agricultural and rural residential development, but as discussed, the Project site is not currently promoting the connectivity of the surrounding land uses, as it is not open to public use. The proposed Project would result in the development of residential uses with a 5.47-acre park/pond in the central portion of the Project site. The proposed Project includes new internal roadways and pedestrian connectivity, a pedestrian/bike corridor throughout the residential area. The sidewalk would connect the residential uses throughout the Project site. These trails would be available for use by surrounding residents and would improve the overall connectivity to the surrounding community. Therefore, the impacts would be *less than significant*.

### **b) Would the Project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?**

**No Impact:** Regarding plan or policy consistency, the proposed Project is evaluated based on whether the proposed site plan, design features or development at this location would be consistent with the applicable goals, policies, and objectives outlined in the City's General Plan. The Project site is located on land designated for residential use by the City of Tulare 2035 General Plan. Although the proposed Project is zoned as Exclusive Agriculture (AE-20 & AE-40) by Tulare County, the City plans to annex the Project site into the City, and the site is within the City's Urban Development Boundary. The City has designated the site to be used for very low-density residential uses, particularly Residential Estate (2.1-3

D.U./acre) and Rural Residential (0-2 D.U./acre). The Project proposes changing the majority of the site to Low Density Residential and keeping a 7.8-acre portion Rural Residential. In order to be compliant with the City's General Plan and zoning ordinance, the Project will require a General Plan Amendment and pre-zoning of the site for the previously mentioned land use change.

The proposed Project does not conflict with this land use, or any other policy or regulation adopted for the purpose of avoiding or mitigating an environmental effect and may actually reduce some environmental effects by proposing higher density development. According to the EPA report, *Protecting Water Resources with Higher-Density Development*, lower density development is often associated with greater environmental impacts resulting from greater travel distances, more impervious surfaces per household, and additional land consumption to accommodate housing demand in a community (EPA, 2006). Therefore, the proposed higher densities would address Land Use Policy P3.5 and P3.6 to encourage the development of higher density housing and to direct future residential development to areas adjacent to existing and future neighborhoods and neighborhood commercial areas near the Project site. The proposed Project would not conflict with land use plans, policies or regulations adopted for the purpose of avoiding or mitigating environmental effects. There is *a less than significant impact*.

## XI. MINERAL RESOURCES

<b>Would the Project:</b>	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally - important mineral resource recovery site delineated on a local general plan, specific plan, or other lands use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### **Environmental Setting**

Tulare County contains mineral resources of sand, gravel, and crushed stone, found in alluvial deposits and hard rock quarries. Historically, the County had mines containing mineral deposits of tungsten, copper, gold, magnesium, and lead, however most of these mines are now closed-leaving only 37 active mining operations. There are no active mining operations or designated Mineral Resource Zones within the City of Tulare. Most of this mining takes place along rivers and at the base of the Sierra foothills.

### **Regulatory Setting**

#### **California State Surface Mining and Reclamation Act**

The California State Surface Mining and Reclamation Act was adopted in 1975 to regulate surface mining to prevent adverse environmental impacts and to preserve the state's mineral resources. The Act is enforced by the California Department of Conservation's Division of Mine Reclamation.

**City of Tulare General Plan:** The following mineral resource goals and policies in the Conservation and Open Space Element of the Tulare County General Plan are potentially applicable to the proposed Project:

**Goal COS-8 To protect the current and future extraction of mineral resources that are important to the City's economy while minimizing impacts of this use on the public and the environment.**

- **COS-P8.3 Future Resource Development.** Provide for the conservation of identified and/or potential mineral deposits within the UDB as areas for future resource development.

- **COS-P8.5 Incompatible Development.** Proposed incompatible land uses shall not be on lands containing, or adjacent to, identified mineral deposits or along key access roads, unless adequate mitigation measures are adopted or a statement of overriding considerations stating public benefits and overriding reasons for permitting the proposed use are adopted.
- **COS-P8.10 Resources Development.** The City will promote the responsible development of identified and/or potential mineral deposits.

### **Discussion**

**a) Would the Project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?**

**No Impact:** The Project site has no known mineral resources that would be of a value to the region and the residents of the state, therefore the proposed Project would not result in the loss of impede the mining of regionally or locally important mineral resources. There is *no impact*.

**b) Would the Project result in the loss of availability of a locally - important mineral resource recovery site delineated on a local general plan, specific plan, or other lands use plan?**

**No Impact:** There are no known mineral resources of importance to the region and the Project site is not designated under the City's or County's General Plan as an important mineral resource recovery site. For that reason, the proposed Project would not result in the loss of availability of known regionally or locally important mineral resources. There is *no impact*.

## XII. NOISE

Would the Project result in:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Generation of excessive ground-borne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) For a Project located within the vicinity of a private airstrip or, an airport land use plan or, where such a plan has not been adopted, within two miles of public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### **Environmental Setting**

Noise is often described as unwanted sound. Sound is the variation in air pressure that the human ear can detect. If the pressure variations occur at least 20 times per second, they can be detected by the human ear. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second, called Hertz (Hz).

Ambient noise is the “background” noise of an environment. Ambient noise levels on the proposed Project site are primarily due to agricultural activities and traffic. Construction activities usually result in an increase in sound above ambient noise levels. Vibration is seismic waves that radiate along the surface of the earth and downward into the earth. The operation of heavy construction equipment, particularly pile driving and other impacts devices such as pavement breakers create this vibration.

### **Sensitive Receptors**

Noise level allowances for various types of land uses reflect the varying noise sensitivities associated with those uses. Residences, hotels/motels, hospitals, schools, and libraries are some of the most sensitive land uses to noise intrusion and therefore have more stringent noise level allowances than most commercial or agricultural uses that are not subject to impacts

such as sleep disturbance. The nearest sensitive receptor is the Wildhorse Subdivision that borders the Southeast border of the site.

### **Regulatory Setting**

**City of Tulare General Plan:** The Noise Element of the City of Tulare General Plan is responsible for establishing noise standards within the City and includes the following goals and policies related to noise that may be applicable to the Project.

#### **Goal NOI-1 Protect the citizens of Tulare County from the harmful effects of exposure to excessive noise.**

- NOI-P1.5 Construction Noise. Reduce noise associated with construction activities by requiring properly maintained mufflers on construction vehicles, requiring the placement of stationary construction equipment as far as possible from developed areas, and requiring temporary acoustical barriers/shielding to minimize construction noise impacts at adjacent receptors. Special attention should be paid to noise-sensitive receptors (including residential, hospital, school, and religious land uses).
- NOI-P1.6 Limiting Construction Activities. The City shall limit construction activities to the hours of 6 am to 10 pm, Monday through Saturday.
- NOI-P1.18 Construction-related Vibration. Evaluate individual Projects that use vibration intensive construction activities, such as pile drivers, jack hammers, and vibratory rollers, near sensitive receptors for potential vibration impacts. If construction-related vibration is determined to be perceptible at vibration-sensitive uses, additional requirements, such as use of less vibration- intensive equipment or construction techniques, should be implemented during construction (e.g., drilled piles to eliminate use of vibration-intensive pile driver).

### **Discussion**

#### **a) Would the Project result in generation of a substantial temporary or permeant increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?**

**Less than Significant Impact:** Project construction is anticipated to last approximately 10 years in five phases and will involve temporary noise sources in the vicinity of the Project. The average noise levels generated by construction equipment that will likely be used in the proposed Project are provided in Table 11.

There are sensitive receptors to the north, south and west of the Project site. The closest sensitive receptors are to the north of the Project site, approximately 40–50 feet away from



the northern site boundary. There is another close sensitive receptor southeast of the site, approximately 180 feet from the southeastern corner of the Project site, but no construction is planned to occur on the southeastern portion of the Project site. There are also single-family homes to the west and south, but they are separated by either vacant or agricultural land and are separated from the Project site boundary by at least 800 to 1000 feet.

The City of Tulare requires that mitigation measures be implemented if noise levels exceed 70 dB in sensitive outdoor areas or if interior noise levels exceed 55 dB. As shown in Figure 9, it was found that a residence must be at least 250 feet from construction in the exterior and 100 feet from construction in the interior to avoid noise levels exceeding these thresholds. The significant majority of the Project site is over 250 feet from sensitive receptors, and the sensitive receptors that are closer are separated by Prosperity Avenue. Prosperity Avenue separates the northern site boundary and the residential homes to the north. Prosperity Avenue is an arterial road and is a significant source of ambient noise and will serve as a buffer from the noise resulting from Project construction. Construction is not intended to exceed the existing ambient noise levels produced by the roadway.

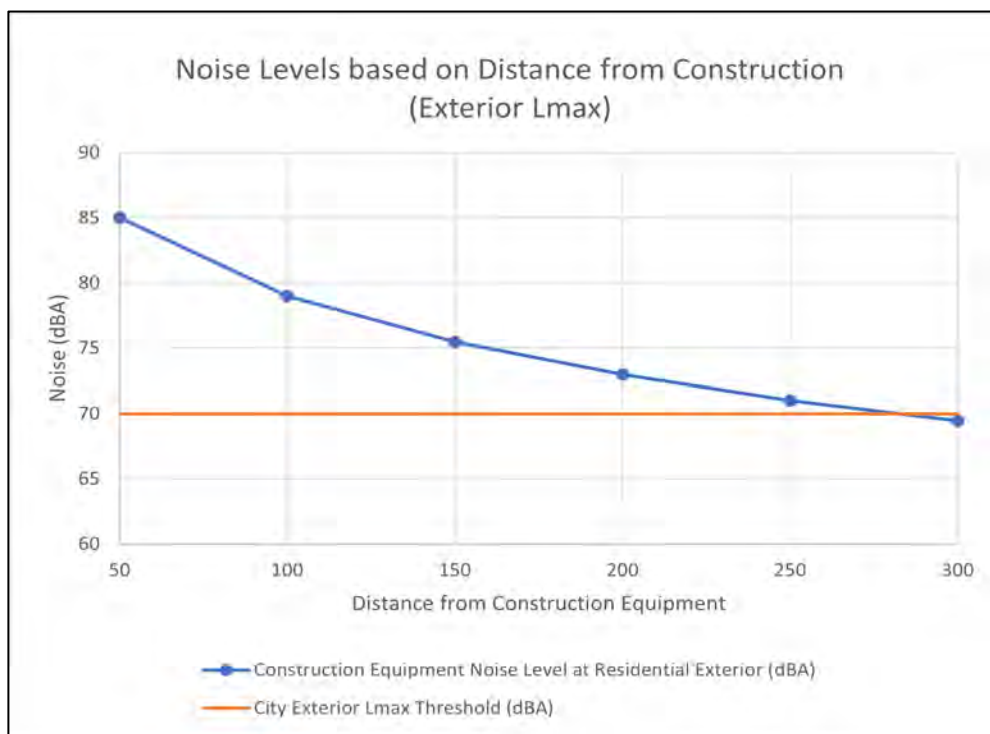
With the Project bordering another residential community, noise disturbance is unavoidable. However, the construction would comply with Tulare Municipal Code Chapter 8.36 to ensure that the construction noise impacts would be less than significant. Measures such as maintaining minimum setback distances between construction equipment and receptors, only having construction during weekday daytime hours, and noise barriers would be implemented to avoid significant construction noise impacts.

Long-term noise levels resulting from the Project would be produced by single family residential homes, which are not normally associated with high operational noise levels. Because noise generated during Project construction would be intermittent, short term, and would not exceed the thresholds established by the Tulare Noise Ordinance for sensitive receptors and the Project does not propose uses that would typically generate high noise levels, the impact is *less than significant*.

Type of Equipment	Exterior Lmax at 50 feet (dBA)
Tractors	84
Loaders	80
Backhoes	80
Excavators	85
Generator Sets	82
Air Compressors	80
Rubber Tired Dozers	85

Forklifts	75
Welders	73
Graders	85
Scrapers	85
Cranes	85
Paving Equipment	85
Rollers	85

*Table 11. Noise Levels of Noise-Generating Construction Equipment. Source: FHA Construction Noise Handbook (dBA at 50 feet). Noise levels beyond 50 feet were estimated using the inverse square law based on given values for dBA at 50 feet.*



*Figure 9: Construction Related Noise Levels - Exterior*

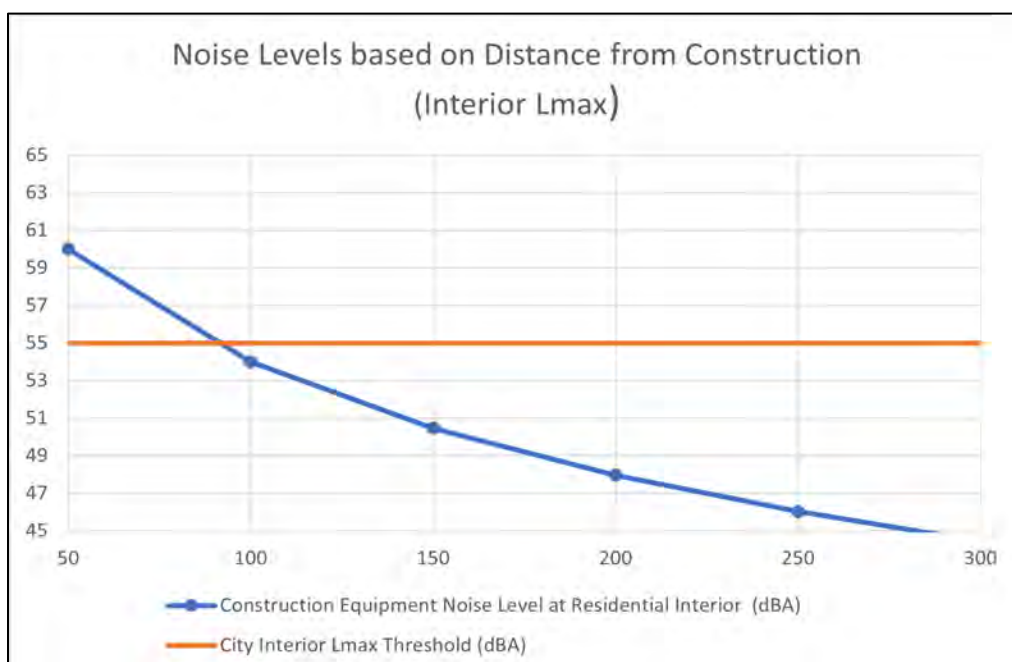


Figure 10: Construction Related Noise Levels – Interior

**b) Would the Project result in generation of excessive ground-borne vibration or groundborne noise levels?**

**Less than Significant Impact:** Although Project operations would not include uses or activities that typically generate excessive groundborne vibration or groundborne noise levels, Project construction could introduce temporary groundborne vibration to the Project site and the surrounding area. Sources that may produce perceptible vibrations are provided in Table 12.

Equipment	Peak Particle Velocity (inches/second) at 25 feet	Approximate Vibration Level (LV) at 25 feet
Pile driver (impact)	1.518 (upper range) 0.644 (typical)	112 104
Pile driver (sonic)	0.734 upper range 0.170 typical	105 93
Clam shovel drop (slurry wall)	0.202	94
Hydromill (slurry wall)	0.008 in soil 0.017 in rock	66 75
Vibratory Roller	0.210	94
Hoe Ram	0.089	87
Large bulldozer	0.089	87
Caisson drill	0.089	87
Loaded trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58

*Table 12. Vibration Levels Generated by Construction Equipment. Source: Transit Noise and Vibration Impact Assessment, Federal Transit Administration, September 2018.*

The primary source of vibration during Project construction would likely be from a bulldozer (tractor), which would generate 0.089 inch per second PPV at 25 feet with an approximate vibration level of 87 VdB. Vibration from the bulldozer would be intermittent and not a source of continual vibration. There are no adopted City standards or thresholds of significance for vibration. The evaluation of potential impacts related to construction vibration levels is based on the published data in the 2018 FTA Guidelines. At 25 feet, the buildings most susceptible to vibration could be impacted at .12 inch/second. Because vibrations generated by Project construction would not exceed 0.12 inch/second.

Additionally, the significant majority of the Project is at least 800–1000 feet from the nearest sensitive receptor, and the closest sensitive receptors to Project construction are along the northern boundary of the Project site. The sensitive receptors (residential homes) to the north of the Project site are about 40–50 feet away from the northern Project boundary, but it is separated by Prosperity Avenue. Prosperity Avenue is a significant source of ambient noise, so Project construction would not significantly alter existing conditions and will be temporary (limited to construction). Construction features such as maintaining minimum setback distances between construction equipment and receptors, only having construction during weekday daytime hours, and noise barriers would reduce the impact of noise and vibration on sensitive receptors. The impact is *less than significant*.

- c) For a Project located within the vicinity of a private airstrip or, an airport land use plan or, where such a plan has not been adopted, within two miles of public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?**

**Less than Significant Impact:** The proposed Project is located approximately 6 miles North of the nearest public airport (Tulare Municipal Airport–Mefford Field). The Project site is not located within the 65 dB contours provided within the Medford Field Comprehensive Airport Land Use Plan. All land uses located outside of the 65 dB contours are considered less than significant. Implementation of the proposed Project would not result in a safety hazard for people residing or working in the Project area. There is a *less than significant impact*.

### XIII. POPULATION AND HOUSING

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Induce substantial unplanned population growth in an area, either directly (for example, by new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

#### **Environmental Setting**

The United States Census Bureau stated the population in the City of Tulare to be 70,693 as of July 2022. This is an increase from the 2010 census, which counted the population in the City of Tulare to be 59,278. Factors that influence population growth in Tulare include job availability, housing availability, and the capacity of proposed and existing infrastructure.

#### **Regulatory Setting**

The City of Tulare population size is influenced by the development code and Housing Element of the General Plan. These documents regulate the number of dwelling units per acre allowed on various land uses and establish minimum and maximum lot sizes, which has a direct impact on the City's population size.

#### **City of Tulare General Plan Housing Element**

The 2035 General Plan includes the following goals and policies related to population and housing that correlate to the proposed Project:

**Goal LU-3** To designate, protect, and provide land to ensure sufficient residential development capacity and variety to meet community needs and Projected population growth.

- **LU-P3.1 Neighborhood Housing Mix.** The City shall encourage mixed use neighborhoods to have a variety of housing types and densities to help create an overall healthy, balanced community.
- **LU-P3.5 Future Residential Development.** The City shall direct future residential development to areas adjacent or in close proximity to existing and future

neighborhoods and neighborhood commercial areas to further Tulare as a self-sufficient, full-service city.

- **LU-P3.6 High Density Residential Locations.** The City shall encourage the development of higher density housing including near commercial services, employment centers, principal arterial routes, and public transportation.

### **Discussion**

- a) **Would the Project induce substantial unplanned population growth in an area, either directly (for example, by new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?**

**Less than Significant:** The United States Census Bureau stated the population in the City of Tulare to be 70,693 as of July 2022. The Project proposes to construct 556 units of low-density residential units and has allocated 8 rural residential units (no planned buildout), but 564 units will be assumed to account for potential future buildout of the rural residential area. According to the US Census Bureau for the year 2020 the average household size is 3.47 persons per household. Based on this metric, the Project will increase the City's population by 1,957 individuals.

The construction of housing at this location would not be unplanned, as the Tulare General Plan designated the proposed Project site for residential uses. Although the land use would be changing to a higher density residential land use than what is outlined in the General Plan, the city is planning for more businesses, services, and infrastructure to accommodate the new population growth. The Project would indirectly induce population growth through the eventual expansion of City limits, extension of roads and the extension of utilities to areas that were previously undeveloped. However, these improvements are depicted as future planned extensions in the City of Tulare's Water, Sewer and Storm Drainage Master Plans reflecting that these improvements are intended to occur. Additionally, these three utility Master Plans were adopted in 2009, reflecting that such improvements have been planned for approximately 15 years. Overall, the Project will not constitute an unplanned increase in growth and population. There is *a less than significant impact*.

- b) Would the Project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?**

**No Impact:** The Project would not displace any existing housing. There are no existing houses located on the Project site. Overall, the Project will increase the amount of available housing in the community. There is *no impact*.

#### XIV. PUBLIC SERVICES

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable serve ratios, response times of other performance objectives for any of the public services:				
a. Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### **Environmental Setting**

##### **Fire**

The City of Tulare and Project site is served by The Tulare Fire Department (TFD), which operates 6 fire stations within the City of Tulare. The TFD will continue to provide fire protection services to the proposed Project site following Project implementation. TFD Fire Station #61 is the nearest fire station and is approximately 2.37 miles southwest of the Project.

##### **Police**

Law enforcement services are provided to the Project site via The Tulare Police Department (TPD). The TPD will continue to provide police protection services to the proposed Project site following Project implementation. The TPD headquarters are located approximately 2.66 miles southwest of the proposed Project site.

##### **Schools**

The majority of the proposed Project site is located within the Tulare City School District (TCSD) from Kindergarten through 8th Grade, and the eastern portion of the subdivision (east of Oakmore Road) is within the Sundale Union Elementary School District. The Tulare City School District includes 17 community day, elementary, and middle schools. The Tulare Joint Union High School District is separate, and there are 8 schools for grades 9-12<sup>th</sup>, which are distributed



throughout Tulare County. The nearest school is located approximately 1.2 miles west (Live Oak Middle School) of the Project site.

Sundale Union Elementary School District covers approximately 24 square miles and is composed of one single school which serves a rural population of TK-8<sup>th</sup> grade students. Sundale Union Elementary School is located approximately 5 miles from the City of Tulare.

## **Regulatory Setting**

### **California Fire Code**

The California Fire Code (Title 24, Part 9 of the California Code of Regulations) establishes regulations to safeguard against hazards of fire, explosion, or dangerous conditions in new and existing buildings, structures, and premises. The provisions of the Fire Code apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal, and demolition of every building or structure throughout the State of California. The Fire Code includes regulations regarding fire-resistance-rated construction, fire protection systems such as alarm and sprinkler systems, fire services features such as fire apparatus access roads, means of egress, fire safety during construction and demolition, and wildland-urban interface areas.

### **City of Tulare Fire Department Plan Check and Hydrant Ordinance**

Tulare's requirements for new construction include provisions for the Fire Department to review building and site plans prior to the issuance of any permit. The Fire Department ensures that proposed Projects will be adequately served by water, and accessible to emergency vehicles. The Department also enforces the City's Hydrant Ordinance, which states that subdividers are responsible for the installation of water mains and hydrants and determines the minimum spacing for fire hydrants. Street dimensions are scrutinized to ensure that space will be preserved for ladder trucks to be stabilized, and for emergency vehicles to turn around. Basic requirements in the City's subdivision ordinance include 52-foot minimum right-of-way widths and a 53-foot turning radius for cul-de-sacs.

### **City of Tulare General Plan**

The 2035 General Plan includes the policies related to public services that correlate to the proposed Project:

- **COS-P4.1:** Parkland/Open Space Standards: The City's goal is to provide 4 acres of developed parkland per 1,000 residents. New residential or mixed-use developments containing a residential component may be required to provide parkland, or pay in-lieu fees, in this ratio as directed by the City.
- **LU-PII.3:** System Expansion: The City shall require new development be responsible for expansion of existing facilities such as water systems, sewer systems, storm drainage

systems, parks, and other capital facilities made necessary to serve the new development.

- **LU-P11.9:** Adequate City Service Capacity: The City shall only approve new development when it can be demonstrated by the applicant that adequate public service capacity in the area is or will be available to handle increases related to the Project. School capacity will be discussed in the review of each development, and the City will ensure early coordination with the school districts serving the site. School capacity will be addressed as allowed under State law.
- **LU-P11.26:** Evaluate Fiscal Impacts: The City shall evaluate the fiscal impacts of new development and encourage a pattern of development that allows the City to provide and maintain a high level of urban services (including, but not limited to, water, sewer, transportation, fire stations, police stations, libraries, administrative, and parks), and community facilities and utility infrastructure, as well as attract targeted businesses and a stable labor force.

## **Discussion**

**a) Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable serve ratios, response times of other performance objectives for any of the public services:**

### **a. Fire protection?**

**Less Than Significant Impact:** Fire protection requirements are based on the number of residents and workers in the TFD service areas. Service demand is primarily tied to population, not building size, because emergency medical calls typically make up the majority of responses provided by the fire department. As the number of residents and workers increases, so does the number of emergency medical calls. The proposed Project is a residential development' therefore, residents would occupy the Project site full-time and there would be an increase in demand for fire protection services.

Service demands during Project construction activities could increase. However, the presence of construction workers on site would be temporary and would cease after construction of the Project is complete. It would therefore not substantially increase the service demand for fire protection services in the City. In addition, the proposed Project would be designed and constructed in accordance with all applicable provisions of the 2019 California Fire Code, which includes requirements for adequate fire flows, width of

emergency access routes, turning radii for equipment, automatic sprinkler systems, fire alarms, and floor to sky height limits along emergency access routes. As part of the standard development practices, Project plans would be reviewed by the City and TFD, prior to construction. Compliance with fire code standards would reduce the potential demand for fire services by decreasing the likelihood and/or severity of a fire emergency at the site.

As previously discussed, the nearest fire station to the Project site is Fire Station 61 (at 800 S. Blackstone), located approximately 2.37 miles southwest. The TFD aims to arrive on the scene of an emergency within a total response time of under 6 minutes 90% of the time. In the event that Fire Station No. 61 could not meet the immediate needs of a call for services independently or does not have capability to address the full extent of a larger incident. The second closest Fire Station No. 63 located approximately 2.93 miles northwest of the Project site or other fire stations within the Tulare/Kings mutual aid agreement, as well as CAL FIRE, could respond or provide support (Tulare County Fire 2022).

The proposed Project would be subject to the payment of a Development Impact Fees (DIF), per Chapter 8.56 (Development Impact Mitigation Fees) of the City's Municipal Code. This fee would be used for future facility improvements necessary to ensure that the development contributes its fair share of the cost of facilities and equipment determined to be necessary to adequately accommodate new development in the City. The DIF amount is determined through evaluation of the need for new public service facilities as it relates to the level of service demanded by new development, which varies in proportion to specific land uses. A portion of the DIF would be used exclusively toward fire protection services.

If the Project is approved and annexed to the City the Project site would be located within the TFD's response area, and the department would provide service to the Project site. With the nearby services of Fire Station No. 61, as well as fire stations in neighboring jurisdictions, the Project would be served by sufficient fire protection services, and it is not anticipated that the Project would hinder the TFD from meeting its response time targets. Furthermore, payment of DIFs would ensure the Project contributes its fair share towards future facility improvements and equipment. The revenues and taxes generated from Project development would contribute to funding for facilities and services that have been identified by the TPD as needed for services in the future. Because the Project would increase the City's population by approximately 4,178 people

and the TFD has indicated they can adequately serve the site, the Project would not result in the need for new or expanded fire protection facilities, and impacts would be less than significant.

#### **b. Police protection?**

**Less than Significant Impact:** The Tulare Police Department (at 260 South M Street) is located approximately 2.84 miles southwest of the Project site. The Project site is currently located in the unincorporated County near the eastern edge of the City and is surrounded by undeveloped agricultural land and scattered rural residential development. It is therefore unlikely to attract attention that would make the Project susceptible to crime.

Construction activities may temporarily increase traffic volumes along Prosperity Avenue, Morrison Street, Oakmore Road and other nearby roadways during the construction period. The added traffic associated with workers commuting to the Project site, haul routes, deliveries, and other Project-related activities may increase the need for law enforcement services during construction activities. During construction, it is anticipated temporary security measures including security fencing and lighting would be installed to deter criminal activity. However, construction would be temporary and would not have a significant adverse effect on the TPD's ability to service the site.

A need for new or expanded public services, such as police facilities, is typically associated with a population increase. Although the proposed Project includes construction of new homes and would generate an increase of approximately 1,957 new residents to the area, it would not induce substantial population growth such that a new police station would need to be constructed on-site. It is anticipated Project design would employ defensible design, lighting, and landscaping, as well as open fencing. These techniques would minimize spaces that are hidden from public view, which would help prevent loitering and crime. Building entries, parking areas, and walkways would be sufficiently lit, which would facilitate safe pedestrian movement. These design and operational practices would lessen the demand for police protection services at the Project site by reducing the potential for crime to occur.

Police units are continuously mobile, and service calls are responded to by the nearest available mobile unit. As previously discussed, TPD's average response time for highest priority emergency calls is 5 minutes. Further, the police service ratio is one police officer per 1,500 population. Therefore, at full build out of the Project, it is estimated an additional 1.3 new officers would be required. However, it is not anticipated that the Project would hinder the TPD from continuing to meet or exceed target response times and provide adequate service levels. In addition, The proposed Project would be subject to the payment of a DIFs per Chapter 8.56 of the City's Municipal Code. This fee would be used for future facility improvements necessary to ensure that the development contributes its fair share

of the cost of facilities and equipment determined to be necessary to adequately accommodate new development in the City. The DIF amount is determined through evaluation of the need for new public service facilities as it relates to the level of service demanded by new development, which varies in proportion to specific land uses. A portion of the DIF would be used exclusively toward fire protection services.

Additionally, the proposed Project would be consistent with or would not hinder implementation of the City General Plan goals and policies pertaining to police protection services. The proposed Project is not anticipated to adversely affect service ratios or response times for police services such that new or expanded police facilities would be required. Therefore, the proposed Project would not result in substantial adverse physical impacts associated with the provision of new or physically altered police facilities, or the need for new or physically altered police facilities; impacts would be *less than significant*.

### c. Schools?

**Less than Significant Impact:** The proposed Project is within the Tulare City Elementary School District, the Tulare Joint Union High School District and the Sundale Union Elementary School District. Since the proposed Project includes the addition of 556 single-family residential units, the number of students in the school district would increase. The proposed Project site is located within the city limits and approved Urban Development Boundary (UDB) per the City's General Plan, and therefore, growth associated with the Project has been planned and expected. In addition to the goals and policies of the City's General Plan, is the Project would be required by Government Code Section 65995 to pay development impact fees to the school districts serving the Project site prior to the issuance of building permits. Pursuant to Government Code Section 65995, the payment of these fees is considered mitigation of Project-related school impacts. Other development projects are likewise subject to the payment of development fees to respective school districts. The funding program established by Government Code Section 65995 allows school districts to collect fees from new developments to offset costs associated with increasing school capacity needs and has been found by the state legislature to constitute "full and complete mitigation of the impacts of any legislative or adjudicative act ... on the provision of adequate school facilities (Government Code Section 65995[h]). Mandatory payment of school fees would reduce impacts to these school districts to less than significant. Furthermore, any project associated with expanding school facilities, whether related to the construction of new facilities or modernization of existing facilities, would be subject to environmental review and mitigation pursuant to CEQA. Therefore, as this Project and other related projects within these school districts' service areas are subject to mandatory impact development fees that are considered by state law to fully mitigate potential impacts, the Project's specific and cumulative impacts to the Tulare City Elementary School District, the Tulare Joint Union High School District, and the Sundale Union Elementary School District would be *less than significant*.

#### d. Parks?

**Less than Significant Impact:** The proposed Project would provide new recreational opportunities or facilities to serve the community population, including a 5.47-acre Central Park and a continuous Class I bike/pedestrian trail, which would help to achieve the City of Tulare's standard of providing 3 acres of developed parkland per 1,000 residents (Quimby Act). Based on a household size of 3.47 persons per household (US Census Bureau 2024)), the Project will add 1,957 individuals to the City's population. Therefore, the Project's 5.47-acre park satisfies the 3 acres per 1000 residents ratio requirement.

Development of the proposed Project would not in and of itself necessitate the construction of new or expanded parks within the city. Parks would act as natural areas, provide stormwater detention, and include trails for recreation. The increase in population associated with the Project would not create a significant impact on city parks outside of the Project site such that there would be substantial deterioration or a need for new or expanded parks, as the new parks would be highly accessible for all Project residents. The proposed Project would also be subject to the payment of DIFs, as per Chapter 8.56 (Development Impact Mitigation Fees) of the City's Municipal Code. This fee would be used for future facility improvements necessary to ensure that the Project contributes its fair share of the cost of facilities and equipment determined to be necessary to adequately accommodate new development in the City. The DIF amount is determined through evaluation of the need for new public service facilities as it relates to the level of service demanded by new development, which varies in proportion to specific land uses. Additionally, the Project would comply with all the applicable goals and policies highlighted in the City's General Plan. As such, impacts associated with parks would be *less than significant*.

#### e. Other public facilities?

**Less than Significant Impact:** Water and wastewater services for the proposed development would be serviced by existing infrastructure beneath neighboring streets. An additional 556 residential units will increase the demand for water and wastewater facilities. According to Tulare's 2035 General Plan Land Use Element, the City states that new development must be responsible for expanding existing water and sewage systems. Therefore, the developer shall pay the required development impact fees to accommodate the expansion of existing systems. Additional discussion of water and wastewater services are provided in the Utilities section of this Initial Study. All development impact fees will be paid to accommodate the increase in the demand for public facilities. The impact is *less than significant*.

## XV. RECREATION

<b>Would the Project:</b>	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Does the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### **Environmental Setting**

There are 20 parks that are owned and operated by The City of Tulare. Live Oak Park is the closest recreational area to the Project site and is located approximately 1.1 miles west of the Project site.

### **Regulatory Setting**

#### **Quimby Act**

The 1975 Quimby Act (California Government Code section 66477) authorized cities and counties to pass ordinances requiring that developers set aside land, donate conservation easements, or pay fees for park improvements. The Act states that the dedication requirement of parkland can be a minimum of three acres per thousand residents or more and up to five acres per thousand residents if the existing ratio is greater than the minimum standard. Revenues generated through in-lieu fees collected and the Quimby Act cannot be used for the operation and maintenance of park facilities. In 1982, the Act was substantially amended. The amendments further defined acceptable uses of or restrictions on Quimby funds, provided acreage/population standards and formulas for determining the exaction, and indicated that the exactions must be closely tied (nexus) to a Project's impacts as identified through studies required by the California Environmental Quality Act (CEQA).

**City of Tulare General Plan:** The Conservation and Open Space Element of the City of Tulare General Plan contains the following recreational resource goals and policies potentially applicable to the Project.

**Goal COS-4 To provide parks and recreation facilities and services that adequately meet the existing and future needs of all Tulare residents.**

- COS-P4.1 Parkland/Open Space Standards. The City's goal is to provide 4 acres of developed parkland per 1,000 residents. New residential or mixed-use developments containing a residential component may be required to provide parkland, or pay in-lieu fees, in this ratio as directed by the City.
- COS-P4.5 Fair Share Responsibilities. The City shall ensure all future residential development is responsible for its fair share of the City's cumulative park and recreational service and facilities maintenance needs.
- COS-P4.6 Land Dedication. The City shall continue its practice of requiring the dedication of community and neighborhood park lands as a condition of approval for large residential development Projects (50 or more lots), if applicable.
- COS-P4.7 Fees In Lieu of Parkland Dedication. The City shall allow the payment of fees in lieu of parkland dedication, especially in areas where dedication is not feasible, as provided under the Quimby Act.

**Discussion**

**a) Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?**

**Less than Significant Impact:** Implementation of the proposed residential Project would include the construction of a 5.47-acre community park, which would satisfy the park-to-resident ratio outlined in the City of Tulare Municipal Code Section 8.26.040. The City requires a ratio of 3 acres of parkland per 1,000 residents. This standard for park dedication was established in compliance with the Quimby Act, California Subdivision Map Act, the Parks Master Plan, and the Open Space and Conservation Element of the City of Tulare General Plan. The Project also includes a Class I Bike/Pedestrian path throughout the site that would connect the residential uses to the community park. Additionally, all developed areas would be landscaped and would provide green space throughout the Project site.

Adherence to the City's municipal code (Chapter 8.56 Development Impact Mitigation Fees) provides funding for the maintenance and operation of existing parks and the development of new parks in the City through in-lieu fees. In summary, the proposed Project would not increase the use of existing recreational facilities such that substantial physical deterioration would occur, as residents and visitors of the Project site would be more likely to use on-site amenities. Conformance with existing regulations and General Plan policies along with the presence of multiple recreational opportunities (park, multi-use trail) will ensure that the potential for significant deterioration of existing recreational



facilities is low. Therefore, impacts related to recreational facilities would be *less than significant*.

**b) Does the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?**

**Less than Significant Impact:** The Project would include construction of a 5.47-acre park / pond. The proposed park is located in the central portion of the proposed neighborhood and would not increase environmental impacts beyond those associated with the proposed Project. The impact is *less than significant*.

## XVI. TRANSPORTATION

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Conflict or be inconsistent with the CEQA guidelines Section 15064.3, Subdivision (b)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### **Environmental Setting**

#### **Vehicular Access**

Vehicular access to the Project is available via Prosperity Avenue on the northern side of the site, Morrison Street on the west side of the site, and the Project will extend Oakmore Street along the Oakmore Street alignment beginning on the northern portion of the Project site. The Project includes a network of local streets that will provide full access to the Project site.

#### **Parking**

Each Single-Family home will contain at least a two-car garage, as well as room for two more cars in the driveway. During construction, workers will utilize existing parking areas and/or temporary construction staging areas for parking vehicles and equipment.

**Pedestrian and Cyclist Connectivity:** The Project will install sidewalks along the south side of Prosperity Avenue, the east side of Morrison Street, and on all internal streets within the Project area, including Oakmore Street. A Class I bike path is proposed along Oakmore Street, Monarch Dunes Avenue, and Castlerock Avenue. These features will provide connectivity for pedestrians and cyclists within the Project area and offsite.

## Roadway Descriptions

**Morrison Street** is a north-south collector that extends south from Prosperity Avenue in the city of Tulare. In the vicinity of the Project, it exists as a two-lane roadway and provides access to agricultural and residential land uses.

**Oakmore Road** is a north-south arterial that extends north from Prosperity Avenue in the city of Tulare. In the vicinity of the Project, it exists as a two-lane roadway and provides access to agricultural and residential land uses.

**Prosperity Avenue** is an east-west arterial that extends throughout the center of the city of Tulare. In the vicinity of the Project, it exists as a four-lane roadway and provides access to agricultural, commercial, industrial, and residential land uses. Across the Project's frontage however, Prosperity Avenue exists as a two-lane road.

## Regulatory Setting

### CEQA Guidelines Section 15064.3, Subdivision (b): Criteria for Analyzing Transportation Impacts

- (1) Land Use Projects. Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, Projects within one-half mile of either an existing major transit stop or a stop along an existing high-quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle miles traveled in the Project area compared to existing conditions should be considered to have a less than significant transportation impact.
- (2) Transportation Projects. Transportation Projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway capacity Projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, a lead agency may tier from that analysis as provided in Section 15152.
- (3) Qualitative Analysis. If existing models or methods are not available to estimate the vehicle miles traveled for the particular Project being considered, a lead agency may analyze the Project's vehicle miles traveled qualitatively. Such a qualitative analysis would evaluate factors such as the availability of transit, proximity to other destinations, etc. For many Projects, a qualitative analysis of construction traffic may be appropriate.
- (4) Methodology. A lead agency has discretion to choose the most appropriate methodology to evaluate a Project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a Project's vehicle miles traveled

and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate vehicle miles traveled and any revisions to model outputs should be documented and explained in the environmental document prepared for the Project. The standard of adequacy in Section 15151 shall apply to the analysis described in this section.

**City of Tulare Improvement Standards:** The City of Tulare's Improvement Standards are developed and enforced by the City of Tulare's Engineering Division to guide the development and maintenance of City Roads. The cross-section drawings contained in the City Improvement Standards dictate the development of roads within the City.

**City of Tulare General Plan:**

The 2035 General Plan includes the policies related to transportation that correlate to the proposed Project:

- **TR-P2.3 Level of Service Standard.** The City shall maintain Level of Service "D," as defined in the Highway Capacity Manual (published by the Transportation Research Board of the National Research Council), as the minimum desirable service level at which freeways, arterial streets, collector streets, and their intersections should operate.
- **TR-P2.6 Highway Right-of-Way.** The City shall work with Caltrans to ensure that new development Projects include the dedication of land to match the ultimate right-of-way as delineated in the Caltrans Transportation Concept Reports.
- **TR-P2.10 Roadway Improvements.** The City shall improve existing roadway links and intersections which are identified as operating below Level of Service "D" standard or have other significant existing safety or operational deficiencies.
- **TR-P2.14 Driveway/Curb Cut Consolidation.** The City shall encourage the consolidation of driveways, access points, and curb cuts along existing developed major arterials or arterials when new development or a change in the intensity of existing development or land uses occurs or when traffic operation or safety warrants.
- **TR-P2.27 Orientation of Subdivision Away from Arterials.** The City shall require residential development to be oriented away (side-on or rear-on) from major arterials and arterials, and properly buffered from these roadway types to preserve the carrying capacity on the street and protect the residential environment. No single-family residence driveways are allowed on collector streets.
- **TR-P6.2 Provision of Sidewalks for new Development.** The City shall require all new development to provide sidewalks or other suitable pedestrian facilities. Whenever feasible, pedestrian paths should be developed to allow for unobstructed pedestrian flow to major destinations such as bus stops, schools, parks, and shopping centers.

## Discussion

### a) Would the Project conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

**Potentially Significant Impact:** The existing General Plan established LOS “D” as the minimum acceptable LOS standard on city facilities. A traffic study prepared for the Project by Ruetters & Schuler, Inc. (Attachment E) concluded that the Project would result in a significant increase in vehicle or trips.

Table 13 shows the estimated vehicle trips generated for the proposed Project. The proposed Project is expected to generate approximately 8,608 daily trips, including 177 AM peak hour trips (109 inbound, 68 outbound) and 502 PM peak hour trips (241 inbound, 261 outbound). All roadway segments within the scope of the study currently operate at or above LOS D and are expected to continue to do so through the year 2044, both with and without the Project.

General Information			Daily Trips	AM Peak Hour Trips		PM Peak Hour Trips	
ITE Code	Development Type	Variable	ADT	In% Split/Trips	Out% Split/Trips	In% Split/Trips	Out% Split/Trips
210	Single-Family Detached Housing	556 Dwelling Units	4,631	25% 84	75% 252	63% 297	37% 174
821	Shopping Plaza*	50,000 S.F.	5,261	62% 109	38% 68	48% 241	52% 261
Sub-total			9,892	109	68	241	261
Adjustments Pass-by		15%	789	16	10	36	39
<b>Total</b>			8,608	88	55	193	209

Table 13. Project Trip Generation (Source: Institute of Transportation Engineers (ITE) Trip Generation, 11<sup>th</sup> Edition)

#	Intersection	Total Improvements Required by 2044	Project Percent Share
1	Mooney Blvd & Cartmill Ave	Add NBT, SBT	4.74%
6	Mooney Blvd & Cartmill Ave	Add NBT, NBL, SBT, SBL, EBT, WBT, WBL	21.47%
7	Morrison St & Seminole Ave	Signal	53.12%
9	Mooney Blvd & Seminole Ave	Signal	2.73%
12	Morrison St & Tulare Ave	Add EBR	19.11%

Table 14. Future Intersection Improvements

\*Removed from Project site plan in later design phases.

**Traffic Improvement Acronyms:**

NBT – North Bound Through  
SBL – South Bound Left  
WBT – West Bound Through

NBL – North Bound Left  
EBT – East Bound Through  
WBL – West Bound Left

SBT – South Bound Through  
EBR – East Bound Right

However, with the addition of Project traffic, the intersection of Morrison Street and Prosperity Avenue is anticipated to operate below an acceptable level of service. Other roadways near but not immediately adjacent to the Project site are also expected to operate below an acceptable level of service with the addition of Project traffic. These intersections include Mooney Boulevard & Cartmill Avenue, Hillman & Prosperity Avenue, Mooney Boulevard & Seminole Avenue, and Mooney Boulevard & Tulare Avenue. All remaining intersections operate at an acceptable level of service in 2024 through 2044 prior to, and with the addition of Project traffic.

Ruettgers & Schuler identified various roadway improvements that would improve the level of service, which would include the installation of traffic signals and the addition/alteration of right-turn lanes and through lanes for north, south, east and west bound traffic. These improvements are needed by the year 2044 to maintain or improve the operational level of service of the street system in the vicinity of the Project site. Recommended future intersection and roadway improvements are shown on Table 14, above.

Potential impacts of the Project on traffic delays within the Project vicinity, recommended roadway improvements, and the feasibility of those improvements will be discussed in greater detail in the Focused EIR prepared for the proposed Project. The Project may result in conflicts with the City of Tulare’s policies on level-of-service, the impact is *potentially significant*.

**b) Would the Project conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b)?**

**Less than Significant Impact:** An analysis of Project VMT (vehicle miles traveled) was conducted in accordance with *Implementing Vehicle Miles Traveled Thresholds in CEQA Analysis Required by SB 743*, a City of Tulare memorandum, dated June 26, 2020 (VMT Guidelines).

**Project Screening**

The VMT Guidelines contain “screening thresholds” for identifying whether a land use Project should be expected to result in a less than significant transportation impact under the California Environmental Quality Act (CEQA). Projects meeting one or more of these

screening criteria are presumed to generate insignificant levels of VMT and would not be required to undergo a detailed VMT analysis.

One screening threshold applies to residential Projects located in low VMT areas. The VMT Guidelines include a map generated by the TCAG regional travel model that identifies which areas satisfy the City's VMT "reduction target" (at least 15 percent below the regional average). Since the Project is shown to be in a low VMT area (see Attachment E for map), the residential portion of the Project is presumed to create a less than significant transportation impact.

The Project meets VMT screening criteria, and therefore, is presumed to have a *less than significant* impact under CEQA.

**c) Would the Project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?**

**No Impact:** The proposed Project does not include any features that could result in increased hazards due to a geometric design feature. All proposed road designs will be reviewed and approved by the City of Tulare Engineering department. There is *no impact*.

**d) Would the Project result in inadequate emergency access?**

**Less Than Significant Impact:** This Project would not result in inadequate emergency access. Emergency access to the site would be via Morrison Street, Prosperity Avenue and Seminole Avenue. A network of local roads within the proposed Project property will provide full access onto and off of the Project site. Any impacts related to emergency access would be *less than significant*.

## XVII. TRIBAL CULTURAL RESOURCES

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

A Phase 1 cultural resources assessment for the FNC Farming Housing Subdivision was conducted by SOAR Environmental (Attachment C). The Project proposes to construct 556 single-family housing units, a community park, and a rural residential zone (undeveloped) on a total of 140.32-acres: Accessor Parcel Numbers (APNs) 172-080-002, 172-010-021, 172-010-022 and 184-020-010.

### **Environmental Setting**

Penutian-speaking Yokuts tribal groups occupied the southern San Joaquin Valley region and much of the nearby Sierra Nevada. For a variety of historical reasons, existing research information emphasizes the central Yokuts tribes who occupied both the valley and particularly the foothills of the Sierra. The northernmost tribes suffered from the influx of Euro-Americans



during the Gold Rush and their populations were in substantial decline by the time ethnographic studies began in the early twentieth century. In contrast, the southernmost tribes were partially removed by the Spanish to missions and eventually absorbed into multi-tribal communities on the Sebastian Indian Reservation (on Tejon Ranch), and later the Tule River Reservation and Santa Rosa Rancheria to the north. The result is an unfortunate scarcity of ethnographic detail on southern Valley tribes, especially in relation to the rich information collected from the central foothill tribes where native speakers of the Yokuts dialects are still found. Regardless, the general details of indigenous lifeways were similar across the broad expanse of Yokuts territory, particularly in terms of environmentally influenced subsistence and adaptation and with regard to religion and belief, which were similar everywhere. The Project Area is in the Southern Valley Yokuts ethnographic territory of the San Joaquin Valley and located between the Kings River and the north shore of Tulare Lake. The Yokuts were generally divided into three major groups, the Northern Valley Yokuts, the Southern Valley Yokuts, and the Foothill Yokuts. The Project Area is likely within the Telamni Yokuts territory. The main village for this area was Waitatshuulul, which was approximately 7 miles north of the Project site along Packwood Creek.

The San Joaquin Valley did not experience contact with Europeans until the late 1700s. The earliest exploration of the San Joaquin Valley by Europeans was likely by the Spaniards when in the fall of 1772 a group known as the Catalanian Volunteers entered the valley through Tejon Pass in search of deserters from the Southern California Missions. However, the group only made it as far north as Buena Vista Lake in modern day Kern County before turning around due to the extensive swamps. Initial settlement within the valley by Europeans in the 1830s was largely either by trappers or horse thieves. With the end of the Mexican American War and the beginning of the gold rush in 1848, the San Joaquin Valley became more populated with ranchers and prospectors. By 1850, California became a state, and Tulare County was established in 1853. Visalia, founded in 1852, is one of the oldest cities in the Southern San Joaquin Valley. During the first few decades, Visalia was a supply center for nearby gold rushes, and had an agricultural economy based on livestock and some agriculture.

### **Cultural Resources Record Search**

The Project Area is located in the USGS Tulare 7.5' Series Quadrangle (USGS 2021). On December 5, 2023, SOAR Environmental submitted a records search request to the Southern San Joaquin Valley Information Center (SSJVIC) located at the California State University, Bakersfield (Attachment C). The records search included a 0.5-mile buffer around the Project Area. The results from the records search indicate two (2) cultural resource studies have been conducted within the Project Area, with one (1) negative result cultural resource study outside the edge of the far south-west corner of the Project Area. According to the information on file, there are no known resources within the Project Area. There are two (2) recorded resources within the 0.5-mile record search radius. There were four (4) reports identified within a 0.5-mile radius of the Project Area. There are no recorded cultural resources within the Project Area or radius that are listed in the National Register of Historic Places, the California Register of

Historical Resources, the California Points of Historical Interest, California Inventory of Historic Resources, or the California State Historic Landmarks. Both are historic-era structures, a railroad branch line and a district canal. In addition to the SSJVIC research, SOAR Environmental further reviewed the cultural resources 0.5-miles from the Project boundary. Using Google Earth aerial maps, the historic railroad branch was determined the majority of the track, ties, and ballast from the Atchison, Topeka, and Santa Fe Railway were removed from the branch lines on the east side of the San Joaquin Valley in the early 1990s.

### **Native American Consultation**

The State requires lead agencies to consider the potential effects of proposed Projects and consult with California Native American tribes during the local planning process for the purpose of protecting Traditional Tribal Cultural Resources through the California Environmental Quality Act (CEQA) Guidelines. Pursuant to PRC Section 21080.3.1, the lead agency shall begin consultation with the California Native American tribe that is traditionally and culturally affiliated with the geographical area of the proposed Project. Such significant cultural resources are either sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a tribe which is either on or eligible for inclusion in the California Historic Register or local historic register, or, the lead agency, at its discretion, and support by substantial evidence, choose to treat the resources as a Tribal Cultural Resources (PRC Section 21074(a) (1-2)).

In accordance with the Tribal Consultation Guidelines and SB 18, government to government consultation between local governments and Native American tribes prior to the adoption or amendment of a general plan is required. Additionally, California PRC § 5024 requires consultation with the Office of Historic Preservation (OHP) when a project may impact historical resources located on State-owned land. California State law (SB 18) requires cities and counties to notify and consult with California Native American Tribes about proposed local land use planning decisions for the purpose of protecting Traditional Tribal Cultural Places (“cultural places”).

Pursuant to AB 52 guidelines, Native American Tribes that could potentially be impacted by the Project were contacted. The tribes that were formally noticed of this Project were the Santa Rosa Rancheria Tachi Yokut Tribe of the Southern Valley Yokut, Tule River Indian Tribe of the Yokut, and the Wuksachi Indian Tribe and Eshom Valley Band of the Foothill Yokut and Mono. These Rancherias are not located within the City limits.

Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See PRC Section 21083.3.2.) Information may also be available from the California Native American Heritage Commission’s Sacred Lands File per PRC Section 5097.96 and the California Historical Resources Information

System administered by the California Office of Historic Preservation. Please also note that PRC Section 21082.3(c) contains provisions specific to confidentiality.

Soar Environmental did not receive comments from the Tulare County Native American groups or affiliated individuals regarding the proposed development at the project location.

### **Regulatory Setting**

In this report “cultural resources” are defined as prehistoric or historical archaeological sites as well as historical objects, buildings, or structures. In accordance with 30 Code of Federal Regulations (CFR) §60.4, “historical” in this report applies to cultural resources which are at least 50 years old. The significance or importance of a cultural resource is dependent upon whether the resource qualifies for inclusion at the local or state level in the California Register of Historical Resources (CRHR), or at the federal level in the National Register of Historic Places (NRHP). Cultural resources that are determined to be eligible for inclusion in the CRHR are called “historical resources” (California Code of Regulations [CCR] 15064.5[a]). Under this statute the determination of eligibility is partially based on the consideration of the criteria of significance as defined in 14 CCR 15064.5(a)(3). Cultural resources eligible for inclusion in the NRHP are deemed “historic properties.”

### **Historical Resources**

Historical resources are defined by CEQA as resources that are listed in or eligible for the California Register of Historical Resources, resources that are listed in a local historical resource register, or resources that are otherwise determined to be historical under California Public Resources Code Section 21084.1 or California Code of Regulations Section 15064.5. Under these definitions Historical Resources can include archaeological resources, Tribal cultural resources, and Paleontological Resources.

### **Archaeological Resources**

As stated above, archaeological resources may be considered historical resources. If they do not meet the qualifications under the California Public Resources Code 21084.1 or California Code of Regulations Section 15064.5, they are instead determined to be “unique” as defined by the CEQA Statute Section 21083.2. A unique archaeological resource is an artifact, object, or site that: (1) contains information (for which there is a demonstrable public interest) needed to answer important scientific research questions; (2) has a special and particular quality, such as being the oldest of its type or the best available example of its type; or (3) is directly associated with a scientifically recognized important prehistoric or historic event or person.

### **Tribal Cultural Resource (TCR)**

Tribal Cultural Resources can include site features, places, cultural landscapes, sacred places, or objects, which are of cultural value to a Tribe. It is either listed on or eligible for the CA Historic Register or a local historic register or determined by the lead agency to be treated as TCR.

### **Paleontological Resources**

For the purposes of this section, “paleontological resources” refers to the fossilized plant and animal remains of prehistoric species. Paleontological Resources are a limited scientific and educational resource and are valued for the information they yield about the history of the earth and its ecology. Fossilized remains, such as bones, teeth, shells, and leaves, are found in geologic deposits (i.e., rock formations). Paleontological resources generally include the geologic formations and localities in which the fossils are collected.

### **Native American Reserve (NAR)**

This designation recognizes tribal trust and reservation lands managed by a Native American Tribe under the United States Department of the Interior’s Bureau of Indian Affairs over which the County has no land use jurisdiction. The County encourages adoption of tribal management plans for these areas that consider compatibility and impacts upon adjacent area facilities and plans.

### **National Historic Preservation Act**

The National Historic Preservation Act was adopted in 1966 to preserve historic and archeological sites in the United States. The Act created the National Register of Historic Places, the list of National Historic Landmarks, and the State Historic Preservation offices.

### **California Historic Register**

The California Historic Register was developed as a program to identify, evaluate, register, and protect Historical Resources in California. Historical resources may include, but are not limited to, “any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically or archaeologically significant” (PRC §5020.1[j]). In addition, a resource included in a local register of historical resources or identified as significant in a local survey conducted in accordance with the state guidelines are also considered historic resources under California Public Resources Code (PRC) Section 5020.1.

According to CEQA guidelines §15064.5 (a)(3), criteria for listing on the California Register of Historical Resources includes the following:

- Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage.
- Is associated with the lives of persons important in our past.

- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
- Has yielded, or may be likely to yield, information important in prehistory or history.

To understand the historic importance of a resource, sufficient time must have passed to obtain a scholarly perspective on the events or individuals associated with the resource. A resource less than 50 years old may be considered for listing in the CRHR if it can be demonstrated that sufficient time has passed to understand its historical importance (14 CCR 4852[d][2]).

The CRHR protects cultural resources by requiring evaluations of the significance of prehistoric and historic resources. The criteria for the CRHR are nearly identical to those for the National Register of Historic Places (NRHP), and properties listed or formally designated as eligible for listing in the NRHP are automatically listed in the CRHR, as are state landmarks and points of interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys.

According to CEQA guidelines §21074 (a)(1), criteria for tribal cultural resources includes the following:

- Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
  - Included or determined to be eligible for inclusion in the California Register of Historical Resources.
  - Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.

Protection of cultural resources within California is additionally regulated by PRC §5097.5, which prohibits destruction, defacing, or removal of any historic or prehistoric cultural features on land under the jurisdiction of State or local authorities.

**City of Tulare General Plan:** The City of Tulare General Plan includes the following goals and policies pertaining to tribal cultural resources:

**Goal COS-5 To manage and protect sites of cultural and archaeological importance for the benefit of present and future generations.**

- **COS-P5.1 Archaeological Resources.** The City shall support efforts to protect and/or recover archaeological resources.
- **COS-P5.6 Protection of Resources with Potential State or Federal Designations.** The City shall encourage the protection of cultural and archaeological sites with potential

for placement on the National Register of Historic Places and/or inclusion in the California State Office of Historic Preservation's California Points of Interest and California Inventory of Historic Resources. Such sites may be of statewide or local significance and have anthropological, cultural, military, political, architectural, economic, scientific, religious, or other values.

- **COS-P5.9 Discovery of Archaeological Resources.** In the event that archaeological/ paleontological resources are discovered during site excavation, grading, or construction, the City shall require that work on the site be suspended within 100 feet of the resource until the significance of the features can be determined by a qualified archaeologist/ paleontologist. If significant resources are determined to exist, an archaeologist shall make recommendations for protection or recovery of the resource. City staff shall consider such recommendations and implement them where they are feasible in light of Project design as previously approved by the City.
- **COS-P5.10 Discovery of Human Remains.** Consistent with Section 7050.5 of the California Health and Safety Code and CEQA Guidelines (Section 15064.5), if human remains of Native American origin are discovered during Project construction, it is necessary to comply with State laws relating to the disposition of Native American burials, which fall within the jurisdiction of the Native American Heritage Commission (Public Resources Code Sec. 5097). If any human remains are discovered or recognized in any location on the Project site, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until:
  - The Tulare County Coroner/Sheriff has been informed and has determined that no investigation of the cause of death is required; and
  - If the remains are of Native American origin,
    - The descendants of the deceased Native Americans have made a timely recommendation to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains, and any associated grave goods as provided in Public Resources Code Section 5097.98.
    - The Native American Heritage Commission was unable to identify a descendant, or the descendant failed to make a recommendation within 24 hours after being notified by the commission, or
    - The landowner or his or her authorized representative rejects any timely recommendations of the descendent, and mediation conducted by the Native American Heritage Commission has failed to provide measures acceptable to the landowner.

- **COS-P5.11 Impact Mitigation.** If preservation of cultural/historical resources is not feasible, the City shall make every effort to mitigate impacts, including relocation of structures, adaptive reuse, preservation of facades, and thorough documentation and archival of records.
- **COS-P5.12 Mitigation Monitoring for Historical Resources.** The City shall develop standards for monitoring mitigation measures established for the protection of historical resources prior to development.
- **COS-P5.13 Alteration of Sites with Identified Cultural Resources.** When planning any development or alteration of a site with identified cultural or archaeological resources, consideration should be given to ways of protecting the resources. The City shall permit development in these areas only after a site-specific investigation has been conducted pursuant to CEQA to define the extent and value of resource, and mitigation measures proposed for any impacts the development may have on the resource.
- **COS-P5.14 Education Program Support.** The City shall support local, state, and national education programs on cultural and archaeological resources.
- **COS-P5.15 Solicit Input from Local Native Americans.** The City shall solicit input from the local Native American communities in cases where development may result in disturbance to sites containing evidence of Native American activity and/or to sites of cultural importance.
- **COS-P5.16 Confidentiality of Archaeological Sites.** The City shall, within its power, maintain confidentiality regarding the locations of archaeological sites in order to preserve and protect resources that are determined to exist. An archaeologist/paleontologist shall make recommendations for protection or recovery of the resource. City staff shall consider such recommendations and implement them where they are feasible in light of Project design as previously approved by the City.
- **COS-P5.17 Cooperation of Property Owners.** The City shall encourage the cooperation of property owners to treat cultural resources as assets rather than liabilities and encourage public support for the preservation of these resources.
- **COS-P5.18 Archaeological Resource Surveys.** Prior to Project approval, the City shall require Project applicant to have a qualified archaeologist conduct the following activities: (1) conduct a record search at the Regional Archaeological Information Center located at California State University Bakersfield and other appropriate historical repositories, (2) conduct field surveys where appropriate, and (3) prepare technical reports, where appropriate, meeting California Office of Historic Preservation Standards (Archaeological Resource Management Reports).

### **Tulare County General Plan (2012)**

Chapter 8.6 of the Tulare County General Plan of 2012 promotes the preservation of cultural and historic resources through managing and protecting sites of cultural and archeological importance for the benefit of present and future generations (County of Tulare 2012). The following policies are outlined for the preservation of cultural resources.

- **ERM-6.1 Evaluation of Cultural and Archaeological Resources:** The County shall participate in and support efforts to identify its significant cultural and archaeological resources using appropriate State and Federal standards.
- **ERM-6.2 Protection of Resources with Potential State or Federal Designations:** The County shall protect cultural and archaeological sites with demonstrated potential for placement on the National Register of Historic Places and/or inclusion in the California State Office of Historic Preservation's California Points of Interest and California Inventory of Historic Resources. Such sites may be of Statewide or local significance and have anthropological, cultural, military, political, architectural, economic, scientific, religious, or other values as determined by a qualified archaeological professional.
- **ERM-6.3 Alteration of Sites with Identified Cultural Resources:** When planning any development or alteration of a site with identified cultural or archaeological resources, consideration should be given to ways of protecting the resources. Development can be permitted in these areas only after a site-specific investigation has been conducted pursuant to CEQA to define the extent and value of resource, and mitigation measures proposed for any impacts the development may have on the resource.
- **ERM-6.4 Mitigation:** If preservation of cultural resources is not feasible, every effort shall be made to mitigate impacts, including relocation of structures, adaptive reuse, preservation of facades, and thorough documentation and archival of records.
- **ERM-6.5 Cultural Resources Education Programs:** The County should support local, State, and national education programs on cultural and archaeological resources.
- **ERM-6.7 Cooperation of Property Owners:** The County should encourage the cooperation of property owners to treat cultural resources as assets rather than liabilities and encourage public support for the preservation of these resources.
- **ERM-6.8 Solicit Input from Local Native Americans:** The County shall continue to solicit input from the local Native American communities in cases where development may result in disturbance to sites containing evidence of Native American activity and/or to sites of cultural importance.
- **ERM-6.9 Confidentiality of Archaeological Sites:** The County shall, within its power, maintain confidentiality regarding the locations of archaeological sites in order to preserve and protect these resources from vandalism and the unauthorized removal of artifacts.



- **ERM-6.10 Grading Cultural Resources Sites:** The County shall ensure all grading activities conform to the County's Grading Ordinance and California Code of Regulations, Title 20, § 2501 et. seq.

### **Discussion**

**a) Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:**

- Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or**

**Less Than Significant Impact with Mitigation:** The Project would not cause a substantial adverse change in the significance of a tribal cultural resource. The Project site is not listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources. Based on the results of the records search, no previously recorded tribal cultural resources are known to be located within the Project site. Although no historical resources were identified, the presence of remains or unanticipated cultural resources under the ground surface is possible. Implementation of Mitigation Measures CUL-1 and CUL-2 will ensure that impacts to tribal cultural resources will be *less than significant with mitigation incorporation*.

- A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.**

**Less Than Significant Impact with Mitigation:** The lead agency has not determined there to be any known tribal cultural resources located within the Project area. Additionally, there are not believed to be any paleontological resources or human remains buried within the Project area's vicinity. However, the potential for buried cultural deposits in the Project area is moderate. If resources were found to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resources to a California Native American Tribe. Implementation of Mitigation Measures CUL-1 and CUL-2 will ensure that any impacts resulting from Project implementation remain *less than significant with mitigation incorporation*.

### **Mitigation Measures for Impacts to Tribal Cultural Resources:**

**Mitigation Measure CUL-1:** If previously unknown resources are encountered before or during grading activities, construction shall stop in the immediate vicinity of the find and a qualified historical resources specialist shall be consulted to determine whether the resource requires further study. The qualified historical resources specialist shall make recommendations to the City on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with Section 15064.5 of the CEQA Guidelines and the City's Historic Preservation Ordinance.

If the resources are determined to be unique historical resources as defined under Section 15064.5 of the CEQA Guidelines, measures shall be identified by the monitor and recommended to the Lead Agency. Appropriate measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these resources. Any historical artifacts recovered as a result of mitigation shall be provided to a City-approved institution or person who is capable of providing long-term preservation to allow future scientific study.

**Mitigation Measure CUL-2:** In the event that human remains are unearthed during excavation and grading activities of any future development Project, all activity shall cease immediately. Pursuant to Health and Safety Code (HSC) Section 7050.5, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98(a). If the remains are determined to be of Native American descent, the coroner shall within 24 hours notify the Native American Heritage Commission (NAHC). The NAHC shall then contact the most likely descendent of the deceased Native American, who shall then serve as the consultant on how to proceed with the remains. Pursuant to PRC Section 5097.98(b), upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment.

## XVIII. UTILITIES AND SERVICE SYSTEMS

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relation of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's Projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### **Environmental Setting**

According to the Tulare Municipal Service Review (2013), the City would be able to provide the necessary infrastructure services and utility systems required for new development. Utilities and service systems include wastewater treatment, storm water drainage facilities, water supply, landfill capacity, and solid waste disposal.

**Wastewater:** Wastewater will be collected and treated at the City's wastewater treatment facility, which is located at the intersection Paige Ave. and West St. Extension of the City's sewer system is planned for future development within the Project area, according to the Sewer System Master Plan for the City of Tulare.

**Solid Waste:** Solid waste collection service is provided by the City of Tulare Solid Waste Division. Solid waste disposal will be provided by the Tulare County Solid Waste Department, which

operates two landfills and six transfer stations within the county. Combined, these landfills receive approximately 300,000 tons of solid waste per day.

**Water:** Water for the proposed development will be provided by the City of Tulare. The City's primary water source is groundwater. Implementation of the proposed Project will not require additional water entitlements. Water pipeline extension has been planned to occur on the Project site, according to the Water System Master Plan (2009) for the City of Tulare.

**Storm Drainage:** Tulare is currently in an agreement with Tulare Irrigation District (TID). The City pumps storm water into canals owned by TID. Storm water is also disposed of and detained in storm drainage detention and retention basins throughout the City. Tulare actively improves its storm drainage system to accommodate new urban development. According to the Storm Drainage System Master Plan (2009), storm drain infrastructure will be extended onto the Project site to accommodate new development. Additionally, a 5.47-acre park and pond will be established and will accommodate storm water flows produced from the development.

## **Regulatory Setting**

### **CalRecycle**

California Code of Regulations, Title 14, Natural Resources – Division 7 contains all current CalRecycle regulations regarding nonhazardous waste management in the state. These regulations include standards for the handling of solid waste, standards for the handling of compostable materials, design standards for disposal facilities, and disposal standards for specific types of waste.

### **Central Valley RWQCB**

The Central Valley RWQCB requires a Stormwater Pollution Prevention Plan (SWPPP) for Projects disturbing more than one acre of total land area. Because the Project is greater than one acre, a SWPPP to manage stormwater generated during Project construction will be required.

The Central Valley RWQCB regulates Wastewater Discharges to Land by establishing thresholds for discharged pollutants and implementing monitoring programs to evaluate program compliance. This program regulates approximately 1500 dischargers in the region.

The Central Valley RWQCB is also responsible for implementing the federal program, the National Pollutant Discharge Elimination System (NPDES). The NPDES Program is the federal permitting program that regulates discharges of pollutants to surface waters of the U.S. Under this program, a NPDES permit is required to discharge pollutants into Waters of the U.S. There are 350 permitted facilities within the Central Valley Region.

## **Discussion**

- a) Would the Project require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relation of which could cause significant environmental effects?**

**Less than Significant Impact:** The proposed Project will require the extension of existing utility services into the Project area. This is not anticipated to cause a significant environmental effect because extension would occur within the right-of-way prior to street construction and/or will occur in areas previously planned for urban development.

The City's wastewater treatment facility (WWTF) has two wastewater treatment trains, domestic and industrial WWTT. Both operate in accordance with the Central Valley Regional Water Quality Control Board Waste Discharge Requirements (WDR) Order NO. R5-2002-0186. The City's Municipal Service Review (2013) indicates that Tulare's WWTF is at sufficient capacity to accommodate new development, including the proposed residential subdivision, which would tie into existing City sewage lines in the Project vicinity. Based on the average generation factor of 93 gallons per day per capita (gpd/c) from the City of Tulare Sewer System Master Plan, a total of 167,865 gallons per day (gpd) or 61.27 million gallons per year of wastewater is estimated to be generated by the proposed Project. This equates to approximately 188 acre-feet per year (AFY). The Tulare Water Pollution Control Facility has an estimated capacity of 6.0 mgd, and the proposed Project would produce 0.1672 mgd. Therefore, the proposed Project would contribute approximately 2.78% of the total remaining capacity of the TWPCF. Furthermore, the proposed Project site was analyzed for service to be provided in the City's Sewer System Master Plan and development here has been accounted for in this document. According to the Sewer System Master Plan, the system is large enough to accommodate a population of 115,000 in the year 2020, far above the current population of 70,693. Furthermore, the Project will likely cause an increase in population totaling to 1,957 individuals. Even with a Projected total population of 72,498 resulting from the Project, it is still far below the capacity of the sewer system.

The Tulare UWMP estimated the residential water demand within the service area to be 11,870 AF by 2040. The residential water demand in the service area (City of Tulare) with the Project was calculated to be 11,963 AF by 2040. The Project is expected to demand approximately 93 AF more water than the demand estimated by the Tulare UWMP. The Project will increase Tulare's water demand; however, because the City has no restrictions on groundwater pumping, it can be assumed that the water system can include the FNC Farming Project. However, the Project's pond will have an estimated yearly recharge of approximately 140 AF of groundwater. (See Section 7.3 of WSA) This results in the Project using 125.89 AFY Net Consumed Groundwater and would result in the Project demanding approximately 47 AF less than the estimated demand from the Tulare UWMP. Furthermore,

development on the Project site has been accounted for in the document on the Proposed Improvements map (City of Tulare Water Master Plan, Figure 5.2), which details the extent of future water system expansion. Therefore, expansion of the water system on the Project has been planned by the City, and the current water system has more than enough capacity to meet the expected demands of the Project.

The Project proposes an on-site stormwater retention basin to retain all stormwater, which is planned to be located in the 5.47-acre park in the center of the neighborhood. The basin would hold 30 acre-feet of storm water, which equates to 1,306,800 cubic feet. The rational method, which is commonly used to estimate peak stormwater runoff, states that the peak runoff rate for this site would be 38 cubic feet/second, which the basin would have capacity for. All values used for the peak runoff rate were based on values from the City of Tulare Design Guidelines (2016) for storm water infrastructure and based on the Project site area.

It is not anticipated that the proposed Project would result in the relocation or construction of new or expanded wastewater treatment facilities, power plants, natural gas extraction facilities or telecommunication facilities, as current facilities have the capacity to accommodate demands associated with the Project. In the event that any of these facilities become required, they would be required to serve more than just the proposed Project and would be subject to separate environmental review and approval. The impact is *less than significant*.

**b) Would the Project have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years?**

**Less than Significant Impact:** According to the Water Supply Assessment prepared by 4Creeks (Appendix F), the City of Tulare Public Water System provided approximately 16,938 acre-feet (AF) of drinking water for consumption for a population of 67,834 residents. The City's water supply source is comprised of 23 active wells that extract water from an underground aquifer. According to the City's Urban Water Management Plan (City of Tulare, 2020), the City is anticipated to supply 11,932 AF in the year 2040. The Tulare UWMP estimated the residential water demand within the service area to be 11,870 AF by 2040. The residential water demand in the service area with the Project was calculated to be 11,983 AF by 2040. The Project is expected to demand approximately 113 AF more water than the demand estimated by the Tulare UWMP. The Project will increase Tulare's water demand; however, because the City has no restrictions on groundwater pumping, it can be assumed that the water system can include the FNC Farming Project. However, the Project's pond will have an estimated yearly recharge of approximately 140 AF of groundwater. (See Section 7.3 of WSA) This results in the Project using 146 AF Net Consumed Groundwater and would result in the Project demanding approximately 33 AF less than the estimated demand from the Tulare UWMP. Therefore, there are sufficient water supplies available to serve the Project and foreseeable future development.

The City engages in a variety of strategies to ensure that adequate water resources are available throughout normal, dry, and multiple dry years. These strategies include a water conservation staging ordinance, which establishes five progressively more restrictive stages of water conservation to be implemented during dry and consecutive-dry years. The city also utilizes conjunctive use techniques, which involve diverting excess surface water for groundwater recharge during wet years so that it will be available during dry years. The proposed Project is planned to be consistent with the 2020 UWMP, which demonstrates adequate water supply to serve development in the City. Additionally, Tulare General Plan Policy LU-P11.3 requires all new development to be responsible for expansion of existing facilities, such as water systems, made necessary to serve the new development. The use of these strategies greatly improves the City's control over water supply and demand, which provides water supply flexibility and significantly reduces the City's vulnerability in the event of dry and multiple dry years.

Based on average per-person water use in the State of California and average household size in the City of Tulare, water demand for the proposed 556-unit (additional 8 rural residential units included in WSA for a conservative estimate) residential development is estimated to be approximately 66,552 gallons of water daily, or 74.54 acre-feet per year. This would be a reduction in water demand for the Project site from the water demand for the existing agricultural use. Including the Projected excess water supply in 2040, the impact is *less than significant*.

**c) Would the Project result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's Projected demand in addition to the provider's existing commitments?**

**Less than Significant Impact:** As previously discussed above for item a) in this section, wastewater generated by the Project would be collected and treated at the City's domestic wastewater treatment train (WWTT). Although the proposed Project will increase wastewater generation due to the addition of 556 residential units, the wastewater produced would not exceed the City's WWTF capacity of 6.0 MGD. The impact is *less than significant*.

**d) Would the Project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?**

**Less than Significant:** Solid waste collection service will be provided by the City of Tulare and waste disposal will be provided by the County. Solid waste is anticipated as a result of Project implementation; however, the Project does not include any components that would generate excessive waste and the existing landfills have sufficient permitted capacity to accommodate the Project's solid waste disposal needs. The impact is *less than significant*.

**e) Would the Project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?**

**No Impact:** This proposed Project conforms to all applicable management and reduction statutes and regulations related to solid waste disposal. The development will comply with the adopted policies related to solid waste, and will comply with all applicable federal, state, and local statutes and regulations pertaining to disposal of solid waste, including recycling. Therefore, the proposed Project would have *no impact* on solid waste regulations.



## XIX. WILDFIRE

<b>If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the Project:</b>	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### **Environmental Setting**

There are no State Responsibility Areas (SRAs) within the vicinity of the Project site, and the Project site is not categorized as a "Very High" Fire Hazard Severity Zone (FHSZ) by CalFire. This CEQA topic only applies to areas within an SRA or a Very High FHSZ.

### **Regulatory Setting**

*Fire Hazard Severity Zones:* geographical areas designated pursuant to California Public Resources Codes Sections 4201 through 4204 and classified as Very High, High, or Moderate in State Responsibility Areas or as Local Agency Very High Fire Hazard Severity Zones designated pursuant to California Government Code, Sections 51175 through 51189.

### **Definitions:**

*Fire hazard severity zones:* geographical areas designated pursuant to California Public Resources Codes Sections 4201 through 4204 and classified as Very High, High, or Moderate in

State Responsibility Areas or as Local Agency Very High Fire Hazard Severity Zones designated pursuant to California Government Code, Sections 51175 through 51189.

*Tulare Unit Strategic Fire Plan Key Goals and Objectives:*

- *Support the implementation and maintenance of defensible space inspections around structures*
- *Analyze trends in fire cause and focus prevention and education efforts to modify behaviors and effect change to reduce ignitions within Tulare County*
- *Identify and evaluate wildland fire hazards and recognize assets at risk, collecting and analyzing data to determine fuel reduction Project, and other Projects.*
- *Assist landowners and local government in the evaluation of the need to retain and utilize features (e.g., roads, fire lines, water sources) developed during fire suppression efforts, taking into consideration those identified in previous planning efforts*

*Tulare County Disaster Preparedness Guide (2011): The Tulare County Preparedness Guide provides guidelines regarding disaster preparedness and evacuation planning for Tulare County residents.*

## **Discussion**

### **a) Would the Project substantially impair an adopted emergency response plan or emergency evacuation plan?**

**No Impact:** The Project would not substantially impair an adopted emergency response plan or emergency evacuation plan. The Tulare Fire Department will review the Project to ensure the Project does not impair emergency response or emergency evacuation. Additionally, the proposed Project site is not located within an SRA or a Very High FHSZ. There is *no impact*.

### **b) Due to slope, prevailing winds, and other factors, would the Project exacerbate wildfire risks, and thereby expose Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?**

**No Impact:** The Project is located on a flat area of agricultural and urban land which is considered to be at little risk of fire. Additionally, the proposed Project site is not located within an SRA or a Very High FHSZ. There is *no impact*.

### **c) Would the Project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?**

**Less than Significant Impact:** The construction of the Project involves adding new local residential streets, and new and relocated utilities. Utilities such as emergency water sources and power lines would be included as part of the proposed development, however all improvements would be subject to City standards and Fire Chief approval. The proposed Project would not exacerbate fire risk and the impact would be *less than significant*.

**d) Would the Project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire instability, or drainage changes?**

**No Impact:** The Project site is not located in an area designated as a Fire Hazard Severity Zone and lands associated with the Project site are relatively flat. Therefore, the Project would not be susceptible to downslope or downstream flooding or landslides as a result of post-fire instability or drainage changes. There is *no impact*.

## XX. MANDATORY FINDINGS OF SIGNIFICANCE

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Does the Project have the potential substantially to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Does the Project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a Project are considerable when viewed in connection with the effects of past Projects, the effects of other current Projects, and the effects of probable future Projects)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Does the Project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### Discussion

- a) Does the Project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number, or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?**

**Less than Significant Impact with Mitigation:** This initial study found the Project could have significant impacts on agricultural resources, biological resources, transportation, hydrology & water quality, geology & soils, cultural and Tribal cultural resources. However, implementation of the mitigation measures pertinent to the quality of the environment, fish and wildlife species habitat, biological communities, rare/endangered animal and plant

species, and California history and prehistory would ensure that impacts are *less than significant with mitigation incorporation*.

- b) Does the Project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a Project are considerable when viewed in connection with the effects of past Projects, the effects of other current Projects, and the effects of probable future Projects)?**

**Potentially Significant Impact:** CEQA Guidelines Section 15064(h) states that a Lead Agency shall consider whether the cumulative impact of a Project is significant and whether the effects of the Project are cumulatively considerable. The assessment of the significance of the cumulative effects of a Project must, therefore, be conducted in connection with the effects of past Projects, other current Projects, and probable future Projects. Cumulative Projects in Tulare County would have the potential to continue to convert agricultural lands and resources to non-agricultural uses, resulting in a significant cumulative impact. The County General Plan EIR found a significant and unavoidable impact for conversion of farmland due to development that may occur in the County (Tulare County 2012). The General Plan EIR found a significant impact at both the county level and in the Project area. Ultimately, even with implementation of Mitigation Measure AG-1, the proposed Project when combined with Projects in the County would be cumulatively significant and unavoidable for agricultural resources. Impacts would be *potentially significant*.

- c) Does the Project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?**

**Less than Significant Impact:** The analyses of environmental issues contained in this Initial Study indicate that the Project is not expected to have substantial impact on human beings, either directly or indirectly. Mitigation measures have been incorporated in the Project design to reduce all potentially significant impacts to less than significant, which results in a *less than significant* impact to this checklist item.

## MITIGATION MONITORING AND REPORTING PROGRAM

As required by Public Resources Code Section 21081.6, subd. (a)(1), a Mitigation Monitoring and Reporting Program (MMRP) has been prepared for the Project in order to monitor the implementation of the mitigation measures that have been adopted for the Project. This Mitigation Monitoring and Reporting Program (MMRP) has been created based upon the findings of the Initial study (IS/MND) for the FNC Farming Subdivision Project in the City of Tulare.

The first column of the table identifies the mitigation measure. The second column names the party responsible for carrying out the required action. The third column, "Timing of Mitigation Measure" identifies the time the mitigation measure should be initiated. The fourth column, "Responsible Party for Monitoring," names the party ensuring that the mitigation measure is implemented. The last column will be used by the City to ensure that the individual mitigation measures have been monitored.

Plan checking and verification of mitigation compliance shall be the responsibility of the City of Tulare.

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
<p><b>AG-1:</b> Prior to issuance of a grading or building permit, whichever occurs first, the Project proponent shall provide written evidence of completion of one or more of the following measures, consistent with Tulare General Plan Policy COS-P3.12 to mitigate the loss of agricultural land at a ratio of 1:1 for net acreage before conversion:</p> <ul style="list-style-type: none"> <li>○ Funding and/or purchasing agricultural conservation easements which shall be managed and maintained by an appropriate entity;</li> <li>○ Purchasing credits from an established agricultural farmland mitigation bank;</li> <li>○ Contributing agricultural land or equivalent funding to an organization that provides for the preservation of farmland in California; or</li> <li>○ Participating in any agricultural land mitigation program adopted by Tulare County provides equal or more effective mitigation than the measures listed above.</li> </ul> <p>The net acreage calculation used to determine mitigation lands shall exclude the existing roads and areas already developed with structures on the Project site. A site plan shall be submitted to the City of Tulare Community Development Department to substantiate the net acreage</p>	City of Tulare	Prior to Construction	City of Tulare	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
<p>calculation, along with written evidence of compliance. Mitigation land shall meet the definition of Prime Farmland and be of similar agricultural quality or higher, as established by the Department of Conservation. Completion of the selected measure or a combination of selected mitigation measures can occur on qualifying land within the southern San Joaquin Valley (Kings, Tulare, or Kern County) that is located outside of a City's UDB and shall be approved by the City of Tulare Community Development Department Director.</p>				
<p><b>Mitigation Measure 1: Swainson's Hawk Nesting Habitat</b></p> <p>A. <b>Protocol Surveys:</b> If construction, grading, or project-related improvements are to commence between March 1 and September 15, a qualified biologist with expertise in Swainson's hawk shall conduct protocol surveys of potential nesting habitat within 0.5 mile of any ground disturbing activities prior to initiation of such activities. Protocol level surveys shall be conducted in conformance with the "Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures for Renewable Energy Projects in the Antelope Valley of Los Angeles and Kern," (<a href="https://www.wildlife.ca.gov/conservation/survey-protocols#377281284-birds">https://www.wildlife.ca.gov/conservation/survey-protocols#377281284-birds</a>) (June 2, 2010) hereby incorporated by references. This protocol prescribes minimum standards for survey equipment, mode of survey, angle and distance to tree, speed, visual and audible clues, distractions, notes</p>	City of Tulare	30 days Prior to the Start of Construction	City of Tulare	



Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
<p>and observations, and timing of surveys. If construction work begins after September 15 and ends before March 1 (outside of the breeding season), impacts to the Swainson's hawk would be avoided. Surveys would not be required for work conducted during this part of the year.</p> <p>A written report with the pre-construction survey results must be provided to the Planning Department and CDFW within 30 days prior to commencement of construction-related activities. The report shall include: the date of the report, authors, and affiliations, contact information, introduction, methods, study location, including map, results, discussion, and literature cited.</p> <p><b>B. Nest Avoidance.</b> If the required protocol surveys show there are no active nests within 0.5-mile of construction activities, then no additional mitigation for nest disturbance will be required. If nesting Swainson's hawks are observed within 0.5-mile of the project site, the project applicant must implement CDFW pre-approved mitigation measures to avoid nest impacts during construction. These measures include:</p> <ol style="list-style-type: none"> <li>1. All project-related activities with the potential to cause nest abandonment or forced fledging of young shall be avoided until the young have fledged.</li> <li>2. If disturbances, habitat conversions, or other project-related activities, that may cause nest abandonment or forced fledging, are necessary, within the nest protection buffer zone (0.5-mile), monitoring of the nest site by a qualified</li> </ol>				

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
<p>raptor biologist, funded by the project applicant, shall be required, to determine if the nest is abandoned. If the nest is abandoned, but the nestlings are still alive, the project proponent is required to fund the recovery and hacking, that is the controlled release of captive reared young, of the nestling.</p> <p>3. The project applicant shall be required to coordinate with CDFW to determine if project activities with the potential to cause disturbance to nesting Swainson's hawks within the 0.5-mile buffer may proceed with a reduced nest buffer and an approved biological monitor. CDFW may authorize a reduced nest buffer with the presence of a monitoring biologist during construction activities to ensure that the nest is not disturbed.</p> <p>4. Routine disturbances such as agricultural activities, commuter traffic, and routine maintenance activities within 0.5-mile of an active nest are not prohibited.</p> <p>C. <b>Foraging Impacts:</b> Generally, CDFW requires mitigation for foraging habitat based on the presence of active nests within 10 miles of the project. If an active nest site is identified within ten miles of the project site, the project proponent will be required by CDFW to provide off-site foraging habitat management lands at a specified Mitigation Ratio that is based on nest proximity to the project site.</p>				
<p><b>Mitigation Measure 2A: Nesting Bird, Roosting Bat, Burrowing Owl Survey, San Joaquin kit fox den Survey:</b> If project-related activities are scheduled between</p>	City of Tulare	14 days Prior to the Start of Construction	City of Tulare	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
<p>February 1 to August 31 (the typical nesting season), a focused survey for nests shall be conducted by a Designated Biologist within fourteen (14) calendar days prior to the beginning of Project-related activities. The Designated Biologist shall survey: a minimum radius of 500-feet for migratory birds around the Project Area, and for sign of roosting bats, active burrowing owl burrows or active San Joaquin kit fox dens. If no active nests, roosts, burrows or dens are found, project activities may proceed as scheduled.</p>				
<p><b>Mitigation Measure 2B: Active Nests or Roosts or Burrows or Dens</b></p> <p>If an active nest, roost or burrow or den is located, then active nests, roosts or burrows or dens should be avoided, and a no-disturbance or destruction buffer shall be determined and established by a Designated Biologist. The buffer shall be kept in place until after the breeding nesting season or the Designated Biologist confirms the young have fledged, are foraging independently, and the nest or burrow is no longer active for the season. The extent of these buffers shall be determined by the Designated Biologist and will depend on the species present, the level of noise or construction disturbance, line of sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers.</p> <p>If an occupied burrowing owl burrow is located the Biologist will consult with CDFW</p>	City of Tulare	Ongoing during Construction	City of Tulare	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
<p>to install one-way doors over the burrow for an individual or an appropriate buffer distance for a nesting pair.</p> <p>If an active San Joaquin kit fox den is located, then consultation with the USFWS would be required in order to document this federally listed species presence in the Project Area.</p>				
<p><b>Mitigation Measure 3: Project Delay</b></p> <p>If a lapse in project-related work of thirty (30) calendar days or longer occurs, the Designated Biologist shall complete another focused survey before Project work can be reinitiated.</p>	City of Tulare	Prior to restarting construction	City of Tulare	
<p><b>CUL-1:</b> If previously unknown resources are encountered before or during grading activities, construction shall stop in the immediate vicinity of the find and a qualified historical resources specialist shall be consulted to determine whether the resource requires further study. The qualified historical resources specialist shall make recommendations to the City on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with Section 15064.5 of the CEQA Guidelines and the City's Historic Preservation Ordinance.</p> <p>If the resources are determined to be unique historical resources as defined under Section 15064.5 of the CEQA Guidelines, measures shall be identified by the monitor and recommended to the Lead Agency. Appropriate measures for significant</p>	City of Tulare	Ongoing During Construction	City of Tulare	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these resources. Any historical artifacts recovered as a result of mitigation shall be provided to a City-approved institution or person who is capable of providing long-term preservation to allow future scientific study.				
<b>CUL-2:</b> In the event that human remains are unearthed during excavation and grading activities of any future development Project, all activity shall cease immediately. Pursuant to Health and Safety Code (HSC) Section 7050.5, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98(a). If the remains are determined to be of Native American descent, the coroner shall within 24 hours notify the Native American Heritage Commission (NAHC). The NAHC shall then contact the most likely descendent of the deceased Native American, who shall then serve as the consultant on how to proceed with the remains. Pursuant to PRC Section 5097.98(b), upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the	City of Tulare	Ongoing During Construction	City of Tulare	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
landowner has discussed and conferred with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment.				
<b>HAZ-1 Soil Sampling:</b> Prior to the commencement of construction activities, the Project site must undergo soil sampling conducted by a qualified environmental consultant. A Soil Sampling and Analysis Plan (SSAP) will be developed and approved by the relevant regulatory agency. Soil samples will be collected and analyzed for contaminants, and the results will be compared to DTSC thresholds. If contamination is found, a Remediation Plan will be implemented to address the issue before construction begins. All activities will be documented and clearance from the regulatory agency must be obtained before proceeding with construction.	City of Tulare	Prior to Construction	City of Tulare	
<b>Mitigation Measure HYD-1:</b> Prior to the issuance of any construction/grading permit and/or the commencement of any clearing, grading, or excavation, the Applicant shall submit a Notice of Intent (NOI) for discharge from the Project site to the California SWRCB Storm Water Permit Unit. <ul style="list-style-type: none"> <li>Prior to issuance of grading permits for Phase 1 the Applicant shall submit a copy of the NOI to the City.</li> <li>The City shall review noticing documentation prior to approval of</li> </ul>	City of Tulare	Prior to the Start of Construction	City of Tulare	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
the grading permit. City monitoring staff will inspect the site during construction for compliance.				
<p><b>Mitigation Measure HYD-2:</b> The Applicant shall require the building contractor to prepare and submit a Storm Water Pollution Prevention Plan (SWPPP) to the City 45 days prior to the start of work for approval. The contractor is responsible for understanding the State General Permit and instituting the SWPPP during construction. A SWPPP for site construction shall be developed prior to the initiation of grading and implemented for all construction activity on the Project site in excess of one (1) acre, or where the area of disturbance is less than one acre but is part of the Project's plan of development that in total disturbs one or more acres. The SWPPP shall identify potential pollutant sources that may affect the quality of discharges to storm water and shall include specific BMPs to control the discharge of material from the site. The following BMP methods shall include, but would not be limited to:</p> <ul style="list-style-type: none"> <li>• Dust control measures will be implemented to ensure success of all onsite activities to control fugitive dust;</li> <li>• A routine monitoring plan will be implemented to ensure success of all onsite erosion and sedimentation control measures;</li> <li>• Provisional detention basins, straw bales, erosion control blankets, mulching, silt fencing, sand</li> </ul>	City of Tulare	45 Prior to the Start of Construction	City of Tulare	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
<p>bagging, and soil stabilizers will be used;</p> <ul style="list-style-type: none"> <li>Soil stockpiles and graded slopes will be covered after two weeks of inactivity and 24 hours prior to and during extreme weather conditions; and</li> </ul> <p>BMPs will be strictly followed to prevent spills and discharges of pollutants onsite, such as material storage, trash disposal, construction entrances, etc.</p>				
<p><b>Mitigation Measure HYD-3:</b> A Development Maintenance Manual for the Project shall include comprehensive procedures for maintenance and operations of any stormwater facilities to ensure long-term operation and maintenance of post-construction stormwater controls. The maintenance manual shall require that stormwater BMP devices be inspected, cleaned, and maintained in accordance with the manufacturer's maintenance conditions. The manual shall require that devices be cleaned prior to the onset of the rainy season (i.e., mid-October) and immediately after the end of the rainy season (i.e., mid-May). The manual shall also require that all devices be checked after major storm events. The Development Maintenance Manual shall include the following:</p> <ul style="list-style-type: none"> <li>Runoff shall be directed away from trash and loading dock areas;</li> <li>Bins shall be lined or otherwise constructed to reduce leaking of liquid wastes;</li> </ul>	City of Tulare	Ongoing through Construction and Operation	City of Tulare	



Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
<ul style="list-style-type: none"> <li>• Trash and loading dock areas shall be screened or walled to minimize offsite transport of trash; and</li> <li>• Impervious berms, trench catch basin, drop inlets, or overflow containment structures nearby docks and trash areas shall be installed to minimize the potential for leaks, spills or wash down water to enter the drainage system.</li> </ul>				

## Supporting Information and Sources

1. AB 3098 List
2. EMFAC2014
3. [Tulare County General Plan \(2012\)](#)
4. [City of Tulare General Plan \(2014\)](#)
5. Tulare County General Plan EIR
6. [City of Tulare Urban Water Management Plan \(2015\)](#)
7. [City of Tulare Climate Action Plan](#)
8. [Tulare County Climate Action Plan](#)
9. [City of Tulare Code of Ordinances](#)
10. [Engineering Standards, City of Tulare \(2016\)](#)
11. SJVAPCD Regulations and Guidelines
12. FEMA Flood Maps
13. California Air Resources Board's (CARB's) Air Quality and Land Use Handbook
14. 2019 California Environmental Quality Act CEQA Guidelines
15. California Building Code (CBC)
16. California Stormwater Pollution Prevention Program (SWPPP)
17. "Construction Noise Handbook." U.S. Department of Transportation/Federal Highway Administration.
18. Government Code Section 65962.5
19. California Environmental Protection Agency (CEPA) San Joaquin Valley Air Pollution Control District Mitigation Measures  
(<http://www.valleyair.org/transportation/Mitigation-Measures.pdf>)
20. Southern California Edison 2019 Power Content Label
21. [Sacramento Valley Land Use/Water Supply Analysis Guidebook \(2007\)](#)
22. Transit Noise and Vibration Impact Assessment, Federal Transit Administration, September 2018.
23. California Department of Transportation Scenic Roadways
24. EPA, Intergovernmental Panel on Climate Change
25. ["The Untapped Potential of California's Urban Water Supply: Water Efficiency, Water Reuse, and Stormwater Capture" – Pacific Institute \(2022\)](#)
26. State of California Governor's Office of Planning and Research
27. Cultural Resources Assessment – SOAR Environmental Consulting, Inc.
28. Biological Resource Assessment – SOAR Environmental Consulting, Inc.
29. Traffic Study – Ruetters & Schuler Civil Engineers

30. [NWCA Guidebook \(2006\)](#)
31. <https://lafco.co.tulare.ca.us/msr/city-of-tulare-msr-update/>
32. U.S. Census Bureau Quickfacts – Tulare City, CA
33. [Code of Federal Regulations Title 33](#)
34. [Sackett v. Environmental Protection Agency](#)

# Appendix A

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## CalEEMod Report

FNC Farming Subdivision - Tulare County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

FNC Farming Subdivision  
Tulare County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	5.34	Acre	5.47	232,610.40	0
Single Family Housing	556.00	Dwelling Unit	127.03	1,000,800.00	1590

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	51
Climate Zone	3			Operational Year	2026
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	CH4 Intensity (lb/MWhr)	0.033	N2O Intensity (lb/MWhr)	0.004

1.3 User Entered Comments & Non-Default Data

- Project Characteristics -
- Land Use - Project Specific Values - according to submitted final site plan. Rural residential portion (7.8-acres) is not included as no development is proposed.
- Construction Phase -
- Woodstoves - There will be no woodstoves in the proposed homes.
- Area Coating -
- Construction Off-road Equipment Mitigation -
- Mobile Land Use Mitigation -
- Area Mitigation -

Table Name	Column Name	Default Value	New Value
tblLandUse	LotAcreage	5.34	5.47

FNC Farming Subdivision - Tulare County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblLandUse	:	LotAcreage	:	180.52	:	127.03
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2.0 Emissions Summary

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2.1 Overall Construction

Unmitigated Construction

## FNC Farming Subdivision - Tulare County, Annual

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2025	0.2655	2.5934	2.1312	4.7900e-003	1.9191	0.1088	2.0280	0.7908	0.1001	0.8909	0.0000	421.9065	421.9065	0.1331	3.2000e-004	425.3309
2026	0.3764	3.5021	3.4507	8.2800e-003	1.2556	0.1398	1.3953	0.4553	0.1287	0.5840	0.0000	731.3389	731.3389	0.2141	4.8400e-003	738.1361
2027	0.2907	2.2522	3.0460	8.2800e-003	0.3943	0.0738	0.4681	0.1068	0.0694	0.1762	0.0000	759.3688	759.3688	0.0777	0.0405	773.3815
2028	0.2826	2.2349	2.9878	8.1300e-003	0.3928	0.0734	0.4662	0.1064	0.0691	0.1755	0.0000	747.3942	747.3942	0.0769	0.0393	761.0304
2029	0.2771	2.2350	2.9585	8.0600e-003	0.3943	0.0736	0.4679	0.1068	0.0692	0.1760	0.0000	741.7380	741.7380	0.0768	0.0385	755.1232
2030	0.2633	1.6364	2.9335	8.4900e-003	0.3943	0.0240	0.4183	0.1068	0.0237	0.1305	0.0000	774.4720	774.4720	0.0190	0.0376	786.1531
2031	0.2572	1.6306	2.9029	8.4100e-003	0.3943	0.0239	0.4182	0.1068	0.0236	0.1304	0.0000	767.6257	767.6257	0.0186	0.0368	779.0676
2032	0.2531	1.6319	2.8888	8.3600e-003	0.3958	0.0239	0.4197	0.1072	0.0237	0.1309	0.0000	764.4919	764.4919	0.0184	0.0363	775.7708
2033	0.2465	1.6155	2.8450	8.2300e-003	0.3928	0.0236	0.4165	0.1064	0.0234	0.1298	0.0000	753.3343	753.3343	0.0180	0.0355	764.3490
2034	0.2425	1.6117	2.8259	8.1700e-003	0.3928	0.0236	0.4164	0.1064	0.0233	0.1297	0.0000	748.5576	748.5576	0.0178	0.0349	759.4144
2035	0.2279	1.5135	2.8159	8.1500e-003	0.3943	0.0160	0.4104	0.1068	0.0158	0.1226	0.0000	747.2340	747.2340	0.0167	0.0346	757.9715
2036	0.2288	1.5193	2.8267	8.1900e-003	0.3958	0.0161	0.4120	0.1072	0.0159	0.1231	0.0000	750.0969	750.0969	0.0167	0.0348	760.8756
2037	0.2279	1.5135	2.8159	8.1500e-003	0.3943	0.0160	0.4104	0.1068	0.0158	0.1226	0.0000	747.2340	747.2340	0.0167	0.0346	757.9715
2038	0.2107	1.3156	2.6524	7.1600e-003	0.3087	0.0180	0.3267	0.0836	0.0178	0.1014	0.0000	651.6926	651.6926	0.0157	0.0269	660.0870
2039	4.3308	0.4335	1.4221	2.6200e-003	0.0333	0.0157	0.0489	8.8500e-003	0.0157	0.0245	0.0000	228.1643	228.1643	8.2500e-003	4.7000e-004	228.5110
2040	5.1775	0.0466	0.1553	3.6000e-004	0.0289	5.0000e-004	0.0294	7.6900e-003	5.0000e-004	8.1900e-003	0.0000	33.5551	33.5551	7.6000e-004	3.9000e-004	33.6893
Maximum	5.1775	3.5021	3.4507	8.4900e-003	1.9191	0.1398	2.0280	0.7908	0.1287	0.8909	0.0000	774.4720	774.4720	0.2141	0.0405	786.1531

## 2.1 Overall Construction

## FNC Farming Subdivision - Tulare County, Annual

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2025	0.2655	2.5934	2.1312	4.7900e-003	0.8717	0.1088	0.9805	0.3580	0.1001	0.4581	0.0000	421.9061	421.9061	0.1331	3.2000e-004	425.3304
2026	0.3764	3.5021	3.4507	8.2800e-003	0.5985	0.1398	0.7382	0.2139	0.1287	0.3426	0.0000	731.3381	731.3381	0.2141	4.8400e-003	738.1353
2027	0.2907	2.2522	3.0460	8.2800e-003	0.3943	0.0738	0.4681	0.1068	0.0694	0.1762	0.0000	759.3684	759.3684	0.0777	0.0405	773.3811
2028	0.2826	2.2349	2.9878	8.1300e-003	0.3928	0.0734	0.4662	0.1064	0.0691	0.1755	0.0000	747.3939	747.3939	0.0769	0.0393	761.0300
2029	0.2771	2.2350	2.9585	8.0600e-003	0.3943	0.0736	0.4679	0.1068	0.0692	0.1760	0.0000	741.7376	741.7376	0.0768	0.0385	755.1229
2030	0.2633	1.6364	2.9335	8.4900e-003	0.3943	0.0240	0.4183	0.1068	0.0237	0.1305	0.0000	774.4716	774.4716	0.0190	0.0376	786.1526
2031	0.2572	1.6306	2.9029	8.4100e-003	0.3943	0.0239	0.4182	0.1068	0.0236	0.1304	0.0000	767.6253	767.6253	0.0186	0.0368	779.0672
2032	0.2531	1.6319	2.8888	8.3600e-003	0.3958	0.0239	0.4197	0.1072	0.0237	0.1309	0.0000	764.4914	764.4914	0.0184	0.0363	775.7704
2033	0.2465	1.6155	2.8450	8.2300e-003	0.3928	0.0236	0.4165	0.1064	0.0234	0.1298	0.0000	753.3338	753.3338	0.0180	0.0355	764.3486
2034	0.2425	1.6117	2.8259	8.1700e-003	0.3928	0.0236	0.4164	0.1064	0.0233	0.1297	0.0000	748.5572	748.5572	0.0178	0.0349	759.4140
2035	0.2279	1.5135	2.8159	8.1500e-003	0.3943	0.0160	0.4104	0.1068	0.0158	0.1226	0.0000	747.2336	747.2336	0.0167	0.0346	757.9711
2036	0.2288	1.5193	2.8267	8.1900e-003	0.3958	0.0161	0.4120	0.1072	0.0159	0.1231	0.0000	750.0965	750.0965	0.0167	0.0348	760.8752
2037	0.2279	1.5135	2.8159	8.1500e-003	0.3943	0.0160	0.4104	0.1068	0.0158	0.1226	0.0000	747.2336	747.2336	0.0167	0.0346	757.9711
2038	0.2107	1.3156	2.6524	7.1600e-003	0.3087	0.0180	0.3267	0.0836	0.0178	0.1014	0.0000	651.6922	651.6922	0.0157	0.0269	660.0866
2039	4.3308	0.4335	1.4221	2.6200e-003	0.0333	0.0157	0.0489	8.8500e-003	0.0157	0.0245	0.0000	228.1640	228.1640	8.2500e-003	4.7000e-004	228.5108
2040	5.1775	0.0466	0.1553	3.6000e-004	0.0289	5.0000e-004	0.0294	7.6900e-003	5.0000e-004	8.1900e-003	0.0000	33.5551	33.5551	7.6000e-004	3.9000e-004	33.6893
Maximum	5.1775	3.5021	3.4507	8.4900e-003	0.8717	0.1398	0.9805	0.3580	0.1287	0.4581	0.0000	774.4716	774.4716	0.2141	0.0405	786.1526



## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	21.63	0.00	19.93	26.75	0.00	21.36	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	4-1-2025	6-30-2025	0.9035	0.9035
2	7-1-2025	9-30-2025	0.9303	0.9303
3	10-1-2025	12-31-2025	1.0168	1.0168
4	1-1-2026	3-31-2026	0.9944	0.9944
5	4-1-2026	6-30-2026	1.0055	1.0055
6	7-1-2026	9-30-2026	1.0166	1.0166
7	10-1-2026	12-31-2026	0.8654	0.8654
8	1-1-2027	3-31-2027	0.6317	0.6317
9	4-1-2027	6-30-2027	0.6302	0.6302
10	7-1-2027	9-30-2027	0.6371	0.6371
11	10-1-2027	12-31-2027	0.6457	0.6457
12	1-1-2028	3-31-2028	0.6346	0.6346
13	4-1-2028	6-30-2028	0.6261	0.6261
14	7-1-2028	9-30-2028	0.6330	0.6330
15	10-1-2028	12-31-2028	0.6416	0.6416
16	1-1-2029	3-31-2029	0.6237	0.6237
17	4-1-2029	6-30-2029	0.6222	0.6222
18	7-1-2029	9-30-2029	0.6290	0.6290
19	10-1-2029	12-31-2029	0.6376	0.6376
20	1-1-2030	3-31-2030	0.4728	0.4728
21	4-1-2030	6-30-2030	0.4695	0.4695
22	7-1-2030	9-30-2030	0.4747	0.4747
23	10-1-2030	12-31-2030	0.4833	0.4833

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

24	1-1-2031	3-31-2031	0.4697	0.4697
25	4-1-2031	6-30-2031	0.4664	0.4664
26	7-1-2031	9-30-2031	0.4715	0.4715
27	10-1-2031	12-31-2031	0.4802	0.4802
28	1-1-2032	3-31-2032	0.4724	0.4724
29	4-1-2032	6-30-2032	0.4637	0.4637
30	7-1-2032	9-30-2032	0.4688	0.4688
31	10-1-2032	12-31-2032	0.4776	0.4776
32	1-1-2033	3-31-2033	0.4650	0.4650
33	4-1-2033	6-30-2033	0.4614	0.4614
34	7-1-2033	9-30-2033	0.4665	0.4665
35	10-1-2033	12-31-2033	0.4753	0.4753
36	1-1-2034	3-31-2034	0.4630	0.4630
37	4-1-2034	6-30-2034	0.4593	0.4593
38	7-1-2034	9-30-2034	0.4644	0.4644
39	10-1-2034	12-31-2034	0.4733	0.4733
40	1-1-2035	3-31-2035	0.4334	0.4334
41	4-1-2035	6-30-2035	0.4293	0.4293
42	7-1-2035	9-30-2035	0.4341	0.4341
43	10-1-2035	12-31-2035	0.4430	0.4430
44	1-1-2036	3-31-2036	0.4382	0.4382
45	4-1-2036	6-30-2036	0.4293	0.4293
46	7-1-2036	9-30-2036	0.4341	0.4341
47	10-1-2036	12-31-2036	0.4430	0.4430
48	1-1-2037	3-31-2037	0.4334	0.4334
49	4-1-2037	6-30-2037	0.4293	0.4293
50	7-1-2037	9-30-2037	0.4341	0.4341
51	10-1-2037	12-31-2037	0.4430	0.4430
52	1-1-2038	3-31-2038	0.4334	0.4334

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

53	4-1-2038	6-30-2038	0.4293	0.4293
54	7-1-2038	9-30-2038	0.4341	0.4341
55	10-1-2038	12-31-2038	0.2281	0.2281
56	1-1-2039	3-31-2039	0.1946	0.1946
57	4-1-2039	6-30-2039	0.1967	0.1967
58	7-1-2039	9-30-2039	1.5192	1.5192
59	10-1-2039	12-31-2039	2.8394	2.8394
60	1-1-2040	3-31-2040	2.8065	2.8065
61	4-1-2040	6-30-2040	2.4364	2.4364
		Highest	2.8394	2.8394

**2.2 Overall Operational****Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	7.5872	0.6390	27.7233	0.0783		3.8750	3.8750		3.8750	3.8750	513.5471	247.6070	761.1541	2.4118	4.4200e-003	822.7651
Energy	0.0721	0.6158	0.2621	3.9300e-003		0.0498	0.0498		0.0498	0.0498	0.0000	1,499.4661	1,499.4661	0.0800	0.0211	1,507.7605
Mobile	2.3699	3.8235	22.0553	0.0517	5.4598	0.0441	5.5039	1.4608	0.0414	1.5022	0.0000	4,924.9711	4,924.9711	0.2512	0.2539	5,006.9191
Waste						0.0000	0.0000		0.0000	0.0000	116.2854	0.0000	116.2854	6.8723	0.0000	288.0922
Water						0.0000	0.0000		0.0000	0.0000	11.4927	52.8877	64.3804	1.1849	0.0284	102.4695
<b>Total</b>	<b>10.0291</b>	<b>5.0783</b>	<b>50.0407</b>	<b>0.1339</b>	<b>5.4598</b>	<b>3.9689</b>	<b>9.4287</b>	<b>1.4608</b>	<b>3.9662</b>	<b>5.4270</b>	<b>641.3252</b>	<b>6,724.9319</b>	<b>7,366.2571</b>	<b>10.8002</b>	<b>0.3079</b>	<b>7,728.0063</b>

## FNC Farming Subdivision - Tulare County, Annual

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.9740	0.0475	4.1245	2.2000e-004		0.0229	0.0229		0.0229	0.0229	0.0000	6.7437	6.7437	6.4600e-003	0.0000	6.9052
Energy	0.0721	0.6158	0.2621	3.9300e-003		0.0498	0.0498		0.0498	0.0498	0.0000	1,499.4661	1,499.4661	0.0800	0.0211	1,507.7605
Mobile	2.3600	3.7929	21.8845	0.0512	5.4052	0.0437	5.4489	1.4462	0.0410	1.4872	0.0000	4,877.1582	4,877.1582	0.2497	0.2519	4,958.4659
Waste						0.0000	0.0000		0.0000	0.0000	116.2854	0.0000	116.2854	6.8723	0.0000	288.0922
Water						0.0000	0.0000		0.0000	0.0000	11.4927	52.8877	64.3804	1.1849	0.0284	102.4695
<b>Total</b>	<b>7.4061</b>	<b>4.4563</b>	<b>26.2711</b>	<b>0.0554</b>	<b>5.4052</b>	<b>0.1164</b>	<b>5.5216</b>	<b>1.4462</b>	<b>0.1137</b>	<b>1.5599</b>	<b>127.7781</b>	<b>6,436.2557</b>	<b>6,564.0339</b>	<b>8.3933</b>	<b>0.3014</b>	<b>6,863.6932</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>26.15</b>	<b>12.25</b>	<b>47.50</b>	<b>58.65</b>	<b>1.00</b>	<b>97.07</b>	<b>41.44</b>	<b>1.00</b>	<b>97.13</b>	<b>71.26</b>	<b>80.08</b>	<b>4.29</b>	<b>10.89</b>	<b>22.29</b>	<b>2.09</b>	<b>11.18</b>

## 3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/1/2025	9/15/2025	5	120	
2	Grading	Grading	9/16/2025	11/23/2026	5	310	
3	Building Construction	Building Construction	11/24/2026	10/11/2038	5	3100	

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

4	Paving	Paving	10/12/2038	8/15/2039	5	220
5	Architectural Coating	Architectural Coating	8/16/2039	6/18/2040	5	220

**Acres of Grading (Site Preparation Phase): 180****Acres of Grading (Grading Phase): 930****Acres of Paving: 0****Residential Indoor: 2,026,620; Residential Outdoor: 675,540; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)****OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

**Trips and VMT**

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	298.00	98.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	60.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

Water Exposed Area

**3.2 Site Preparation - 2025****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.1794	0.0000	1.1794	0.6062	0.0000	0.6062	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1484	1.5140	1.0747	2.2900e-003		0.0652	0.0652		0.0600	0.0600	0.0000	200.8019	200.8019	0.0649	0.0000	202.4255
<b>Total</b>	<b>0.1484</b>	<b>1.5140</b>	<b>1.0747</b>	<b>2.2900e-003</b>	<b>1.1794</b>	<b>0.0652</b>	<b>1.2446</b>	<b>0.6062</b>	<b>0.0600</b>	<b>0.6661</b>	<b>0.0000</b>	<b>200.8019</b>	<b>200.8019</b>	<b>0.0649</b>	<b>0.0000</b>	<b>202.4255</b>

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.2 Site Preparation - 2025****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.1900e-003	2.0600e-003	0.0250	7.0000e-005	8.6000e-003	4.0000e-005	8.6400e-003	2.2900e-003	4.0000e-005	2.3200e-003	0.0000	6.5709	6.5709	1.9000e-004	1.9000e-004	6.6316
<b>Total</b>	<b>3.1900e-003</b>	<b>2.0600e-003</b>	<b>0.0250</b>	<b>7.0000e-005</b>	<b>8.6000e-003</b>	<b>4.0000e-005</b>	<b>8.6400e-003</b>	<b>2.2900e-003</b>	<b>4.0000e-005</b>	<b>2.3200e-003</b>	<b>0.0000</b>	<b>6.5709</b>	<b>6.5709</b>	<b>1.9000e-004</b>	<b>1.9000e-004</b>	<b>6.6316</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.5307	0.0000	0.5307	0.2728	0.0000	0.2728	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1484	1.5140	1.0747	2.2900e-003		0.0652	0.0652		0.0600	0.0600	0.0000	200.8017	200.8017	0.0649	0.0000	202.4253
<b>Total</b>	<b>0.1484</b>	<b>1.5140</b>	<b>1.0747</b>	<b>2.2900e-003</b>	<b>0.5307</b>	<b>0.0652</b>	<b>0.5960</b>	<b>0.2728</b>	<b>0.0600</b>	<b>0.3328</b>	<b>0.0000</b>	<b>200.8017</b>	<b>200.8017</b>	<b>0.0649</b>	<b>0.0000</b>	<b>202.4253</b>

## FNC Farming Subdivision - Tulare County, Annual

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.2 Site Preparation - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.1900e-003	2.0600e-003	0.0250	7.0000e-005	8.6000e-003	4.0000e-005	8.6400e-003	2.2900e-003	4.0000e-005	2.3200e-003	0.0000	6.5709	6.5709	1.9000e-004	1.9000e-004	6.6316
<b>Total</b>	<b>3.1900e-003</b>	<b>2.0600e-003</b>	<b>0.0250</b>	<b>7.0000e-005</b>	<b>8.6000e-003</b>	<b>4.0000e-005</b>	<b>8.6400e-003</b>	<b>2.2900e-003</b>	<b>4.0000e-005</b>	<b>2.3200e-003</b>	<b>0.0000</b>	<b>6.5709</b>	<b>6.5709</b>	<b>1.9000e-004</b>	<b>1.9000e-004</b>	<b>6.6316</b>

## 3.3 Grading - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.7250	0.0000	0.7250	0.1807	0.0000	0.1807	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1117	1.0758	1.0138	2.3900e-003		0.0435	0.0435		0.0401	0.0401	0.0000	209.8489	209.8489	0.0679	0.0000	211.5457
<b>Total</b>	<b>0.1117</b>	<b>1.0758</b>	<b>1.0138</b>	<b>2.3900e-003</b>	<b>0.7250</b>	<b>0.0435</b>	<b>0.7685</b>	<b>0.1807</b>	<b>0.0401</b>	<b>0.2208</b>	<b>0.0000</b>	<b>209.8489</b>	<b>209.8489</b>	<b>0.0679</b>	<b>0.0000</b>	<b>211.5457</b>



## FNC Farming Subdivision - Tulare County, Annual

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.3 Grading - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2800e-003	1.4700e-003	0.0178	5.0000e-005	6.1300e-003	3.0000e-005	6.1600e-003	1.6300e-003	3.0000e-005	1.6600e-003	0.0000	4.6848	4.6848	1.3000e-004	1.3000e-004	4.7281
<b>Total</b>	<b>2.2800e-003</b>	<b>1.4700e-003</b>	<b>0.0178</b>	<b>5.0000e-005</b>	<b>6.1300e-003</b>	<b>3.0000e-005</b>	<b>6.1600e-003</b>	<b>1.6300e-003</b>	<b>3.0000e-005</b>	<b>1.6600e-003</b>	<b>0.0000</b>	<b>4.6848</b>	<b>4.6848</b>	<b>1.3000e-004</b>	<b>1.3000e-004</b>	<b>4.7281</b>

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3262	0.0000	0.3262	0.0813	0.0000	0.0813	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1117	1.0758	1.0138	2.3900e-003		0.0435	0.0435		0.0401	0.0401	0.0000	209.8487	209.8487	0.0679	0.0000	211.5454
<b>Total</b>	<b>0.1117</b>	<b>1.0758</b>	<b>1.0138</b>	<b>2.3900e-003</b>	<b>0.3262</b>	<b>0.0435</b>	<b>0.3698</b>	<b>0.0813</b>	<b>0.0401</b>	<b>0.1214</b>	<b>0.0000</b>	<b>209.8487</b>	<b>209.8487</b>	<b>0.0679</b>	<b>0.0000</b>	<b>211.5454</b>

## FNC Farming Subdivision - Tulare County, Annual

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.3 Grading - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2800e-003	1.4700e-003	0.0178	5.0000e-005	6.1300e-003	3.0000e-005	6.1600e-003	1.6300e-003	3.0000e-005	1.6600e-003	0.0000	4.6848	4.6848	1.3000e-004	1.3000e-004	4.7281
<b>Total</b>	<b>2.2800e-003</b>	<b>1.4700e-003</b>	<b>0.0178</b>	<b>5.0000e-005</b>	<b>6.1300e-003</b>	<b>3.0000e-005</b>	<b>6.1600e-003</b>	<b>1.6300e-003</b>	<b>3.0000e-005</b>	<b>1.6600e-003</b>	<b>0.0000</b>	<b>4.6848</b>	<b>4.6848</b>	<b>1.3000e-004</b>	<b>1.3000e-004</b>	<b>4.7281</b>

## 3.3 Grading - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.1947	0.0000	1.1947	0.4389	0.0000	0.4389	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3380	3.2554	3.0676	7.2300e-003		0.1318	0.1318		0.1212	0.1212	0.0000	634.9974	634.9974	0.2054	0.0000	640.1317
<b>Total</b>	<b>0.3380</b>	<b>3.2554</b>	<b>3.0676</b>	<b>7.2300e-003</b>	<b>1.1947</b>	<b>0.1318</b>	<b>1.3265</b>	<b>0.4389</b>	<b>0.1212</b>	<b>0.5601</b>	<b>0.0000</b>	<b>634.9974</b>	<b>634.9974</b>	<b>0.2054</b>	<b>0.0000</b>	<b>640.1317</b>

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.3 Grading - 2026****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.3900e-003	3.9600e-003	0.0503	1.4000e-004	0.0186	8.0000e-005	0.0186	4.9300e-003	7.0000e-005	5.0100e-003	0.0000	13.8160	13.8160	3.7000e-004	3.8000e-004	13.9376
<b>Total</b>	<b>6.3900e-003</b>	<b>3.9600e-003</b>	<b>0.0503</b>	<b>1.4000e-004</b>	<b>0.0186</b>	<b>8.0000e-005</b>	<b>0.0186</b>	<b>4.9300e-003</b>	<b>7.0000e-005</b>	<b>5.0100e-003</b>	<b>0.0000</b>	<b>13.8160</b>	<b>13.8160</b>	<b>3.7000e-004</b>	<b>3.8000e-004</b>	<b>13.9376</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.5376	0.0000	0.5376	0.1975	0.0000	0.1975	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3380	3.2553	3.0676	7.2300e-003		0.1318	0.1318		0.1212	0.1212	0.0000	634.9966	634.9966	0.2054	0.0000	640.1309
<b>Total</b>	<b>0.3380</b>	<b>3.2553</b>	<b>3.0676</b>	<b>7.2300e-003</b>	<b>0.5376</b>	<b>0.1318</b>	<b>0.6694</b>	<b>0.1975</b>	<b>0.1212</b>	<b>0.3187</b>	<b>0.0000</b>	<b>634.9966</b>	<b>634.9966</b>	<b>0.2054</b>	<b>0.0000</b>	<b>640.1309</b>

## FNC Farming Subdivision - Tulare County, Annual

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.3 Grading - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.3900e-003	3.9600e-003	0.0503	1.4000e-004	0.0186	8.0000e-005	0.0186	4.9300e-003	7.0000e-005	5.0100e-003	0.0000	13.8160	13.8160	3.7000e-004	3.8000e-004	13.9376
<b>Total</b>	<b>6.3900e-003</b>	<b>3.9600e-003</b>	<b>0.0503</b>	<b>1.4000e-004</b>	<b>0.0186</b>	<b>8.0000e-005</b>	<b>0.0186</b>	<b>4.9300e-003</b>	<b>7.0000e-005</b>	<b>5.0100e-003</b>	<b>0.0000</b>	<b>13.8160</b>	<b>13.8160</b>	<b>3.7000e-004</b>	<b>3.8000e-004</b>	<b>13.9376</b>

## 3.4 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0191	0.1746	0.2252	3.8000e-004		7.3900e-003	7.3900e-003		6.9500e-003	6.9500e-003	0.0000	32.4687	32.4687	7.6300e-003	0.0000	32.6595
<b>Total</b>	<b>0.0191</b>	<b>0.1746</b>	<b>0.2252</b>	<b>3.8000e-004</b>		<b>7.3900e-003</b>	<b>7.3900e-003</b>		<b>6.9500e-003</b>	<b>6.9500e-003</b>	<b>0.0000</b>	<b>32.4687</b>	<b>32.4687</b>	<b>7.6300e-003</b>	<b>0.0000</b>	<b>32.6595</b>

## FNC Farming Subdivision - Tulare County, Annual

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.4 Building Construction - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.4400e-003	0.0611	0.0176	2.6000e-004	9.0700e-003	4.0000e-004	9.4700e-003	2.6200e-003	3.8000e-004	3.0000e-003	0.0000	25.3185	25.3185	1.1000e-004	3.7900e-003	26.4514
Worker	0.0114	7.0800e-003	0.0901	2.6000e-004	0.0332	1.5000e-004	0.0334	8.8400e-003	1.3000e-004	8.9700e-003	0.0000	24.7383	24.7383	6.6000e-004	6.8000e-004	24.9560
<b>Total</b>	<b>0.0129</b>	<b>0.0682</b>	<b>0.1076</b>	<b>5.2000e-004</b>	<b>0.0423</b>	<b>5.5000e-004</b>	<b>0.0429</b>	<b>0.0115</b>	<b>5.1000e-004</b>	<b>0.0120</b>	<b>0.0000</b>	<b>50.0568</b>	<b>50.0568</b>	<b>7.7000e-004</b>	<b>4.4700e-003</b>	<b>51.4074</b>

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0191	0.1746	0.2252	3.8000e-004		7.3900e-003	7.3900e-003		6.9500e-003	6.9500e-003	0.0000	32.4687	32.4687	7.6300e-003	0.0000	32.6595
<b>Total</b>	<b>0.0191</b>	<b>0.1746</b>	<b>0.2252</b>	<b>3.8000e-004</b>		<b>7.3900e-003</b>	<b>7.3900e-003</b>		<b>6.9500e-003</b>	<b>6.9500e-003</b>	<b>0.0000</b>	<b>32.4687</b>	<b>32.4687</b>	<b>7.6300e-003</b>	<b>0.0000</b>	<b>32.6595</b>

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Building Construction - 2026****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.4400e-003	0.0611	0.0176	2.6000e-004	9.0700e-003	4.0000e-004	9.4700e-003	2.6200e-003	3.8000e-004	3.0000e-003	0.0000	25.3185	25.3185	1.1000e-004	3.7900e-003	26.4514
Worker	0.0114	7.0800e-003	0.0901	2.6000e-004	0.0332	1.5000e-004	0.0334	8.8400e-003	1.3000e-004	8.9700e-003	0.0000	24.7383	24.7383	6.6000e-004	6.8000e-004	24.9560
<b>Total</b>	<b>0.0129</b>	<b>0.0682</b>	<b>0.1076</b>	<b>5.2000e-004</b>	<b>0.0423</b>	<b>5.5000e-004</b>	<b>0.0429</b>	<b>0.0115</b>	<b>5.1000e-004</b>	<b>0.0120</b>	<b>0.0000</b>	<b>50.0568</b>	<b>50.0568</b>	<b>7.7000e-004</b>	<b>4.4700e-003</b>	<b>51.4074</b>

**3.4 Building Construction - 2027****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
<b>Total</b>	<b>0.1785</b>	<b>1.6273</b>	<b>2.0991</b>	<b>3.5200e-003</b>		<b>0.0689</b>	<b>0.0689</b>		<b>0.0648</b>	<b>0.0648</b>	<b>0.0000</b>	<b>302.6549</b>	<b>302.6549</b>	<b>0.0711</b>	<b>0.0000</b>	<b>304.4335</b>

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Building Construction - 2027****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0132	0.5655	0.1617	2.4100e-003	0.0846	3.6600e-003	0.0882	0.0244	3.5000e-003	0.0279	0.0000	231.2462	231.2462	1.0100e-003	0.0346	241.5791
Worker	0.0991	0.0594	0.7852	2.3500e-003	0.3098	1.2800e-003	0.3110	0.0824	1.1800e-003	0.0835	0.0000	225.4677	225.4677	5.5600e-003	5.9100e-003	227.3689
<b>Total</b>	<b>0.1123</b>	<b>0.6249</b>	<b>0.9469</b>	<b>4.7600e-003</b>	<b>0.3943</b>	<b>4.9400e-003</b>	<b>0.3993</b>	<b>0.1068</b>	<b>4.6800e-003</b>	<b>0.1115</b>	<b>0.0000</b>	<b>456.7139</b>	<b>456.7139</b>	<b>6.5700e-003</b>	<b>0.0405</b>	<b>468.9480</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
<b>Total</b>	<b>0.1784</b>	<b>1.6273</b>	<b>2.0991</b>	<b>3.5200e-003</b>		<b>0.0689</b>	<b>0.0689</b>		<b>0.0648</b>	<b>0.0648</b>	<b>0.0000</b>	<b>302.6545</b>	<b>302.6545</b>	<b>0.0711</b>	<b>0.0000</b>	<b>304.4331</b>

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Building Construction - 2027****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0132	0.5655	0.1617	2.4100e-003	0.0846	3.6600e-003	0.0882	0.0244	3.5000e-003	0.0279	0.0000	231.2462	231.2462	1.0100e-003	0.0346	241.5791
Worker	0.0991	0.0594	0.7852	2.3500e-003	0.3098	1.2800e-003	0.3110	0.0824	1.1800e-003	0.0835	0.0000	225.4677	225.4677	5.5600e-003	5.9100e-003	227.3689
<b>Total</b>	<b>0.1123</b>	<b>0.6249</b>	<b>0.9469</b>	<b>4.7600e-003</b>	<b>0.3943</b>	<b>4.9400e-003</b>	<b>0.3993</b>	<b>0.1068</b>	<b>4.6800e-003</b>	<b>0.1115</b>	<b>0.0000</b>	<b>456.7139</b>	<b>456.7139</b>	<b>6.5700e-003</b>	<b>0.0405</b>	<b>468.9480</b>

**3.4 Building Construction - 2028****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1778	1.6211	2.0910	3.5000e-003		0.0686	0.0686		0.0645	0.0645	0.0000	301.4953	301.4953	0.0709	0.0000	303.2671
<b>Total</b>	<b>0.1778</b>	<b>1.6211</b>	<b>2.0910</b>	<b>3.5000e-003</b>		<b>0.0686</b>	<b>0.0686</b>		<b>0.0645</b>	<b>0.0645</b>	<b>0.0000</b>	<b>301.4953</b>	<b>301.4953</b>	<b>0.0709</b>	<b>0.0000</b>	<b>303.2671</b>



## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Building Construction - 2028****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0129	0.5602	0.1593	2.3500e-003	0.0842	3.6200e-003	0.0879	0.0244	3.4600e-003	0.0278	0.0000	225.8452	225.8452	9.8000e-004	0.0337	235.9226
Worker	0.0920	0.0537	0.7375	2.2700e-003	0.3086	1.1900e-003	0.3098	0.0820	1.1000e-003	0.0831	0.0000	220.0537	220.0537	5.0600e-003	5.5700e-003	221.8407
<b>Total</b>	<b>0.1049</b>	<b>0.6138</b>	<b>0.8968</b>	<b>4.6200e-003</b>	<b>0.3928</b>	<b>4.8100e-003</b>	<b>0.3976</b>	<b>0.1064</b>	<b>4.5600e-003</b>	<b>0.1110</b>	<b>0.0000</b>	<b>445.8990</b>	<b>445.8990</b>	<b>6.0400e-003</b>	<b>0.0393</b>	<b>457.7633</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1778	1.6211	2.0910	3.5000e-003		0.0686	0.0686		0.0645	0.0645	0.0000	301.4949	301.4949	0.0709	0.0000	303.2667
<b>Total</b>	<b>0.1778</b>	<b>1.6211</b>	<b>2.0910</b>	<b>3.5000e-003</b>		<b>0.0686</b>	<b>0.0686</b>		<b>0.0645</b>	<b>0.0645</b>	<b>0.0000</b>	<b>301.4949</b>	<b>301.4949</b>	<b>0.0709</b>	<b>0.0000</b>	<b>303.2667</b>

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Building Construction - 2028****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0129	0.5602	0.1593	2.3500e-003	0.0842	3.6200e-003	0.0879	0.0244	3.4600e-003	0.0278	0.0000	225.8452	225.8452	9.8000e-004	0.0337	235.9226
Worker	0.0920	0.0537	0.7375	2.2700e-003	0.3086	1.1900e-003	0.3098	0.0820	1.1000e-003	0.0831	0.0000	220.0537	220.0537	5.0600e-003	5.5700e-003	221.8407
<b>Total</b>	<b>0.1049</b>	<b>0.6138</b>	<b>0.8968</b>	<b>4.6200e-003</b>	<b>0.3928</b>	<b>4.8100e-003</b>	<b>0.3976</b>	<b>0.1064</b>	<b>4.5600e-003</b>	<b>0.1110</b>	<b>0.0000</b>	<b>445.8990</b>	<b>445.8990</b>	<b>6.0400e-003</b>	<b>0.0393</b>	<b>457.7633</b>

**3.4 Building Construction - 2029****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
<b>Total</b>	<b>0.1785</b>	<b>1.6273</b>	<b>2.0991</b>	<b>3.5200e-003</b>		<b>0.0689</b>	<b>0.0689</b>		<b>0.0648</b>	<b>0.0648</b>	<b>0.0000</b>	<b>302.6549</b>	<b>302.6549</b>	<b>0.0711</b>	<b>0.0000</b>	<b>304.4335</b>

## FNC Farming Subdivision - Tulare County, Annual

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.4 Building Construction - 2029

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0127	0.5586	0.1584	2.3200e-003	0.0846	3.6100e-003	0.0882	0.0244	3.4500e-003	0.0279	0.0000	222.2860	222.2860	9.7000e-004	0.0332	232.1907
Worker	0.0859	0.0491	0.7011	2.2300e-003	0.3098	1.1200e-003	0.3109	0.0824	1.0300e-003	0.0834	0.0000	216.7971	216.7971	4.6500e-003	5.3200e-003	218.4990
<b>Total</b>	<b>0.0986</b>	<b>0.6077</b>	<b>0.8595</b>	<b>4.5500e-003</b>	<b>0.3943</b>	<b>4.7300e-003</b>	<b>0.3991</b>	<b>0.1068</b>	<b>4.4800e-003</b>	<b>0.1113</b>	<b>0.0000</b>	<b>439.0831</b>	<b>439.0831</b>	<b>5.6200e-003</b>	<b>0.0385</b>	<b>450.6897</b>

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
<b>Total</b>	<b>0.1784</b>	<b>1.6273</b>	<b>2.0991</b>	<b>3.5200e-003</b>		<b>0.0689</b>	<b>0.0689</b>		<b>0.0648</b>	<b>0.0648</b>	<b>0.0000</b>	<b>302.6545</b>	<b>302.6545</b>	<b>0.0711</b>	<b>0.0000</b>	<b>304.4331</b>

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Building Construction - 2029****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0127	0.5586	0.1584	2.3200e-003	0.0846	3.6100e-003	0.0882	0.0244	3.4500e-003	0.0279	0.0000	222.2860	222.2860	9.7000e-004	0.0332	232.1907
Worker	0.0859	0.0491	0.7011	2.2300e-003	0.3098	1.1200e-003	0.3109	0.0824	1.0300e-003	0.0834	0.0000	216.7971	216.7971	4.6500e-003	5.3200e-003	218.4990
<b>Total</b>	<b>0.0986</b>	<b>0.6077</b>	<b>0.8595</b>	<b>4.5500e-003</b>	<b>0.3943</b>	<b>4.7300e-003</b>	<b>0.3991</b>	<b>0.1068</b>	<b>4.4800e-003</b>	<b>0.1113</b>	<b>0.0000</b>	<b>439.0831</b>	<b>439.0831</b>	<b>5.6200e-003</b>	<b>0.0385</b>	<b>450.6897</b>

**3.4 Building Construction - 2030****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1708	1.0355	2.1085	4.0400e-003		0.0193	0.0193		0.0193	0.0193	0.0000	343.0336	343.0336	0.0138	0.0000	343.3777
<b>Total</b>	<b>0.1708</b>	<b>1.0355</b>	<b>2.1085</b>	<b>4.0400e-003</b>		<b>0.0193</b>	<b>0.0193</b>		<b>0.0193</b>	<b>0.0193</b>	<b>0.0000</b>	<b>343.0336</b>	<b>343.0336</b>	<b>0.0138</b>	<b>0.0000</b>	<b>343.3777</b>

## FNC Farming Subdivision - Tulare County, Annual

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.4 Building Construction - 2030

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0126	0.5559	0.1572	2.2800e-003	0.0846	3.5800e-003	0.0882	0.0244	3.4300e-003	0.0279	0.0000	218.2624	218.2624	9.5000e-004	0.0325	227.9757
Worker	0.0799	0.0450	0.6678	2.1700e-003	0.3098	1.0400e-003	0.3108	0.0824	9.6000e-004	0.0833	0.0000	213.1760	213.1760	4.2800e-003	5.0900e-003	214.7997
<b>Total</b>	<b>0.0924</b>	<b>0.6009</b>	<b>0.8250</b>	<b>4.4500e-003</b>	<b>0.3943</b>	<b>4.6200e-003</b>	<b>0.3990</b>	<b>0.1068</b>	<b>4.3900e-003</b>	<b>0.1112</b>	<b>0.0000</b>	<b>431.4384</b>	<b>431.4384</b>	<b>5.2300e-003</b>	<b>0.0376</b>	<b>442.7754</b>

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1708	1.0355	2.1085	4.0400e-003		0.0193	0.0193		0.0193	0.0193	0.0000	343.0332	343.0332	0.0138	0.0000	343.3773
<b>Total</b>	<b>0.1708</b>	<b>1.0355</b>	<b>2.1085</b>	<b>4.0400e-003</b>		<b>0.0193</b>	<b>0.0193</b>		<b>0.0193</b>	<b>0.0193</b>	<b>0.0000</b>	<b>343.0332</b>	<b>343.0332</b>	<b>0.0138</b>	<b>0.0000</b>	<b>343.3773</b>

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Building Construction - 2030****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0126	0.5559	0.1572	2.2800e-003	0.0846	3.5800e-003	0.0882	0.0244	3.4300e-003	0.0279	0.0000	218.2624	218.2624	9.5000e-004	0.0325	227.9757
Worker	0.0799	0.0450	0.6678	2.1700e-003	0.3098	1.0400e-003	0.3108	0.0824	9.6000e-004	0.0833	0.0000	213.1760	213.1760	4.2800e-003	5.0900e-003	214.7997
<b>Total</b>	<b>0.0924</b>	<b>0.6009</b>	<b>0.8250</b>	<b>4.4500e-003</b>	<b>0.3943</b>	<b>4.6200e-003</b>	<b>0.3990</b>	<b>0.1068</b>	<b>4.3900e-003</b>	<b>0.1112</b>	<b>0.0000</b>	<b>431.4384</b>	<b>431.4384</b>	<b>5.2300e-003</b>	<b>0.0376</b>	<b>442.7754</b>

**3.4 Building Construction - 2031****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1708	1.0355	2.1085	4.0400e-003		0.0193	0.0193		0.0193	0.0193	0.0000	343.0336	343.0336	0.0138	0.0000	343.3777
<b>Total</b>	<b>0.1708</b>	<b>1.0355</b>	<b>2.1085</b>	<b>4.0400e-003</b>		<b>0.0193</b>	<b>0.0193</b>		<b>0.0193</b>	<b>0.0193</b>	<b>0.0000</b>	<b>343.0336</b>	<b>343.0336</b>	<b>0.0138</b>	<b>0.0000</b>	<b>343.3777</b>

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Building Construction - 2031****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0125	0.5538	0.1565	2.2400e-003	0.0846	3.5700e-003	0.0881	0.0244	3.4100e-003	0.0279	0.0000	214.6627	214.6627	9.3000e-004	0.0320	224.2062
Worker	0.0739	0.0413	0.6379	2.1300e-003	0.3098	9.7000e-004	0.3107	0.0824	9.0000e-004	0.0833	0.0000	209.9294	209.9294	3.9400e-003	4.8900e-003	211.4837
<b>Total</b>	<b>0.0864</b>	<b>0.5951</b>	<b>0.7944</b>	<b>4.3700e-003</b>	<b>0.3943</b>	<b>4.5400e-003</b>	<b>0.3989</b>	<b>0.1068</b>	<b>4.3100e-003</b>	<b>0.1111</b>	<b>0.0000</b>	<b>424.5921</b>	<b>424.5921</b>	<b>4.8700e-003</b>	<b>0.0368</b>	<b>435.6900</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1708	1.0355	2.1085	4.0400e-003		0.0193	0.0193		0.0193	0.0193	0.0000	343.0332	343.0332	0.0138	0.0000	343.3773
<b>Total</b>	<b>0.1708</b>	<b>1.0355</b>	<b>2.1085</b>	<b>4.0400e-003</b>		<b>0.0193</b>	<b>0.0193</b>		<b>0.0193</b>	<b>0.0193</b>	<b>0.0000</b>	<b>343.0332</b>	<b>343.0332</b>	<b>0.0138</b>	<b>0.0000</b>	<b>343.3773</b>

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Building Construction - 2031****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0125	0.5538	0.1565	2.2400e-003	0.0846	3.5700e-003	0.0881	0.0244	3.4100e-003	0.0279	0.0000	214.6627	214.6627	9.3000e-004	0.0320	224.2062
Worker	0.0739	0.0413	0.6379	2.1300e-003	0.3098	9.7000e-004	0.3107	0.0824	9.0000e-004	0.0833	0.0000	209.9294	209.9294	3.9400e-003	4.8900e-003	211.4837
<b>Total</b>	<b>0.0864</b>	<b>0.5951</b>	<b>0.7944</b>	<b>4.3700e-003</b>	<b>0.3943</b>	<b>4.5400e-003</b>	<b>0.3989</b>	<b>0.1068</b>	<b>4.3100e-003</b>	<b>0.1111</b>	<b>0.0000</b>	<b>424.5921</b>	<b>424.5921</b>	<b>4.8700e-003</b>	<b>0.0368</b>	<b>435.6900</b>

**3.4 Building Construction - 2032****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1715	1.0394	2.1166	4.0600e-003		0.0194	0.0194		0.0194	0.0194	0.0000	344.3479	344.3479	0.0138	0.0000	344.6933
<b>Total</b>	<b>0.1715</b>	<b>1.0394</b>	<b>2.1166</b>	<b>4.0600e-003</b>		<b>0.0194</b>	<b>0.0194</b>		<b>0.0194</b>	<b>0.0194</b>	<b>0.0000</b>	<b>344.3479</b>	<b>344.3479</b>	<b>0.0138</b>	<b>0.0000</b>	<b>344.6933</b>



## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Building Construction - 2032****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0124	0.5540	0.1569	2.2100e-003	0.0849	3.5600e-003	0.0885	0.0245	3.4100e-003	0.0279	0.0000	212.2762	212.2762	9.3000e-004	0.0316	221.7056
Worker	0.0692	0.0385	0.6153	2.0900e-003	0.3110	9.1000e-004	0.3119	0.0827	8.4000e-004	0.0835	0.0000	207.8677	207.8677	3.6600e-003	4.7400e-003	209.3718
<b>Total</b>	<b>0.0816</b>	<b>0.5925</b>	<b>0.7722</b>	<b>4.3000e-003</b>	<b>0.3958</b>	<b>4.4700e-003</b>	<b>0.4003</b>	<b>0.1072</b>	<b>4.2500e-003</b>	<b>0.1115</b>	<b>0.0000</b>	<b>420.1439</b>	<b>420.1439</b>	<b>4.5900e-003</b>	<b>0.0363</b>	<b>431.0775</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1715	1.0394	2.1166	4.0600e-003		0.0194	0.0194		0.0194	0.0194	0.0000	344.3475	344.3475	0.0138	0.0000	344.6929
<b>Total</b>	<b>0.1715</b>	<b>1.0394</b>	<b>2.1166</b>	<b>4.0600e-003</b>		<b>0.0194</b>	<b>0.0194</b>		<b>0.0194</b>	<b>0.0194</b>	<b>0.0000</b>	<b>344.3475</b>	<b>344.3475</b>	<b>0.0138</b>	<b>0.0000</b>	<b>344.6929</b>

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Building Construction - 2032****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0124	0.5540	0.1569	2.2100e-003	0.0849	3.5600e-003	0.0885	0.0245	3.4100e-003	0.0279	0.0000	212.2762	212.2762	9.3000e-004	0.0316	221.7056
Worker	0.0692	0.0385	0.6153	2.0900e-003	0.3110	9.1000e-004	0.3119	0.0827	8.4000e-004	0.0835	0.0000	207.8677	207.8677	3.6600e-003	4.7400e-003	209.3718
<b>Total</b>	<b>0.0816</b>	<b>0.5925</b>	<b>0.7722</b>	<b>4.3000e-003</b>	<b>0.3958</b>	<b>4.4700e-003</b>	<b>0.4003</b>	<b>0.1072</b>	<b>4.2500e-003</b>	<b>0.1115</b>	<b>0.0000</b>	<b>420.1439</b>	<b>420.1439</b>	<b>4.5900e-003</b>	<b>0.0363</b>	<b>431.0775</b>

**3.4 Building Construction - 2033****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1702	1.0315	2.1004	4.0200e-003		0.0193	0.0193		0.0193	0.0193	0.0000	341.7193	341.7193	0.0137	0.0000	342.0621
<b>Total</b>	<b>0.1702</b>	<b>1.0315</b>	<b>2.1004</b>	<b>4.0200e-003</b>		<b>0.0193</b>	<b>0.0193</b>		<b>0.0193</b>	<b>0.0193</b>	<b>0.0000</b>	<b>341.7193</b>	<b>341.7193</b>	<b>0.0137</b>	<b>0.0000</b>	<b>342.0621</b>

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Building Construction - 2033****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0123	0.5483	0.1558	2.1700e-003	0.0842	3.5200e-003	0.0878	0.0244	3.3700e-003	0.0277	0.0000	207.8607	207.8607	9.1000e-004	0.0309	217.0873
Worker	0.0640	0.0357	0.5888	2.0400e-003	0.3086	8.5000e-004	0.3094	0.0820	7.8000e-004	0.0828	0.0000	203.7543	203.7543	3.3800e-003	4.5700e-003	205.1997
<b>Total</b>	<b>0.0763</b>	<b>0.5840</b>	<b>0.7446</b>	<b>4.2100e-003</b>	<b>0.3928</b>	<b>4.3700e-003</b>	<b>0.3972</b>	<b>0.1064</b>	<b>4.1500e-003</b>	<b>0.1105</b>	<b>0.0000</b>	<b>411.6149</b>	<b>411.6149</b>	<b>4.2900e-003</b>	<b>0.0355</b>	<b>422.2870</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1702	1.0315	2.1004	4.0200e-003		0.0193	0.0193		0.0193	0.0193	0.0000	341.7189	341.7189	0.0137	0.0000	342.0617
<b>Total</b>	<b>0.1702</b>	<b>1.0315</b>	<b>2.1004</b>	<b>4.0200e-003</b>		<b>0.0193</b>	<b>0.0193</b>		<b>0.0193</b>	<b>0.0193</b>	<b>0.0000</b>	<b>341.7189</b>	<b>341.7189</b>	<b>0.0137</b>	<b>0.0000</b>	<b>342.0617</b>

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Building Construction - 2033****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0123	0.5483	0.1558	2.1700e-003	0.0842	3.5200e-003	0.0878	0.0244	3.3700e-003	0.0277	0.0000	207.8607	207.8607	9.1000e-004	0.0309	217.0873
Worker	0.0640	0.0357	0.5888	2.0400e-003	0.3086	8.5000e-004	0.3094	0.0820	7.8000e-004	0.0828	0.0000	203.7543	203.7543	3.3800e-003	4.5700e-003	205.1997
<b>Total</b>	<b>0.0763</b>	<b>0.5840</b>	<b>0.7446</b>	<b>4.2100e-003</b>	<b>0.3928</b>	<b>4.3700e-003</b>	<b>0.3972</b>	<b>0.1064</b>	<b>4.1500e-003</b>	<b>0.1105</b>	<b>0.0000</b>	<b>411.6149</b>	<b>411.6149</b>	<b>4.2900e-003</b>	<b>0.0355</b>	<b>422.2870</b>

**3.4 Building Construction - 2034****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1702	1.0315	2.1004	4.0200e-003		0.0193	0.0193		0.0193	0.0193	0.0000	341.7193	341.7193	0.0137	0.0000	342.0621
<b>Total</b>	<b>0.1702</b>	<b>1.0315</b>	<b>2.1004</b>	<b>4.0200e-003</b>		<b>0.0193</b>	<b>0.0193</b>		<b>0.0193</b>	<b>0.0193</b>	<b>0.0000</b>	<b>341.7193</b>	<b>341.7193</b>	<b>0.0137</b>	<b>0.0000</b>	<b>342.0621</b>

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Building Construction - 2034****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0123	0.5466	0.1560	2.1400e-003	0.0842	3.5000e-003	0.0877	0.0244	3.3500e-003	0.0277	0.0000	205.3112	205.3112	9.0000e-004	0.0305	214.4188
Worker	0.0600	0.0337	0.5695	2.0100e-003	0.3086	8.0000e-004	0.3094	0.0820	7.3000e-004	0.0828	0.0000	201.5271	201.5271	3.1500e-003	4.4600e-003	202.9336
<b>Total</b>	<b>0.0723</b>	<b>0.5802</b>	<b>0.7255</b>	<b>4.1500e-003</b>	<b>0.3928</b>	<b>4.3000e-003</b>	<b>0.3971</b>	<b>0.1064</b>	<b>4.0800e-003</b>	<b>0.1105</b>	<b>0.0000</b>	<b>406.8383</b>	<b>406.8383</b>	<b>4.0500e-003</b>	<b>0.0350</b>	<b>417.3524</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1702	1.0315	2.1004	4.0200e-003		0.0193	0.0193		0.0193	0.0193	0.0000	341.7189	341.7189	0.0137	0.0000	342.0617
<b>Total</b>	<b>0.1702</b>	<b>1.0315</b>	<b>2.1004</b>	<b>4.0200e-003</b>		<b>0.0193</b>	<b>0.0193</b>		<b>0.0193</b>	<b>0.0193</b>	<b>0.0000</b>	<b>341.7189</b>	<b>341.7189</b>	<b>0.0137</b>	<b>0.0000</b>	<b>342.0617</b>

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Building Construction - 2034****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0123	0.5466	0.1560	2.1400e-003	0.0842	3.5000e-003	0.0877	0.0244	3.3500e-003	0.0277	0.0000	205.3112	205.3112	9.0000e-004	0.0305	214.4188
Worker	0.0600	0.0337	0.5695	2.0100e-003	0.3086	8.0000e-004	0.3094	0.0820	7.3000e-004	0.0828	0.0000	201.5271	201.5271	3.1500e-003	4.4600e-003	202.9336
<b>Total</b>	<b>0.0723</b>	<b>0.5802</b>	<b>0.7255</b>	<b>4.1500e-003</b>	<b>0.3928</b>	<b>4.3000e-003</b>	<b>0.3971</b>	<b>0.1064</b>	<b>4.0800e-003</b>	<b>0.1105</b>	<b>0.0000</b>	<b>406.8383</b>	<b>406.8383</b>	<b>4.0500e-003</b>	<b>0.0350</b>	<b>417.3524</b>

**3.4 Building Construction - 2035****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1588	0.9346	2.1034	4.0400e-003		0.0118	0.0118		0.0118	0.0118	0.0000	343.0336	343.0336	0.0128	0.0000	343.3530
<b>Total</b>	<b>0.1588</b>	<b>0.9346</b>	<b>2.1034</b>	<b>4.0400e-003</b>		<b>0.0118</b>	<b>0.0118</b>		<b>0.0118</b>	<b>0.0118</b>	<b>0.0000</b>	<b>343.0336</b>	<b>343.0336</b>	<b>0.0128</b>	<b>0.0000</b>	<b>343.3530</b>

## FNC Farming Subdivision - Tulare County, Annual

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.4 Building Construction - 2035

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0123	0.5466	0.1568	2.1300e-003	0.0846	3.4900e-003	0.0881	0.0245	3.3400e-003	0.0278	0.0000	203.8247	203.8247	9.0000e-004	0.0303	212.8612
Worker	0.0568	0.0323	0.5557	1.9900e-003	0.3098	7.5000e-004	0.3105	0.0824	6.9000e-004	0.0831	0.0000	200.3756	200.3756	2.9700e-003	4.3900e-003	201.7573
<b>Total</b>	<b>0.0691</b>	<b>0.5789</b>	<b>0.7125</b>	<b>4.1200e-003</b>	<b>0.3943</b>	<b>4.2400e-003</b>	<b>0.3986</b>	<b>0.1068</b>	<b>4.0300e-003</b>	<b>0.1108</b>	<b>0.0000</b>	<b>404.2004</b>	<b>404.2004</b>	<b>3.8700e-003</b>	<b>0.0346</b>	<b>414.6185</b>

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1588	0.9346	2.1034	4.0400e-003		0.0118	0.0118		0.0118	0.0118	0.0000	343.0332	343.0332	0.0128	0.0000	343.3526
<b>Total</b>	<b>0.1588</b>	<b>0.9346</b>	<b>2.1034</b>	<b>4.0400e-003</b>		<b>0.0118</b>	<b>0.0118</b>		<b>0.0118</b>	<b>0.0118</b>	<b>0.0000</b>	<b>343.0332</b>	<b>343.0332</b>	<b>0.0128</b>	<b>0.0000</b>	<b>343.3526</b>

## FNC Farming Subdivision - Tulare County, Annual

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.4 Building Construction - 2035

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0123	0.5466	0.1568	2.1300e-003	0.0846	3.4900e-003	0.0881	0.0245	3.3400e-003	0.0278	0.0000	203.8247	203.8247	9.0000e-004	0.0303	212.8612
Worker	0.0568	0.0323	0.5557	1.9900e-003	0.3098	7.5000e-004	0.3105	0.0824	6.9000e-004	0.0831	0.0000	200.3756	200.3756	2.9700e-003	4.3900e-003	201.7573
<b>Total</b>	<b>0.0691</b>	<b>0.5789</b>	<b>0.7125</b>	<b>4.1200e-003</b>	<b>0.3943</b>	<b>4.2400e-003</b>	<b>0.3986</b>	<b>0.1068</b>	<b>4.0300e-003</b>	<b>0.1108</b>	<b>0.0000</b>	<b>404.2004</b>	<b>404.2004</b>	<b>3.8700e-003</b>	<b>0.0346</b>	<b>414.6185</b>

## 3.4 Building Construction - 2036

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1594	0.9381	2.1114	4.0600e-003		0.0118	0.0118		0.0118	0.0118	0.0000	344.3479	344.3479	0.0128	0.0000	344.6686
<b>Total</b>	<b>0.1594</b>	<b>0.9381</b>	<b>2.1114</b>	<b>4.0600e-003</b>		<b>0.0118</b>	<b>0.0118</b>		<b>0.0118</b>	<b>0.0118</b>	<b>0.0000</b>	<b>344.3479</b>	<b>344.3479</b>	<b>0.0128</b>	<b>0.0000</b>	<b>344.6686</b>



## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Building Construction - 2036****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0123	0.5487	0.1574	2.1300e-003	0.0849	3.5100e-003	0.0884	0.0245	3.3500e-003	0.0279	0.0000	204.6057	204.6057	9.1000e-004	0.0304	213.6767
Worker	0.0571	0.0324	0.5579	2.0000e-003	0.3110	7.5000e-004	0.3117	0.0827	6.9000e-004	0.0834	0.0000	201.1434	201.1434	2.9800e-003	4.4000e-003	202.5303
<b>Total</b>	<b>0.0694</b>	<b>0.5811</b>	<b>0.7153</b>	<b>4.1300e-003</b>	<b>0.3958</b>	<b>4.2600e-003</b>	<b>0.4001</b>	<b>0.1072</b>	<b>4.0400e-003</b>	<b>0.1113</b>	<b>0.0000</b>	<b>405.7490</b>	<b>405.7490</b>	<b>3.8900e-003</b>	<b>0.0348</b>	<b>416.2070</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1594	0.9381	2.1114	4.0600e-003		0.0118	0.0118		0.0118	0.0118	0.0000	344.3475	344.3475	0.0128	0.0000	344.6682
<b>Total</b>	<b>0.1594</b>	<b>0.9381</b>	<b>2.1114</b>	<b>4.0600e-003</b>		<b>0.0118</b>	<b>0.0118</b>		<b>0.0118</b>	<b>0.0118</b>	<b>0.0000</b>	<b>344.3475</b>	<b>344.3475</b>	<b>0.0128</b>	<b>0.0000</b>	<b>344.6682</b>

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Building Construction - 2036****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0123	0.5487	0.1574	2.1300e-003	0.0849	3.5100e-003	0.0884	0.0245	3.3500e-003	0.0279	0.0000	204.6057	204.6057	9.1000e-004	0.0304	213.6767
Worker	0.0571	0.0324	0.5579	2.0000e-003	0.3110	7.5000e-004	0.3117	0.0827	6.9000e-004	0.0834	0.0000	201.1434	201.1434	2.9800e-003	4.4000e-003	202.5303
<b>Total</b>	<b>0.0694</b>	<b>0.5811</b>	<b>0.7153</b>	<b>4.1300e-003</b>	<b>0.3958</b>	<b>4.2600e-003</b>	<b>0.4001</b>	<b>0.1072</b>	<b>4.0400e-003</b>	<b>0.1113</b>	<b>0.0000</b>	<b>405.7490</b>	<b>405.7490</b>	<b>3.8900e-003</b>	<b>0.0348</b>	<b>416.2070</b>

**3.4 Building Construction - 2037****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1588	0.9346	2.1034	4.0400e-003		0.0118	0.0118		0.0118	0.0118	0.0000	343.0336	343.0336	0.0128	0.0000	343.3530
<b>Total</b>	<b>0.1588</b>	<b>0.9346</b>	<b>2.1034</b>	<b>4.0400e-003</b>		<b>0.0118</b>	<b>0.0118</b>		<b>0.0118</b>	<b>0.0118</b>	<b>0.0000</b>	<b>343.0336</b>	<b>343.0336</b>	<b>0.0128</b>	<b>0.0000</b>	<b>343.3530</b>

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Building Construction - 2037****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0123	0.5466	0.1568	2.1300e-003	0.0846	3.4900e-003	0.0881	0.0245	3.3400e-003	0.0278	0.0000	203.8247	203.8247	9.0000e-004	0.0303	212.8612
Worker	0.0568	0.0323	0.5557	1.9900e-003	0.3098	7.5000e-004	0.3105	0.0824	6.9000e-004	0.0831	0.0000	200.3756	200.3756	2.9700e-003	4.3900e-003	201.7573
<b>Total</b>	<b>0.0691</b>	<b>0.5789</b>	<b>0.7125</b>	<b>4.1200e-003</b>	<b>0.3943</b>	<b>4.2400e-003</b>	<b>0.3986</b>	<b>0.1068</b>	<b>4.0300e-003</b>	<b>0.1108</b>	<b>0.0000</b>	<b>404.2004</b>	<b>404.2004</b>	<b>3.8700e-003</b>	<b>0.0346</b>	<b>414.6185</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1588	0.9346	2.1034	4.0400e-003		0.0118	0.0118		0.0118	0.0118	0.0000	343.0332	343.0332	0.0128	0.0000	343.3526
<b>Total</b>	<b>0.1588</b>	<b>0.9346</b>	<b>2.1034</b>	<b>4.0400e-003</b>		<b>0.0118</b>	<b>0.0118</b>		<b>0.0118</b>	<b>0.0118</b>	<b>0.0000</b>	<b>343.0332</b>	<b>343.0332</b>	<b>0.0128</b>	<b>0.0000</b>	<b>343.3526</b>

## FNC Farming Subdivision - Tulare County, Annual

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.4 Building Construction - 2037

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0123	0.5466	0.1568	2.1300e-003	0.0846	3.4900e-003	0.0881	0.0245	3.3400e-003	0.0278	0.0000	203.8247	203.8247	9.0000e-004	0.0303	212.8612
Worker	0.0568	0.0323	0.5557	1.9900e-003	0.3098	7.5000e-004	0.3105	0.0824	6.9000e-004	0.0831	0.0000	200.3756	200.3756	2.9700e-003	4.3900e-003	201.7573
<b>Total</b>	<b>0.0691</b>	<b>0.5789</b>	<b>0.7125</b>	<b>4.1200e-003</b>	<b>0.3943</b>	<b>4.2400e-003</b>	<b>0.3986</b>	<b>0.1068</b>	<b>4.0300e-003</b>	<b>0.1108</b>	<b>0.0000</b>	<b>404.2004</b>	<b>404.2004</b>	<b>3.8700e-003</b>	<b>0.0346</b>	<b>414.6185</b>

## 3.4 Building Construction - 2038

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1229	0.7233	1.6279	3.1300e-003		9.1300e-003	9.1300e-003		9.1300e-003	9.1300e-003	0.0000	265.4896	265.4896	9.8900e-003	0.0000	265.7368
<b>Total</b>	<b>0.1229</b>	<b>0.7233</b>	<b>1.6279</b>	<b>3.1300e-003</b>		<b>9.1300e-003</b>	<b>9.1300e-003</b>		<b>9.1300e-003</b>	<b>9.1300e-003</b>	<b>0.0000</b>	<b>265.4896</b>	<b>265.4896</b>	<b>9.8900e-003</b>	<b>0.0000</b>	<b>265.7368</b>

## FNC Farming Subdivision - Tulare County, Annual

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.4 Building Construction - 2038

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.5000e-003	0.4231	0.1214	1.6500e-003	0.0655	2.7000e-003	0.0682	0.0189	2.5900e-003	0.0215	0.0000	157.7494	157.7494	7.0000e-004	0.0234	164.7431
Worker	0.0440	0.0250	0.4301	1.5400e-003	0.2397	5.8000e-004	0.2403	0.0637	5.3000e-004	0.0643	0.0000	155.0800	155.0800	2.3000e-003	3.4000e-003	156.1493
<b>Total</b>	<b>0.0535</b>	<b>0.4480</b>	<b>0.5515</b>	<b>3.1900e-003</b>	<b>0.3052</b>	<b>3.2800e-003</b>	<b>0.3085</b>	<b>0.0827</b>	<b>3.1200e-003</b>	<b>0.0858</b>	<b>0.0000</b>	<b>312.8294</b>	<b>312.8294</b>	<b>3.0000e-003</b>	<b>0.0268</b>	<b>320.8924</b>

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1229	0.7233	1.6279	3.1300e-003		9.1300e-003	9.1300e-003		9.1300e-003	9.1300e-003	0.0000	265.4893	265.4893	9.8900e-003	0.0000	265.7365
<b>Total</b>	<b>0.1229</b>	<b>0.7233</b>	<b>1.6279</b>	<b>3.1300e-003</b>		<b>9.1300e-003</b>	<b>9.1300e-003</b>		<b>9.1300e-003</b>	<b>9.1300e-003</b>	<b>0.0000</b>	<b>265.4893</b>	<b>265.4893</b>	<b>9.8900e-003</b>	<b>0.0000</b>	<b>265.7365</b>

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Building Construction - 2038****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.5000e-003	0.4231	0.1214	1.6500e-003	0.0655	2.7000e-003	0.0682	0.0189	2.5900e-003	0.0215	0.0000	157.7494	157.7494	7.0000e-004	0.0234	164.7431
Worker	0.0440	0.0250	0.4301	1.5400e-003	0.2397	5.8000e-004	0.2403	0.0637	5.3000e-004	0.0643	0.0000	155.0800	155.0800	2.3000e-003	3.4000e-003	156.1493
<b>Total</b>	<b>0.0535</b>	<b>0.4480</b>	<b>0.5515</b>	<b>3.1900e-003</b>	<b>0.3052</b>	<b>3.2800e-003</b>	<b>0.3085</b>	<b>0.0827</b>	<b>3.1200e-003</b>	<b>0.0858</b>	<b>0.0000</b>	<b>312.8294</b>	<b>312.8294</b>	<b>3.0000e-003</b>	<b>0.0268</b>	<b>320.8924</b>

**3.5 Paving - 2038****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0336	0.1439	0.4667	8.3000e-004		5.5300e-003	5.5300e-003		5.5300e-003	5.5300e-003	0.0000	71.0936	71.0936	2.7400e-003	0.0000	71.1620
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0336</b>	<b>0.1439</b>	<b>0.4667</b>	<b>8.3000e-004</b>		<b>5.5300e-003</b>	<b>5.5300e-003</b>		<b>5.5300e-003</b>	<b>5.5300e-003</b>	<b>0.0000</b>	<b>71.0936</b>	<b>71.0936</b>	<b>2.7400e-003</b>	<b>0.0000</b>	<b>71.1620</b>

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.5 Paving - 2038****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.5000e-004	3.7000e-004	6.3200e-003	2.0000e-005	3.5200e-003	1.0000e-005	3.5300e-003	9.4000e-004	1.0000e-005	9.4000e-004	0.0000	2.2800	2.2800	3.0000e-005	5.0000e-005	2.2957
<b>Total</b>	<b>6.5000e-004</b>	<b>3.7000e-004</b>	<b>6.3200e-003</b>	<b>2.0000e-005</b>	<b>3.5200e-003</b>	<b>1.0000e-005</b>	<b>3.5300e-003</b>	<b>9.4000e-004</b>	<b>1.0000e-005</b>	<b>9.4000e-004</b>	<b>0.0000</b>	<b>2.2800</b>	<b>2.2800</b>	<b>3.0000e-005</b>	<b>5.0000e-005</b>	<b>2.2957</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0336	0.1439	0.4667	8.3000e-004		5.5300e-003	5.5300e-003		5.5300e-003	5.5300e-003	0.0000	71.0935	71.0935	2.7400e-003	0.0000	71.1619
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0336</b>	<b>0.1439</b>	<b>0.4667</b>	<b>8.3000e-004</b>		<b>5.5300e-003</b>	<b>5.5300e-003</b>		<b>5.5300e-003</b>	<b>5.5300e-003</b>	<b>0.0000</b>	<b>71.0935</b>	<b>71.0935</b>	<b>2.7400e-003</b>	<b>0.0000</b>	<b>71.1619</b>

## FNC Farming Subdivision - Tulare County, Annual

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.5 Paving - 2038

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.5000e-004	3.7000e-004	6.3200e-003	2.0000e-005	3.5200e-003	1.0000e-005	3.5300e-003	9.4000e-004	1.0000e-005	9.4000e-004	0.0000	2.2800	2.2800	3.0000e-005	5.0000e-005	2.2957
<b>Total</b>	<b>6.5000e-004</b>	<b>3.7000e-004</b>	<b>6.3200e-003</b>	<b>2.0000e-005</b>	<b>3.5200e-003</b>	<b>1.0000e-005</b>	<b>3.5300e-003</b>	<b>9.4000e-004</b>	<b>1.0000e-005</b>	<b>9.4000e-004</b>	<b>0.0000</b>	<b>2.2800</b>	<b>2.2800</b>	<b>3.0000e-005</b>	<b>5.0000e-005</b>	<b>2.2957</b>

## 3.5 Paving - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0918	0.3925	1.2735	2.2600e-003		0.0151	0.0151		0.0151	0.0151	0.0000	194.0011	194.0011	7.4700e-003	0.0000	194.1878
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0918</b>	<b>0.3925</b>	<b>1.2735</b>	<b>2.2600e-003</b>		<b>0.0151</b>	<b>0.0151</b>		<b>0.0151</b>	<b>0.0151</b>	<b>0.0000</b>	<b>194.0011</b>	<b>194.0011</b>	<b>7.4700e-003</b>	<b>0.0000</b>	<b>194.1878</b>



## FNC Farming Subdivision - Tulare County, Annual

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.5 Paving - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7600e-003	1.0000e-003	0.0173	6.0000e-005	9.6200e-003	2.0000e-005	9.6400e-003	2.5600e-003	2.0000e-005	2.5800e-003	0.0000	6.2217	6.2217	9.0000e-005	1.4000e-004	6.2646
<b>Total</b>	<b>1.7600e-003</b>	<b>1.0000e-003</b>	<b>0.0173</b>	<b>6.0000e-005</b>	<b>9.6200e-003</b>	<b>2.0000e-005</b>	<b>9.6400e-003</b>	<b>2.5600e-003</b>	<b>2.0000e-005</b>	<b>2.5800e-003</b>	<b>0.0000</b>	<b>6.2217</b>	<b>6.2217</b>	<b>9.0000e-005</b>	<b>1.4000e-004</b>	<b>6.2646</b>

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0918	0.3925	1.2735	2.2600e-003		0.0151	0.0151		0.0151	0.0151	0.0000	194.0009	194.0009	7.4700e-003	0.0000	194.1875
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0918</b>	<b>0.3925</b>	<b>1.2735</b>	<b>2.2600e-003</b>		<b>0.0151</b>	<b>0.0151</b>		<b>0.0151</b>	<b>0.0151</b>	<b>0.0000</b>	<b>194.0009</b>	<b>194.0009</b>	<b>7.4700e-003</b>	<b>0.0000</b>	<b>194.1875</b>

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.5 Paving - 2039****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7600e-003	1.0000e-003	0.0173	6.0000e-005	9.6200e-003	2.0000e-005	9.6400e-003	2.5600e-003	2.0000e-005	2.5800e-003	0.0000	6.2217	6.2217	9.0000e-005	1.4000e-004	6.2646
<b>Total</b>	<b>1.7600e-003</b>	<b>1.0000e-003</b>	<b>0.0173</b>	<b>6.0000e-005</b>	<b>9.6200e-003</b>	<b>2.0000e-005</b>	<b>9.6400e-003</b>	<b>2.5600e-003</b>	<b>2.0000e-005</b>	<b>2.5800e-003</b>	<b>0.0000</b>	<b>6.2217</b>	<b>6.2217</b>	<b>9.0000e-005</b>	<b>1.4000e-004</b>	<b>6.2646</b>

**3.6 Architectural Coating - 2039****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.2270					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.8300e-003	0.0375	0.0888	1.5000e-004		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	12.6386	12.6386	4.7000e-004	0.0000	12.6503
<b>Total</b>	<b>4.2329</b>	<b>0.0375</b>	<b>0.0888</b>	<b>1.5000e-004</b>		<b>4.9000e-004</b>	<b>4.9000e-004</b>		<b>4.9000e-004</b>	<b>4.9000e-004</b>	<b>0.0000</b>	<b>12.6386</b>	<b>12.6386</b>	<b>4.7000e-004</b>	<b>0.0000</b>	<b>12.6503</b>

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.6 Architectural Coating - 2039****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.3400e-003	2.4600e-003	0.0424	1.5000e-004	0.0237	6.0000e-005	0.0237	6.2900e-003	5.0000e-005	6.3400e-003	0.0000	15.3029	15.3029	2.3000e-004	3.4000e-004	15.4085
<b>Total</b>	<b>4.3400e-003</b>	<b>2.4600e-003</b>	<b>0.0424</b>	<b>1.5000e-004</b>	<b>0.0237</b>	<b>6.0000e-005</b>	<b>0.0237</b>	<b>6.2900e-003</b>	<b>5.0000e-005</b>	<b>6.3400e-003</b>	<b>0.0000</b>	<b>15.3029</b>	<b>15.3029</b>	<b>2.3000e-004</b>	<b>3.4000e-004</b>	<b>15.4085</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.2270					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.8300e-003	0.0375	0.0888	1.5000e-004		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	12.6386	12.6386	4.7000e-004	0.0000	12.6503
<b>Total</b>	<b>4.2329</b>	<b>0.0375</b>	<b>0.0888</b>	<b>1.5000e-004</b>		<b>4.9000e-004</b>	<b>4.9000e-004</b>		<b>4.9000e-004</b>	<b>4.9000e-004</b>	<b>0.0000</b>	<b>12.6386</b>	<b>12.6386</b>	<b>4.7000e-004</b>	<b>0.0000</b>	<b>12.6503</b>

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.6 Architectural Coating - 2039****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.3400e-003	2.4600e-003	0.0424	1.5000e-004	0.0237	6.0000e-005	0.0237	6.2900e-003	5.0000e-005	6.3400e-003	0.0000	15.3029	15.3029	2.3000e-004	3.4000e-004	15.4085
<b>Total</b>	<b>4.3400e-003</b>	<b>2.4600e-003</b>	<b>0.0424</b>	<b>1.5000e-004</b>	<b>0.0237</b>	<b>6.0000e-005</b>	<b>0.0237</b>	<b>6.2900e-003</b>	<b>5.0000e-005</b>	<b>6.3400e-003</b>	<b>0.0000</b>	<b>15.3029</b>	<b>15.3029</b>	<b>2.3000e-004</b>	<b>3.4000e-004</b>	<b>15.4085</b>

**3.6 Architectural Coating - 2040****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	5.1664					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.9500e-003	0.0440	0.1084	1.8000e-004		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	15.4472	15.4472	5.4000e-004	0.0000	15.4608
<b>Total</b>	<b>5.1733</b>	<b>0.0440</b>	<b>0.1084</b>	<b>1.8000e-004</b>		<b>4.5000e-004</b>	<b>4.5000e-004</b>		<b>4.5000e-004</b>	<b>4.5000e-004</b>	<b>0.0000</b>	<b>15.4472</b>	<b>15.4472</b>	<b>5.4000e-004</b>	<b>0.0000</b>	<b>15.4608</b>

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.6 Architectural Coating - 2040****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.1400e-003	2.5900e-003	0.0469	1.8000e-004	0.0289	5.0000e-005	0.0290	7.6900e-003	5.0000e-005	7.7400e-003	0.0000	18.1079	18.1079	2.1000e-004	3.9000e-004	18.2285
<b>Total</b>	<b>4.1400e-003</b>	<b>2.5900e-003</b>	<b>0.0469</b>	<b>1.8000e-004</b>	<b>0.0289</b>	<b>5.0000e-005</b>	<b>0.0290</b>	<b>7.6900e-003</b>	<b>5.0000e-005</b>	<b>7.7400e-003</b>	<b>0.0000</b>	<b>18.1079</b>	<b>18.1079</b>	<b>2.1000e-004</b>	<b>3.9000e-004</b>	<b>18.2285</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	5.1664					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.9500e-003	0.0440	0.1084	1.8000e-004		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	15.4472	15.4472	5.4000e-004	0.0000	15.4608
<b>Total</b>	<b>5.1733</b>	<b>0.0440</b>	<b>0.1084</b>	<b>1.8000e-004</b>		<b>4.5000e-004</b>	<b>4.5000e-004</b>		<b>4.5000e-004</b>	<b>4.5000e-004</b>	<b>0.0000</b>	<b>15.4472</b>	<b>15.4472</b>	<b>5.4000e-004</b>	<b>0.0000</b>	<b>15.4608</b>

FNC Farming Subdivision - Tulare County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.1400e-003	2.5900e-003	0.0469	1.8000e-004	0.0289	5.0000e-005	0.0290	7.6900e-003	5.0000e-005	7.7400e-003	0.0000	18.1079	18.1079	2.1000e-004	3.9000e-004	18.2285
Total	4.1400e-003	2.5900e-003	0.0469	1.8000e-004	0.0289	5.0000e-005	0.0290	7.6900e-003	5.0000e-005	7.7400e-003	0.0000	18.1079	18.1079	2.1000e-004	3.9000e-004	18.2285

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Pedestrian Network

## FNC Farming Subdivision - Tulare County, Annual

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.3600	3.7929	21.8845	0.0512	5.4052	0.0437	5.4489	1.4462	0.0410	1.4872	0.0000	4,877.158 2	4,877.158 2	0.2497	0.2519	4,958.465 9
Unmitigated	2.3699	3.8235	22.0553	0.0517	5.4598	0.0441	5.5039	1.4608	0.0414	1.5022	0.0000	4,924.971 1	4,924.971 1	0.2512	0.2539	5,006.919 1

## 4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	4.17	10.47	11.69	13,110	12,979
Single Family Housing	5,248.64	5,304.24	4753.80	14,617,649	14,471,473
Total	5,252.81	5,314.71	4,765.49	14,630,759	14,484,452

## 4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Single Family Housing	10.80	7.30	7.50	38.40	22.60	39.00	86	11	3

## 4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.525357	0.051382	0.167800	0.162287	0.028850	0.007480	0.012195	0.015949	0.000630	0.000469	0.022910	0.001396	0.003296
Single Family Housing	0.525357	0.051382	0.167800	0.162287	0.028850	0.007480	0.012195	0.015949	0.000630	0.000469	0.022910	0.001396	0.003296

## 5.0 Energy Detail

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

Historical Energy Use: N

**5.1 Mitigation Measures Energy**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	786.2653	786.2653	0.0664	8.0400e-003	790.3215
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	786.2653	786.2653	0.0664	8.0400e-003	790.3215
NaturalGas Mitigated	0.0721	0.6158	0.2621	3.9300e-003		0.0498	0.0498		0.0498	0.0498	0.0000	713.2008	713.2008	0.0137	0.0131	717.4390
NaturalGas Unmitigated	0.0721	0.6158	0.2621	3.9300e-003		0.0498	0.0498		0.0498	0.0498	0.0000	713.2008	713.2008	0.0137	0.0131	717.4390



## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****5.2 Energy by Land Use - NaturalGas****Unmitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.33649e+007	0.0721	0.6158	0.2621	3.9300e-003		0.0498	0.0498		0.0498	0.0498	0.0000	713.2008	713.2008	0.0137	0.0131	717.4390
<b>Total</b>		<b>0.0721</b>	<b>0.6158</b>	<b>0.2621</b>	<b>3.9300e-003</b>		<b>0.0498</b>	<b>0.0498</b>		<b>0.0498</b>	<b>0.0498</b>	<b>0.0000</b>	<b>713.2008</b>	<b>713.2008</b>	<b>0.0137</b>	<b>0.0131</b>	<b>717.4390</b>

**Mitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.33649e+007	0.0721	0.6158	0.2621	3.9300e-003		0.0498	0.0498		0.0498	0.0498	0.0000	713.2008	713.2008	0.0137	0.0131	717.4390
<b>Total</b>		<b>0.0721</b>	<b>0.6158</b>	<b>0.2621</b>	<b>3.9300e-003</b>		<b>0.0498</b>	<b>0.0498</b>		<b>0.0498</b>	<b>0.0498</b>	<b>0.0000</b>	<b>713.2008</b>	<b>713.2008</b>	<b>0.0137</b>	<b>0.0131</b>	<b>717.4390</b>

FNC Farming Subdivision - Tulare County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	4.43352e+006	786.2653	0.0664	8.0400e-003	790.3215
Total		786.2653	0.0664	8.0400e-003	790.3215

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	4.43352e+006	786.2653	0.0664	8.0400e-003	790.3215
Total		786.2653	0.0664	8.0400e-003	790.3215

6.0 Area Detail

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## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****6.1 Mitigation Measures Area**

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.9740	0.0475	4.1245	2.2000e-004		0.0229	0.0229		0.0229	0.0229	0.0000	6.7437	6.7437	6.4600e-003	0.0000	6.9052
Unmitigated	7.5872	0.6390	27.7233	0.0783		3.8750	3.8750		3.8750	3.8750	513.5471	247.6070	761.1541	2.4118	4.4200e-003	822.7651

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****6.2 Area by SubCategory****Unmitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.9393					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.9108					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	2.6132	0.5915	23.5988	0.0780		3.8521	3.8521		3.8521	3.8521	513.5471	240.8633	754.4104	2.4053	4.4200e-003	815.8599
Landscaping	0.1238	0.0475	4.1245	2.2000e-004		0.0229	0.0229		0.0229	0.0229	0.0000	6.7437	6.7437	6.4600e-003	0.0000	6.9052
<b>Total</b>	<b>7.5872</b>	<b>0.6390</b>	<b>27.7233</b>	<b>0.0783</b>		<b>3.8750</b>	<b>3.8750</b>		<b>3.8750</b>	<b>3.8750</b>	<b>513.5471</b>	<b>247.6070</b>	<b>761.1541</b>	<b>2.4118</b>	<b>4.4200e-003</b>	<b>822.7651</b>

## FNC Farming Subdivision - Tulare County, Annual

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.9393					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.9108					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1238	0.0475	4.1245	2.2000e-004		0.0229	0.0229		0.0229	0.0229	0.0000	6.7437	6.7437	6.4600e-003	0.0000	6.9052
<b>Total</b>	<b>4.9740</b>	<b>0.0475</b>	<b>4.1245</b>	<b>2.2000e-004</b>		<b>0.0229</b>	<b>0.0229</b>		<b>0.0229</b>	<b>0.0229</b>	<b>0.0000</b>	<b>6.7437</b>	<b>6.7437</b>	<b>6.4600e-003</b>	<b>0.0000</b>	<b>6.9052</b>

## 7.0 Water Detail

## 7.1 Mitigation Measures Water

## FNC Farming Subdivision - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	64.3804	1.1849	0.0284	102.4695
Unmitigated	64.3804	1.1849	0.0284	102.4695

**7.2 Water by Land Use****Unmitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 6.36251	3.9493	3.3000e-004	4.0000e-005	3.9696
Single Family Housing	36.2256 / 22.8379	60.4312	1.1845	0.0284	98.4998
<b>Total</b>		<b>64.3804</b>	<b>1.1849</b>	<b>0.0284</b>	<b>102.4695</b>

FNC Farming Subdivision - Tulare County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 6.36251	3.9493	3.3000e-004	4.0000e-005	3.9696
Single Family Housing	36.2256 / 22.8379	60.4312	1.1845	0.0284	98.4998
Total		64.3804	1.1849	0.0284	102.4695

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	116.2854	6.8723	0.0000	288.0922
Unmitigated	116.2854	6.8723	0.0000	288.0922

FNC Farming Subdivision - Tulare County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.46	0.0934	5.5200e-003	0.0000	0.2313
Single Family Housing	572.4	116.1920	6.8668	0.0000	287.8608
Total		116.2854	6.8723	0.0000	288.0922

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.46	0.0934	5.5200e-003	0.0000	0.2313
Single Family Housing	572.4	116.1920	6.8668	0.0000	287.8608
Total		116.2854	6.8723	0.0000	288.0922

9.0 Operational Offroad

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FNC Farming Subdivision - Tulare County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment

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Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

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23412 - 2005 BAU - Tulare County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

23412 - 2005 BAU  
Tulare County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	556.00	Dwelling Unit	127.03	1,000,800.00	1929
City Park	5.47	Acre	5.47	238,273.20	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	51
Climate Zone	3			Operational Year	2005
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	CH4 Intensity (lb/MWhr)	0.033	N2O Intensity (lb/MWhr)	0.004

1.3 User Entered Comments & Non-Default Data

- Project Characteristics -
- Land Use - Acreage and dwelling units based on final site plan.
- Construction Phase -
- Architectural Coating - Based on 2005 values.
- Area Mitigation -
- Area Coating -
- Woodstoves - Probable value for BAU year.
- Off-road Equipment -
- Off-road Equipment -
- Mobile Land Use Mitigation -
- Energy Use - Using historical data

23412 - 2005 BAU - Tulare County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	150.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Residential_Interior	250.00	150.00
tblEnergyUse	NT24E	5,093.98	6,155.97
tblEnergyUse	NT24NG	6,005.20	3,723.00
tblEnergyUse	Refrigerator	1,251.38	827.00
tblEnergyUse	T24E	1,243.06	209.15
tblEnergyUse	T24NG	28,148.14	20,314.55
tblFireplaces	NumberWood	0.00	556.00
tblLandUse	LotAcreage	180.52	127.03
tblLandUse	Population	1,590.00	1,929.00

2.0 Emissions Summary

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2.1 Overall Construction

Unmitigated Construction

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
1991	2.5433	19.6137	10.0519	0.9971	2.1143	1.4159	3.5302	0.8970	1.4159	2.3129	0.0000	701.3530	701.3530	0.2079	0.0000	706.5508
1992	2.4570	18.5792	10.3625	0.9447	1.1310	1.3412	2.4722	0.3646	1.3412	1.7059	0.0000	675.1665	675.1665	0.2008	0.0000	680.1866
1993	1.5224	9.3657	3.7427	0.5012	0.3293	0.7967	1.1260	0.0808	0.7967	0.8775	0.0000	343.0338	343.0338	0.1243	0.0000	346.1399
1994	1.5165	9.3299	3.7284	0.4992	0.3280	0.7936	1.1217	0.0805	0.7936	0.8741	0.0000	341.7195	341.7195	0.1238	0.0000	344.8137
1995	1.5165	9.3299	3.7284	0.4992	0.3280	0.7936	1.1217	0.0805	0.7936	0.8741	0.0000	341.7195	341.7195	0.1238	0.0000	344.8137
1996	1.5282	9.4016	3.7571	0.5031	0.3306	0.7997	1.1303	0.0811	0.7997	0.8809	0.0000	344.3481	344.3481	0.1247	0.0000	347.4661
1997	1.5224	9.3657	3.7427	0.5012	0.3293	0.7967	1.1260	0.0808	0.7967	0.8775	0.0000	343.0338	343.0338	0.1243	0.0000	346.1399
1998	1.5224	9.3657	3.7427	0.5012	0.3293	0.7967	1.1260	0.0808	0.7967	0.8775	0.0000	343.0338	343.0338	0.1243	0.0000	346.1399
1999	1.5224	9.3657	3.7427	0.5012	0.3293	0.7967	1.1260	0.0808	0.7967	0.8775	0.0000	343.0338	343.0338	0.1243	0.0000	346.1399
2000	2.5731	11.4083	14.9032	0.0725	0.3949	0.6573	1.0521	0.1069	0.6498	0.7567	0.0000	1,024.128 0	1,024.128 0	0.1904	0.1078	1,061.015 2
2001	2.5830	11.4521	14.9605	0.0728	0.3964	0.6598	1.0562	0.1073	0.6523	0.7596	0.0000	1,028.067 0	1,028.067 0	0.1912	0.1082	1,065.096 0
2002	2.5830	11.4521	14.9605	0.0728	0.3964	0.6598	1.0562	0.1073	0.6523	0.7596	0.0000	1,028.067 0	1,028.067 0	0.1912	0.1082	1,065.096 0
2003	2.5830	11.4521	14.9605	0.0728	0.3964	0.6598	1.0562	0.1073	0.6523	0.7596	0.0000	1,028.067 0	1,028.067 0	0.1912	0.1082	1,065.096 0
2004	1.8035	9.0490	9.3438	0.0554	0.2170	0.5294	0.7464	0.0587	0.5254	0.5841	0.0000	701.6716	701.6716	0.1366	0.0587	722.5714
2005	7.4408	2.4774	2.0414	0.0159	0.0449	0.1593	0.2042	0.0119	0.1592	0.1712	0.0000	186.7602	186.7602	0.0357	6.2800e-003	189.5220
2006	2.4416	0.1575	0.3582	1.0000e-003	0.0134	0.0111	0.0245	3.5600e-003	0.0111	0.0146	0.0000	22.0862	22.0862	4.0900e-003	1.8700e-003	22.7455
Maximum	7.4408	19.6137	14.9605	0.9971	2.1143	1.4159	3.5302	0.8970	1.4159	2.3129	0.0000	1,028.067 0	1,028.067 0	0.2079	0.1082	1,065.096 0

**2.1 Overall Construction**

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****Mitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
1991	2.5433	19.6137	10.0519	0.9971	2.1143	1.4159	3.5302	0.8970	1.4159	2.3129	0.0000	701.3522	701.3522	0.2079	0.0000	706.5500
1992	2.4570	18.5791	10.3625	0.9447	1.1310	1.3412	2.4722	0.3646	1.3412	1.7059	0.0000	675.1657	675.1657	0.2008	0.0000	680.1857
1993	1.5224	9.3657	3.7427	0.5012	0.3293	0.7967	1.1260	0.0808	0.7967	0.8775	0.0000	343.0334	343.0334	0.1243	0.0000	346.1395
1994	1.5165	9.3299	3.7284	0.4992	0.3280	0.7936	1.1217	0.0805	0.7936	0.8741	0.0000	341.7191	341.7191	0.1238	0.0000	344.8133
1995	1.5165	9.3299	3.7284	0.4992	0.3280	0.7936	1.1217	0.0805	0.7936	0.8741	0.0000	341.7191	341.7191	0.1238	0.0000	344.8133
1996	1.5282	9.4016	3.7571	0.5031	0.3306	0.7997	1.1303	0.0811	0.7997	0.8809	0.0000	344.3477	344.3477	0.1247	0.0000	347.4657
1997	1.5224	9.3657	3.7427	0.5012	0.3293	0.7967	1.1260	0.0808	0.7967	0.8775	0.0000	343.0334	343.0334	0.1243	0.0000	346.1395
1998	1.5224	9.3657	3.7427	0.5012	0.3293	0.7967	1.1260	0.0808	0.7967	0.8775	0.0000	343.0334	343.0334	0.1243	0.0000	346.1395
1999	1.5224	9.3657	3.7427	0.5012	0.3293	0.7967	1.1260	0.0808	0.7967	0.8775	0.0000	343.0334	343.0334	0.1243	0.0000	346.1395
2000	2.5731	11.4083	14.9031	0.0725	0.3949	0.6573	1.0521	0.1069	0.6498	0.7567	0.0000	1,024.127 6	1,024.127 6	0.1904	0.1078	1,061.014 7
2001	2.5830	11.4521	14.9605	0.0728	0.3964	0.6598	1.0562	0.1073	0.6523	0.7596	0.0000	1,028.066 6	1,028.066 6	0.1912	0.1082	1,065.095 6
2002	2.5830	11.4521	14.9605	0.0728	0.3964	0.6598	1.0562	0.1073	0.6523	0.7596	0.0000	1,028.066 6	1,028.066 6	0.1912	0.1082	1,065.095 6
2003	2.5830	11.4521	14.9605	0.0728	0.3964	0.6598	1.0562	0.1073	0.6523	0.7596	0.0000	1,028.066 6	1,028.066 6	0.1912	0.1082	1,065.095 6
2004	1.8035	9.0490	9.3438	0.0554	0.2170	0.5294	0.7464	0.0587	0.5254	0.5841	0.0000	701.6712	701.6712	0.1366	0.0587	722.5710
2005	7.4408	2.4774	2.0414	0.0159	0.0449	0.1593	0.2042	0.0119	0.1592	0.1712	0.0000	186.7600	186.7600	0.0357	6.2800e-003	189.5218
2006	2.4416	0.1575	0.3582	1.0000e-003	0.0134	0.0111	0.0245	3.5600e-003	0.0111	0.0146	0.0000	22.0862	22.0862	4.0900e-003	1.8700e-003	22.7455
Maximum	7.4408	19.6137	14.9605	0.9971	2.1143	1.4159	3.5302	0.8970	1.4159	2.3129	0.0000	1,028.066 6	1,028.066 6	0.2079	0.1082	1,065.095 6

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-1991	3-31-1991	4.2016	4.2016
2	4-1-1991	6-30-1991	4.5841	4.5841
3	7-1-1991	9-30-1991	6.6712	6.6712
4	10-1-1991	12-31-1991	6.6712	6.6712
5	1-1-1992	3-31-1992	6.5986	6.5986
6	4-1-1992	6-30-1992	6.5986	6.5986
7	7-1-1992	9-30-1992	5.0907	5.0907
8	10-1-1992	12-31-1992	2.7414	2.7414
9	1-1-1993	3-31-1993	2.6818	2.6818
10	4-1-1993	6-30-1993	2.7116	2.7116
11	7-1-1993	9-30-1993	2.7414	2.7414
12	10-1-1993	12-31-1993	2.7414	2.7414
13	1-1-1994	3-31-1994	2.6818	2.6818
14	4-1-1994	6-30-1994	2.7116	2.7116
15	7-1-1994	9-30-1994	2.7414	2.7414
16	10-1-1994	12-31-1994	2.7414	2.7414
17	1-1-1995	3-31-1995	2.6818	2.6818
18	4-1-1995	6-30-1995	2.7116	2.7116
19	7-1-1995	9-30-1995	2.7414	2.7414
20	10-1-1995	12-31-1995	2.7414	2.7414
21	1-1-1996	3-31-1996	2.7116	2.7116
22	4-1-1996	6-30-1996	2.7116	2.7116
23	7-1-1996	9-30-1996	2.7414	2.7414

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

24	10-1-1996	12-31-1996	2.7414	2.7414
25	1-1-1997	3-31-1997	2.6818	2.6818
26	4-1-1997	6-30-1997	2.7116	2.7116
27	7-1-1997	9-30-1997	2.7414	2.7414
28	10-1-1997	12-31-1997	2.7414	2.7414
29	1-1-1998	3-31-1998	2.6818	2.6818
30	4-1-1998	6-30-1998	2.7116	2.7116
31	7-1-1998	9-30-1998	2.7414	2.7414
32	10-1-1998	12-31-1998	2.7414	2.7414
33	1-1-1999	3-31-1999	2.6818	2.6818
34	4-1-1999	6-30-1999	2.7116	2.7116
35	7-1-1999	9-30-1999	2.7414	2.7414
36	10-1-1999	12-31-1999	2.7414	2.7414
37	1-1-2000	3-31-2000	3.5579	3.5579
38	4-1-2000	6-30-2000	3.4508	3.4508
39	7-1-2000	9-30-2000	3.4887	3.4887
40	10-1-2000	12-31-2000	3.5970	3.5970
41	1-1-2001	3-31-2001	3.5188	3.5188
42	4-1-2001	6-30-2001	3.4508	3.4508
43	7-1-2001	9-30-2001	3.4887	3.4887
44	10-1-2001	12-31-2001	3.5970	3.5970
45	1-1-2002	3-31-2002	3.5188	3.5188
46	4-1-2002	6-30-2002	3.4508	3.4508
47	7-1-2002	9-30-2002	3.4887	3.4887
48	10-1-2002	12-31-2002	3.5970	3.5970
49	1-1-2003	3-31-2003	3.5188	3.5188
50	4-1-2003	6-30-2003	3.4508	3.4508
51	7-1-2003	9-30-2003	3.4887	3.4887
52	10-1-2003	12-31-2003	3.5970	3.5970

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

53	1-1-2004	3-31-2004	3.5579	3.5579
54	4-1-2004	6-30-2004	3.4508	3.4508
55	7-1-2004	9-30-2004	2.0364	2.0364
56	10-1-2004	12-31-2004	1.8208	1.8208
57	1-1-2005	3-31-2005	1.5459	1.5459
58	4-1-2005	6-30-2005	2.2822	2.2822
59	7-1-2005	9-30-2005	3.0514	3.0514
60	10-1-2005	12-31-2005	3.0554	3.0554
61	1-1-2006	3-31-2006	2.6236	2.6236
		Highest	6.6712	6.6712

**2.2 Overall Operational****Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	106.2853	1.7691	136.4738	0.2494		18.6776	18.6776		18.6776	18.6776	1,833.3665	247.6070	2,080.9735	2.4161	0.1209	2,177.3965
Energy	0.0721	0.6158	0.2621	3.9300e-003		0.0498	0.0498		0.0498	0.0498	0.0000	1,499.4661	1,499.4661	0.0800	0.0211	1,507.7605
Mobile	10.2417	24.5699	119.8562	0.1550	5.4794	0.4494	5.9288	1.4693	0.4264	1.8957	0.0000	7,246.9166	7,246.9166	1.0788	0.8515	7,527.6229
Waste						0.0000	0.0000		0.0000	0.0000	141.0605	0.0000	141.0605	8.3364	0.0000	349.4713
Water						0.0000	0.0000		0.0000	0.0000	11.4927	52.9838	64.4766	1.1849	0.0284	102.5661
<b>Total</b>	<b>116.5990</b>	<b>26.9549</b>	<b>256.5920</b>	<b>0.4084</b>	<b>5.4794</b>	<b>19.1768</b>	<b>24.6562</b>	<b>1.4693</b>	<b>19.1538</b>	<b>20.6231</b>	<b>1,985.9197</b>	<b>9,046.9735</b>	<b>11,032.8932</b>	<b>13.0962</b>	<b>1.0219</b>	<b>11,664.8173</b>



## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****2.2 Overall Operational****Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	106.2853	1.7691	136.4738	0.2494		18.6776	18.6776		18.6776	18.6776	1,833.3665	247.6070	2,080.9735	2.4161	0.1209	2,177.3965
Energy	0.0721	0.6158	0.2621	3.9300e-003		0.0498	0.0498		0.0498	0.0498	0.0000	1,499.4661	1,499.4661	0.0800	0.0211	1,507.7605
Mobile	10.2417	24.5699	119.8562	0.1550	5.4794	0.4494	5.9288	1.4693	0.4264	1.8957	0.0000	7,246.9166	7,246.9166	1.0788	0.8515	7,527.6229
Waste						0.0000	0.0000		0.0000	0.0000	141.0605	0.0000	141.0605	8.3364	0.0000	349.4713
Water						0.0000	0.0000		0.0000	0.0000	11.4927	52.9838	64.4766	1.1849	0.0284	102.5661
<b>Total</b>	<b>116.5990</b>	<b>26.9549</b>	<b>256.5920</b>	<b>0.4084</b>	<b>5.4794</b>	<b>19.1768</b>	<b>24.6562</b>	<b>1.4693</b>	<b>19.1538</b>	<b>20.6231</b>	<b>1,985.9197</b>	<b>9,046.9735</b>	<b>11,032.8932</b>	<b>13.0962</b>	<b>1.0219</b>	<b>11,664.8173</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

**3.0 Construction Detail****Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/1991	6/17/1991	5	120	
2	Grading	Grading	6/18/1991	8/24/1992	5	310	
3	Building Construction	Building Construction	8/25/1992	7/12/2004	5	3100	

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

4	Paving	Paving	7/13/2004	5/16/2005	5	220
5	Architectural Coating	Architectural Coating	5/17/2005	3/20/2006	5	220

**Acres of Grading (Site Preparation Phase): 180****Acres of Grading (Grading Phase): 930****Acres of Paving: 0****Residential Indoor: 2,026,620; Residential Outdoor: 675,540; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)****OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Building Construction	Cranes	1	7.00	231	0.29
Grading	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

**Trips and VMT**

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	300.00	98.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	60.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction****3.2 Site Preparation - 1991****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.1794	0.0000	1.1794	0.6062	0.0000	0.6062	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.9460	6.8970	2.5189	0.3579		0.5338	0.5338		0.5338	0.5338	0.0000	240.0277	240.0277	0.0773	0.0000	241.9605
<b>Total</b>	<b>0.9460</b>	<b>6.8970</b>	<b>2.5189</b>	<b>0.3579</b>	<b>1.1794</b>	<b>0.5338</b>	<b>1.7132</b>	<b>0.6062</b>	<b>0.5338</b>	<b>1.1399</b>	<b>0.0000</b>	<b>240.0277</b>	<b>240.0277</b>	<b>0.0773</b>	<b>0.0000</b>	<b>241.9605</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.2 Site Preparation - 1991****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					7.4400e-003	0.0000	7.4400e-003	1.8300e-003	0.0000	1.8300e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>7.4400e-003</b>	<b>0.0000</b>	<b>7.4400e-003</b>	<b>1.8300e-003</b>	<b>0.0000</b>	<b>1.8300e-003</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.1794	0.0000	1.1794	0.6062	0.0000	0.6062	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.9460	6.8970	2.5189	0.3579		0.5338	0.5338		0.5338	0.5338	0.0000	240.0274	240.0274	0.0773	0.0000	241.9602
<b>Total</b>	<b>0.9460</b>	<b>6.8970</b>	<b>2.5189</b>	<b>0.3579</b>	<b>1.1794</b>	<b>0.5338</b>	<b>1.7132</b>	<b>0.6062</b>	<b>0.5338</b>	<b>1.1399</b>	<b>0.0000</b>	<b>240.0274</b>	<b>240.0274</b>	<b>0.0773</b>	<b>0.0000</b>	<b>241.9602</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.2 Site Preparation - 1991****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					7.4400e-003	0.0000	7.4400e-003	1.8300e-003	0.0000	1.8300e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>7.4400e-003</b>	<b>0.0000</b>	<b>7.4400e-003</b>	<b>1.8300e-003</b>	<b>0.0000</b>	<b>1.8300e-003</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**3.3 Grading - 1991****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.9177	0.0000	0.9177	0.2866	0.0000	0.2866	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.5973	12.7167	7.5330	0.6392		0.8822	0.8822		0.8822	0.8822	0.0000	461.3254	461.3254	0.1306	0.0000	464.5903
<b>Total</b>	<b>1.5973</b>	<b>12.7167</b>	<b>7.5330</b>	<b>0.6392</b>	<b>0.9177</b>	<b>0.8822</b>	<b>1.7999</b>	<b>0.2866</b>	<b>0.8822</b>	<b>1.1688</b>	<b>0.0000</b>	<b>461.3254</b>	<b>461.3254</b>	<b>0.1306</b>	<b>0.0000</b>	<b>464.5903</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.3 Grading - 1991****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					9.7100e-003	0.0000	9.7100e-003	2.3800e-003	0.0000	2.3800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>9.7100e-003</b>	<b>0.0000</b>	<b>9.7100e-003</b>	<b>2.3800e-003</b>	<b>0.0000</b>	<b>2.3800e-003</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.9177	0.0000	0.9177	0.2866	0.0000	0.2866	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.5973	12.7166	7.5329	0.6392		0.8822	0.8822		0.8822	0.8822	0.0000	461.3248	461.3248	0.1306	0.0000	464.5897
<b>Total</b>	<b>1.5973</b>	<b>12.7166</b>	<b>7.5329</b>	<b>0.6392</b>	<b>0.9177</b>	<b>0.8822</b>	<b>1.7999</b>	<b>0.2866</b>	<b>0.8822</b>	<b>1.1688</b>	<b>0.0000</b>	<b>461.3248</b>	<b>461.3248</b>	<b>0.1306</b>	<b>0.0000</b>	<b>464.5897</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.3 Grading - 1991****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					9.7100e-003	0.0000	9.7100e-003	2.3800e-003	0.0000	2.3800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>9.7100e-003</b>	<b>0.0000</b>	<b>9.7100e-003</b>	<b>2.3800e-003</b>	<b>0.0000</b>	<b>2.3800e-003</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**3.3 Grading - 1992****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.0020	0.0000	1.0020	0.3330	0.0000	0.3330	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9145	15.2419	9.0289	0.7661		1.0574	1.0574		1.0574	1.0574	0.0000	552.9361	552.9361	0.1565	0.0000	556.8493
<b>Total</b>	<b>1.9145</b>	<b>15.2419</b>	<b>9.0289</b>	<b>0.7661</b>	<b>1.0020</b>	<b>1.0574</b>	<b>2.0594</b>	<b>0.3330</b>	<b>1.0574</b>	<b>1.3903</b>	<b>0.0000</b>	<b>552.9361</b>	<b>552.9361</b>	<b>0.1565</b>	<b>0.0000</b>	<b>556.8493</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.3 Grading - 1992****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0116	0.0000	0.0116	2.8600e-003	0.0000	2.8600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>0.0116</b>	<b>0.0000</b>	<b>0.0116</b>	<b>2.8600e-003</b>	<b>0.0000</b>	<b>2.8600e-003</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.0020	0.0000	1.0020	0.3330	0.0000	0.3330	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9145	15.2419	9.0289	0.7661		1.0574	1.0574		1.0574	1.0574	0.0000	552.9354	552.9354	0.1565	0.0000	556.8487
<b>Total</b>	<b>1.9145</b>	<b>15.2419</b>	<b>9.0289</b>	<b>0.7661</b>	<b>1.0020</b>	<b>1.0574</b>	<b>2.0594</b>	<b>0.3330</b>	<b>1.0574</b>	<b>1.3903</b>	<b>0.0000</b>	<b>552.9354</b>	<b>552.9354</b>	<b>0.1565</b>	<b>0.0000</b>	<b>556.8487</b>



## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.3 Grading - 1992****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0116	0.0000	0.0116	2.8600e-003	0.0000	2.8600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>0.0116</b>	<b>0.0000</b>	<b>0.0116</b>	<b>2.8600e-003</b>	<b>0.0000</b>	<b>2.8600e-003</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**3.4 Building Construction - 1992****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.5425	3.3372	1.3336	0.1786		0.2839	0.2839		0.2839	0.2839	0.0000	122.2304	122.2304	0.0443	0.0000	123.3372
<b>Total</b>	<b>0.5425</b>	<b>3.3372</b>	<b>1.3336</b>	<b>0.1786</b>		<b>0.2839</b>	<b>0.2839</b>		<b>0.2839</b>	<b>0.2839</b>	<b>0.0000</b>	<b>122.2304</b>	<b>122.2304</b>	<b>0.0443</b>	<b>0.0000</b>	<b>123.3372</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Building Construction - 1992****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0212	0.0000	0.0212	5.2100e-003	0.0000	5.2100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0961	0.0000	0.0961	0.0236	0.0000	0.0236	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>0.1173</b>	<b>0.0000</b>	<b>0.1173</b>	<b>0.0288</b>	<b>0.0000</b>	<b>0.0288</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.5425	3.3372	1.3336	0.1786		0.2839	0.2839		0.2839	0.2839	0.0000	122.2303	122.2303	0.0443	0.0000	123.3371
<b>Total</b>	<b>0.5425</b>	<b>3.3372</b>	<b>1.3336</b>	<b>0.1786</b>		<b>0.2839</b>	<b>0.2839</b>		<b>0.2839</b>	<b>0.2839</b>	<b>0.0000</b>	<b>122.2303</b>	<b>122.2303</b>	<b>0.0443</b>	<b>0.0000</b>	<b>123.3371</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Building Construction - 1992****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0212	0.0000	0.0212	5.2100e-003	0.0000	5.2100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0961	0.0000	0.0961	0.0236	0.0000	0.0236	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>0.1173</b>	<b>0.0000</b>	<b>0.1173</b>	<b>0.0288</b>	<b>0.0000</b>	<b>0.0288</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**3.4 Building Construction - 1993****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5224	9.3657	3.7427	0.5012		0.7967	0.7967		0.7967	0.7967	0.0000	343.0338	343.0338	0.1243	0.0000	346.1399
<b>Total</b>	<b>1.5224</b>	<b>9.3657</b>	<b>3.7427</b>	<b>0.5012</b>		<b>0.7967</b>	<b>0.7967</b>		<b>0.7967</b>	<b>0.7967</b>	<b>0.0000</b>	<b>343.0338</b>	<b>343.0338</b>	<b>0.1243</b>	<b>0.0000</b>	<b>346.1399</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Building Construction - 1993****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0596	0.0000	0.0596	0.0146	0.0000	0.0146	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.2697	0.0000	0.2697	0.0662	0.0000	0.0662	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>0.3293</b>	<b>0.0000</b>	<b>0.3293</b>	<b>0.0808</b>	<b>0.0000</b>	<b>0.0808</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5224	9.3657	3.7427	0.5012		0.7967	0.7967		0.7967	0.7967	0.0000	343.0334	343.0334	0.1243	0.0000	346.1395
<b>Total</b>	<b>1.5224</b>	<b>9.3657</b>	<b>3.7427</b>	<b>0.5012</b>		<b>0.7967</b>	<b>0.7967</b>		<b>0.7967</b>	<b>0.7967</b>	<b>0.0000</b>	<b>343.0334</b>	<b>343.0334</b>	<b>0.1243</b>	<b>0.0000</b>	<b>346.1395</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Building Construction - 1993****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0596	0.0000	0.0596	0.0146	0.0000	0.0146	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.2697	0.0000	0.2697	0.0662	0.0000	0.0662	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>0.3293</b>	<b>0.0000</b>	<b>0.3293</b>	<b>0.0808</b>	<b>0.0000</b>	<b>0.0808</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**3.4 Building Construction - 1994****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5165	9.3299	3.7284	0.4992		0.7936	0.7936		0.7936	0.7936	0.0000	341.7195	341.7195	0.1238	0.0000	344.8137
<b>Total</b>	<b>1.5165</b>	<b>9.3299</b>	<b>3.7284</b>	<b>0.4992</b>		<b>0.7936</b>	<b>0.7936</b>		<b>0.7936</b>	<b>0.7936</b>	<b>0.0000</b>	<b>341.7195</b>	<b>341.7195</b>	<b>0.1238</b>	<b>0.0000</b>	<b>344.8137</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Building Construction - 1994****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0593	0.0000	0.0593	0.0146	0.0000	0.0146	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.2687	0.0000	0.2687	0.0660	0.0000	0.0660	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>0.3280</b>	<b>0.0000</b>	<b>0.3280</b>	<b>0.0805</b>	<b>0.0000</b>	<b>0.0805</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5165	9.3299	3.7284	0.4992		0.7936	0.7936		0.7936	0.7936	0.0000	341.7191	341.7191	0.1238	0.0000	344.8133
<b>Total</b>	<b>1.5165</b>	<b>9.3299</b>	<b>3.7284</b>	<b>0.4992</b>		<b>0.7936</b>	<b>0.7936</b>		<b>0.7936</b>	<b>0.7936</b>	<b>0.0000</b>	<b>341.7191</b>	<b>341.7191</b>	<b>0.1238</b>	<b>0.0000</b>	<b>344.8133</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Building Construction - 1994****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0593	0.0000	0.0593	0.0146	0.0000	0.0146	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.2687	0.0000	0.2687	0.0660	0.0000	0.0660	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>0.3280</b>	<b>0.0000</b>	<b>0.3280</b>	<b>0.0805</b>	<b>0.0000</b>	<b>0.0805</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**3.4 Building Construction - 1995****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5165	9.3299	3.7284	0.4992		0.7936	0.7936		0.7936	0.7936	0.0000	341.7195	341.7195	0.1238	0.0000	344.8137
<b>Total</b>	<b>1.5165</b>	<b>9.3299</b>	<b>3.7284</b>	<b>0.4992</b>		<b>0.7936</b>	<b>0.7936</b>		<b>0.7936</b>	<b>0.7936</b>	<b>0.0000</b>	<b>341.7195</b>	<b>341.7195</b>	<b>0.1238</b>	<b>0.0000</b>	<b>344.8137</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Building Construction - 1995****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0593	0.0000	0.0593	0.0146	0.0000	0.0146	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.2687	0.0000	0.2687	0.0660	0.0000	0.0660	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>0.3280</b>	<b>0.0000</b>	<b>0.3280</b>	<b>0.0805</b>	<b>0.0000</b>	<b>0.0805</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5165	9.3299	3.7284	0.4992		0.7936	0.7936		0.7936	0.7936	0.0000	341.7191	341.7191	0.1238	0.0000	344.8133
<b>Total</b>	<b>1.5165</b>	<b>9.3299</b>	<b>3.7284</b>	<b>0.4992</b>		<b>0.7936</b>	<b>0.7936</b>		<b>0.7936</b>	<b>0.7936</b>	<b>0.0000</b>	<b>341.7191</b>	<b>341.7191</b>	<b>0.1238</b>	<b>0.0000</b>	<b>344.8133</b>



## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Building Construction - 1995****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0593	0.0000	0.0593	0.0146	0.0000	0.0146	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.2687	0.0000	0.2687	0.0660	0.0000	0.0660	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>0.3280</b>	<b>0.0000</b>	<b>0.3280</b>	<b>0.0805</b>	<b>0.0000</b>	<b>0.0805</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**3.4 Building Construction - 1996****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5282	9.4016	3.7571	0.5031		0.7997	0.7997		0.7997	0.7997	0.0000	344.3481	344.3481	0.1247	0.0000	347.4661
<b>Total</b>	<b>1.5282</b>	<b>9.4016</b>	<b>3.7571</b>	<b>0.5031</b>		<b>0.7997</b>	<b>0.7997</b>		<b>0.7997</b>	<b>0.7997</b>	<b>0.0000</b>	<b>344.3481</b>	<b>344.3481</b>	<b>0.1247</b>	<b>0.0000</b>	<b>347.4661</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Building Construction - 1996****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0598	0.0000	0.0598	0.0147	0.0000	0.0147	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.2708	0.0000	0.2708	0.0665	0.0000	0.0665	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>0.3306</b>	<b>0.0000</b>	<b>0.3306</b>	<b>0.0811</b>	<b>0.0000</b>	<b>0.0811</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5282	9.4016	3.7571	0.5031		0.7997	0.7997		0.7997	0.7997	0.0000	344.3477	344.3477	0.1247	0.0000	347.4657
<b>Total</b>	<b>1.5282</b>	<b>9.4016</b>	<b>3.7571</b>	<b>0.5031</b>		<b>0.7997</b>	<b>0.7997</b>		<b>0.7997</b>	<b>0.7997</b>	<b>0.0000</b>	<b>344.3477</b>	<b>344.3477</b>	<b>0.1247</b>	<b>0.0000</b>	<b>347.4657</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Building Construction - 1996****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0598	0.0000	0.0598	0.0147	0.0000	0.0147	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.2708	0.0000	0.2708	0.0665	0.0000	0.0665	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>0.3306</b>	<b>0.0000</b>	<b>0.3306</b>	<b>0.0811</b>	<b>0.0000</b>	<b>0.0811</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**3.4 Building Construction - 1997****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5224	9.3657	3.7427	0.5012		0.7967	0.7967		0.7967	0.7967	0.0000	343.0338	343.0338	0.1243	0.0000	346.1399
<b>Total</b>	<b>1.5224</b>	<b>9.3657</b>	<b>3.7427</b>	<b>0.5012</b>		<b>0.7967</b>	<b>0.7967</b>		<b>0.7967</b>	<b>0.7967</b>	<b>0.0000</b>	<b>343.0338</b>	<b>343.0338</b>	<b>0.1243</b>	<b>0.0000</b>	<b>346.1399</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Building Construction - 1997****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0596	0.0000	0.0596	0.0146	0.0000	0.0146	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.2697	0.0000	0.2697	0.0662	0.0000	0.0662	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>0.3293</b>	<b>0.0000</b>	<b>0.3293</b>	<b>0.0808</b>	<b>0.0000</b>	<b>0.0808</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5224	9.3657	3.7427	0.5012		0.7967	0.7967		0.7967	0.7967	0.0000	343.0334	343.0334	0.1243	0.0000	346.1395
<b>Total</b>	<b>1.5224</b>	<b>9.3657</b>	<b>3.7427</b>	<b>0.5012</b>		<b>0.7967</b>	<b>0.7967</b>		<b>0.7967</b>	<b>0.7967</b>	<b>0.0000</b>	<b>343.0334</b>	<b>343.0334</b>	<b>0.1243</b>	<b>0.0000</b>	<b>346.1395</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Building Construction - 1997****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0596	0.0000	0.0596	0.0146	0.0000	0.0146	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.2697	0.0000	0.2697	0.0662	0.0000	0.0662	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>0.3293</b>	<b>0.0000</b>	<b>0.3293</b>	<b>0.0808</b>	<b>0.0000</b>	<b>0.0808</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**3.4 Building Construction - 1998****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5224	9.3657	3.7427	0.5012		0.7967	0.7967		0.7967	0.7967	0.0000	343.0338	343.0338	0.1243	0.0000	346.1399
<b>Total</b>	<b>1.5224</b>	<b>9.3657</b>	<b>3.7427</b>	<b>0.5012</b>		<b>0.7967</b>	<b>0.7967</b>		<b>0.7967</b>	<b>0.7967</b>	<b>0.0000</b>	<b>343.0338</b>	<b>343.0338</b>	<b>0.1243</b>	<b>0.0000</b>	<b>346.1399</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Building Construction - 1998****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0596	0.0000	0.0596	0.0146	0.0000	0.0146	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.2697	0.0000	0.2697	0.0662	0.0000	0.0662	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>0.3293</b>	<b>0.0000</b>	<b>0.3293</b>	<b>0.0808</b>	<b>0.0000</b>	<b>0.0808</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5224	9.3657	3.7427	0.5012		0.7967	0.7967		0.7967	0.7967	0.0000	343.0334	343.0334	0.1243	0.0000	346.1395
<b>Total</b>	<b>1.5224</b>	<b>9.3657</b>	<b>3.7427</b>	<b>0.5012</b>		<b>0.7967</b>	<b>0.7967</b>		<b>0.7967</b>	<b>0.7967</b>	<b>0.0000</b>	<b>343.0334</b>	<b>343.0334</b>	<b>0.1243</b>	<b>0.0000</b>	<b>346.1395</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Building Construction - 1998****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0596	0.0000	0.0596	0.0146	0.0000	0.0146	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.2697	0.0000	0.2697	0.0662	0.0000	0.0662	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>0.3293</b>	<b>0.0000</b>	<b>0.3293</b>	<b>0.0808</b>	<b>0.0000</b>	<b>0.0808</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**3.4 Building Construction - 1999****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5224	9.3657	3.7427	0.5012		0.7967	0.7967		0.7967	0.7967	0.0000	343.0338	343.0338	0.1243	0.0000	346.1399
<b>Total</b>	<b>1.5224</b>	<b>9.3657</b>	<b>3.7427</b>	<b>0.5012</b>		<b>0.7967</b>	<b>0.7967</b>		<b>0.7967</b>	<b>0.7967</b>	<b>0.0000</b>	<b>343.0338</b>	<b>343.0338</b>	<b>0.1243</b>	<b>0.0000</b>	<b>346.1399</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Building Construction - 1999****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0596	0.0000	0.0596	0.0146	0.0000	0.0146	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.2697	0.0000	0.2697	0.0662	0.0000	0.0662	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>0.3293</b>	<b>0.0000</b>	<b>0.3293</b>	<b>0.0808</b>	<b>0.0000</b>	<b>0.0808</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5224	9.3657	3.7427	0.5012		0.7967	0.7967		0.7967	0.7967	0.0000	343.0334	343.0334	0.1243	0.0000	346.1395
<b>Total</b>	<b>1.5224</b>	<b>9.3657</b>	<b>3.7427</b>	<b>0.5012</b>		<b>0.7967</b>	<b>0.7967</b>		<b>0.7967</b>	<b>0.7967</b>	<b>0.0000</b>	<b>343.0334</b>	<b>343.0334</b>	<b>0.1243</b>	<b>0.0000</b>	<b>346.1395</b>



## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Building Construction - 1999****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0596	0.0000	0.0596	0.0146	0.0000	0.0146	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.2697	0.0000	0.2697	0.0662	0.0000	0.0662	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>					<b>0.3293</b>	<b>0.0000</b>	<b>0.3293</b>	<b>0.0808</b>	<b>0.0000</b>	<b>0.0808</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**3.4 Building Construction - 2000****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.1342	6.2741	2.9067	0.0395		0.4932	0.4932		0.4932	0.4932	0.0000	341.7193	341.7193	0.0924	0.0000	344.0287
<b>Total</b>	<b>1.1342</b>	<b>6.2741</b>	<b>2.9067</b>	<b>0.0395</b>		<b>0.4932</b>	<b>0.4932</b>		<b>0.4932</b>	<b>0.4932</b>	<b>0.0000</b>	<b>341.7193</b>	<b>341.7193</b>	<b>0.0924</b>	<b>0.0000</b>	<b>344.0287</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Building Construction - 2000****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.4453	3.8215	2.3089	0.0273	0.0842	0.1499	0.2341	0.0243	0.1434	0.1678	0.0000	318.4513	318.4513	0.0213	0.0470	332.9804
Worker	0.9936	1.3127	9.6876	5.7400e-003	0.3107	0.0141	0.3248	0.0826	0.0131	0.0957	0.0000	363.9574	363.9574	0.0768	0.0608	384.0062
<b>Total</b>	<b>1.4389</b>	<b>5.1342</b>	<b>11.9965</b>	<b>0.0330</b>	<b>0.3949</b>	<b>0.1641</b>	<b>0.5589</b>	<b>0.1069</b>	<b>0.1565</b>	<b>0.2635</b>	<b>0.0000</b>	<b>682.4087</b>	<b>682.4087</b>	<b>0.0981</b>	<b>0.1078</b>	<b>716.9865</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.1342	6.2741	2.9067	0.0395		0.4932	0.4932		0.4932	0.4932	0.0000	341.7189	341.7189	0.0924	0.0000	344.0282
<b>Total</b>	<b>1.1342</b>	<b>6.2741</b>	<b>2.9067</b>	<b>0.0395</b>		<b>0.4932</b>	<b>0.4932</b>		<b>0.4932</b>	<b>0.4932</b>	<b>0.0000</b>	<b>341.7189</b>	<b>341.7189</b>	<b>0.0924</b>	<b>0.0000</b>	<b>344.0282</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Building Construction - 2000****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.4453	3.8215	2.3089	0.0273	0.0842	0.1499	0.2341	0.0243	0.1434	0.1678	0.0000	318.4513	318.4513	0.0213	0.0470	332.9804
Worker	0.9936	1.3127	9.6876	5.7400e-003	0.3107	0.0141	0.3248	0.0826	0.0131	0.0957	0.0000	363.9574	363.9574	0.0768	0.0608	384.0062
<b>Total</b>	<b>1.4389</b>	<b>5.1342</b>	<b>11.9965</b>	<b>0.0330</b>	<b>0.3949</b>	<b>0.1641</b>	<b>0.5589</b>	<b>0.1069</b>	<b>0.1565</b>	<b>0.2635</b>	<b>0.0000</b>	<b>682.4087</b>	<b>682.4087</b>	<b>0.0981</b>	<b>0.1078</b>	<b>716.9865</b>

**3.4 Building Construction - 2001****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.1386	6.2982	2.9179	0.0397		0.4951	0.4951		0.4951	0.4951	0.0000	343.0336	343.0336	0.0927	0.0000	345.3518
<b>Total</b>	<b>1.1386</b>	<b>6.2982</b>	<b>2.9179</b>	<b>0.0397</b>		<b>0.4951</b>	<b>0.4951</b>		<b>0.4951</b>	<b>0.4951</b>	<b>0.0000</b>	<b>343.0336</b>	<b>343.0336</b>	<b>0.0927</b>	<b>0.0000</b>	<b>345.3518</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Building Construction - 2001****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.4470	3.8362	2.3178	0.0274	0.0845	0.1505	0.2350	0.0244	0.1440	0.1684	0.0000	319.6761	319.6761	0.0214	0.0472	334.2610
Worker	0.9974	1.3177	9.7249	5.7600e-003	0.3118	0.0142	0.3260	0.0829	0.0132	0.0961	0.0000	365.3573	365.3573	0.0771	0.0611	385.4831
<b>Total</b>	<b>1.4444</b>	<b>5.1540</b>	<b>12.0426</b>	<b>0.0331</b>	<b>0.3964</b>	<b>0.1647</b>	<b>0.5611</b>	<b>0.1073</b>	<b>0.1572</b>	<b>0.2645</b>	<b>0.0000</b>	<b>685.0333</b>	<b>685.0333</b>	<b>0.0984</b>	<b>0.1082</b>	<b>719.7441</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.1386	6.2982	2.9178	0.0397		0.4951	0.4951		0.4951	0.4951	0.0000	343.0332	343.0332	0.0927	0.0000	345.3514
<b>Total</b>	<b>1.1386</b>	<b>6.2982</b>	<b>2.9178</b>	<b>0.0397</b>		<b>0.4951</b>	<b>0.4951</b>		<b>0.4951</b>	<b>0.4951</b>	<b>0.0000</b>	<b>343.0332</b>	<b>343.0332</b>	<b>0.0927</b>	<b>0.0000</b>	<b>345.3514</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Building Construction - 2001****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.4470	3.8362	2.3178	0.0274	0.0845	0.1505	0.2350	0.0244	0.1440	0.1684	0.0000	319.6761	319.6761	0.0214	0.0472	334.2610
Worker	0.9974	1.3177	9.7249	5.7600e-003	0.3118	0.0142	0.3260	0.0829	0.0132	0.0961	0.0000	365.3573	365.3573	0.0771	0.0611	385.4831
<b>Total</b>	<b>1.4444</b>	<b>5.1540</b>	<b>12.0426</b>	<b>0.0331</b>	<b>0.3964</b>	<b>0.1647</b>	<b>0.5611</b>	<b>0.1073</b>	<b>0.1572</b>	<b>0.2645</b>	<b>0.0000</b>	<b>685.0333</b>	<b>685.0333</b>	<b>0.0984</b>	<b>0.1082</b>	<b>719.7441</b>

**3.4 Building Construction - 2002****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.1386	6.2982	2.9179	0.0397		0.4951	0.4951		0.4951	0.4951	0.0000	343.0336	343.0336	0.0927	0.0000	345.3518
<b>Total</b>	<b>1.1386</b>	<b>6.2982</b>	<b>2.9179</b>	<b>0.0397</b>		<b>0.4951</b>	<b>0.4951</b>		<b>0.4951</b>	<b>0.4951</b>	<b>0.0000</b>	<b>343.0336</b>	<b>343.0336</b>	<b>0.0927</b>	<b>0.0000</b>	<b>345.3518</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Building Construction - 2002****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.4470	3.8362	2.3178	0.0274	0.0845	0.1505	0.2350	0.0244	0.1440	0.1684	0.0000	319.6761	319.6761	0.0214	0.0472	334.2610
Worker	0.9974	1.3177	9.7249	5.7600e-003	0.3118	0.0142	0.3260	0.0829	0.0132	0.0961	0.0000	365.3573	365.3573	0.0771	0.0611	385.4831
<b>Total</b>	<b>1.4444</b>	<b>5.1540</b>	<b>12.0426</b>	<b>0.0331</b>	<b>0.3964</b>	<b>0.1647</b>	<b>0.5611</b>	<b>0.1073</b>	<b>0.1572</b>	<b>0.2645</b>	<b>0.0000</b>	<b>685.0333</b>	<b>685.0333</b>	<b>0.0984</b>	<b>0.1082</b>	<b>719.7441</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.1386	6.2982	2.9178	0.0397		0.4951	0.4951		0.4951	0.4951	0.0000	343.0332	343.0332	0.0927	0.0000	345.3514
<b>Total</b>	<b>1.1386</b>	<b>6.2982</b>	<b>2.9178</b>	<b>0.0397</b>		<b>0.4951</b>	<b>0.4951</b>		<b>0.4951</b>	<b>0.4951</b>	<b>0.0000</b>	<b>343.0332</b>	<b>343.0332</b>	<b>0.0927</b>	<b>0.0000</b>	<b>345.3514</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Building Construction - 2002****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.4470	3.8362	2.3178	0.0274	0.0845	0.1505	0.2350	0.0244	0.1440	0.1684	0.0000	319.6761	319.6761	0.0214	0.0472	334.2610
Worker	0.9974	1.3177	9.7249	5.7600e-003	0.3118	0.0142	0.3260	0.0829	0.0132	0.0961	0.0000	365.3573	365.3573	0.0771	0.0611	385.4831
<b>Total</b>	<b>1.4444</b>	<b>5.1540</b>	<b>12.0426</b>	<b>0.0331</b>	<b>0.3964</b>	<b>0.1647</b>	<b>0.5611</b>	<b>0.1073</b>	<b>0.1572</b>	<b>0.2645</b>	<b>0.0000</b>	<b>685.0333</b>	<b>685.0333</b>	<b>0.0984</b>	<b>0.1082</b>	<b>719.7441</b>

**3.4 Building Construction - 2003****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.1386	6.2982	2.9179	0.0397		0.4951	0.4951		0.4951	0.4951	0.0000	343.0336	343.0336	0.0927	0.0000	345.3518
<b>Total</b>	<b>1.1386</b>	<b>6.2982</b>	<b>2.9179</b>	<b>0.0397</b>		<b>0.4951</b>	<b>0.4951</b>		<b>0.4951</b>	<b>0.4951</b>	<b>0.0000</b>	<b>343.0336</b>	<b>343.0336</b>	<b>0.0927</b>	<b>0.0000</b>	<b>345.3518</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Building Construction - 2003****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.4470	3.8362	2.3178	0.0274	0.0845	0.1505	0.2350	0.0244	0.1440	0.1684	0.0000	319.6761	319.6761	0.0214	0.0472	334.2610
Worker	0.9974	1.3177	9.7249	5.7600e-003	0.3118	0.0142	0.3260	0.0829	0.0132	0.0961	0.0000	365.3573	365.3573	0.0771	0.0611	385.4831
<b>Total</b>	<b>1.4444</b>	<b>5.1540</b>	<b>12.0426</b>	<b>0.0331</b>	<b>0.3964</b>	<b>0.1647</b>	<b>0.5611</b>	<b>0.1073</b>	<b>0.1572</b>	<b>0.2645</b>	<b>0.0000</b>	<b>685.0333</b>	<b>685.0333</b>	<b>0.0984</b>	<b>0.1082</b>	<b>719.7441</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.1386	6.2982	2.9178	0.0397		0.4951	0.4951		0.4951	0.4951	0.0000	343.0332	343.0332	0.0927	0.0000	345.3514
<b>Total</b>	<b>1.1386</b>	<b>6.2982</b>	<b>2.9178</b>	<b>0.0397</b>		<b>0.4951</b>	<b>0.4951</b>		<b>0.4951</b>	<b>0.4951</b>	<b>0.0000</b>	<b>343.0332</b>	<b>343.0332</b>	<b>0.0927</b>	<b>0.0000</b>	<b>345.3514</b>



## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Building Construction - 2003****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.4470	3.8362	2.3178	0.0274	0.0845	0.1505	0.2350	0.0244	0.1440	0.1684	0.0000	319.6761	319.6761	0.0214	0.0472	334.2610
Worker	0.9974	1.3177	9.7249	5.7600e-003	0.3118	0.0142	0.3260	0.0829	0.0132	0.0961	0.0000	365.3573	365.3573	0.0771	0.0611	385.4831
<b>Total</b>	<b>1.4444</b>	<b>5.1540</b>	<b>12.0426</b>	<b>0.0331</b>	<b>0.3964</b>	<b>0.1647</b>	<b>0.5611</b>	<b>0.1073</b>	<b>0.1572</b>	<b>0.2645</b>	<b>0.0000</b>	<b>685.0333</b>	<b>685.0333</b>	<b>0.0984</b>	<b>0.1082</b>	<b>719.7441</b>

**3.4 Building Construction - 2004****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.6020	3.3301	1.5428	0.0210		0.2618	0.2618		0.2618	0.2618	0.0000	181.3741	181.3741	0.0490	0.0000	182.5998
<b>Total</b>	<b>0.6020</b>	<b>3.3301</b>	<b>1.5428</b>	<b>0.0210</b>		<b>0.2618</b>	<b>0.2618</b>		<b>0.2618</b>	<b>0.2618</b>	<b>0.0000</b>	<b>181.3741</b>	<b>181.3741</b>	<b>0.0490</b>	<b>0.0000</b>	<b>182.5998</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Building Construction - 2004****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2364	2.0284	1.2255	0.0145	0.0447	0.0796	0.1243	0.0129	0.0761	0.0891	0.0000	169.0241	169.0241	0.0113	0.0249	176.7357
Worker	0.5274	0.6967	5.1419	3.0500e-003	0.1649	7.4900e-003	0.1724	0.0438	6.9500e-003	0.0508	0.0000	193.1774	193.1774	0.0408	0.0323	203.8187
<b>Total</b>	<b>0.7637</b>	<b>2.7251</b>	<b>6.3674</b>	<b>0.0175</b>	<b>0.2096</b>	<b>0.0871</b>	<b>0.2967</b>	<b>0.0568</b>	<b>0.0831</b>	<b>0.1398</b>	<b>0.0000</b>	<b>362.2015</b>	<b>362.2015</b>	<b>0.0520</b>	<b>0.0572</b>	<b>380.5544</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.6020	3.3301	1.5428	0.0210		0.2618	0.2618		0.2618	0.2618	0.0000	181.3739	181.3739	0.0490	0.0000	182.5996
<b>Total</b>	<b>0.6020</b>	<b>3.3301</b>	<b>1.5428</b>	<b>0.0210</b>		<b>0.2618</b>	<b>0.2618</b>		<b>0.2618</b>	<b>0.2618</b>	<b>0.0000</b>	<b>181.3739</b>	<b>181.3739</b>	<b>0.0490</b>	<b>0.0000</b>	<b>182.5996</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Building Construction - 2004****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2364	2.0284	1.2255	0.0145	0.0447	0.0796	0.1243	0.0129	0.0761	0.0891	0.0000	169.0241	169.0241	0.0113	0.0249	176.7357
Worker	0.5274	0.6967	5.1419	3.0500e-003	0.1649	7.4900e-003	0.1724	0.0438	6.9500e-003	0.0508	0.0000	193.1774	193.1774	0.0408	0.0323	203.8187
<b>Total</b>	<b>0.7637</b>	<b>2.7251</b>	<b>6.3674</b>	<b>0.0175</b>	<b>0.2096</b>	<b>0.0871</b>	<b>0.2967</b>	<b>0.0568</b>	<b>0.0831</b>	<b>0.1398</b>	<b>0.0000</b>	<b>362.2015</b>	<b>362.2015</b>	<b>0.0520</b>	<b>0.0572</b>	<b>380.5544</b>

**3.5 Paving - 2004****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4141	2.9626	1.2027	0.0167		0.1802	0.1802		0.1802	0.1802	0.0000	149.4170	149.4170	0.0337	0.0000	150.2602
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.4141</b>	<b>2.9626</b>	<b>1.2027</b>	<b>0.0167</b>		<b>0.1802</b>	<b>0.1802</b>		<b>0.1802</b>	<b>0.1802</b>	<b>0.0000</b>	<b>149.4170</b>	<b>149.4170</b>	<b>0.0337</b>	<b>0.0000</b>	<b>150.2602</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.5 Paving - 2004****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0237	0.0313	0.2310	1.4000e-004	7.4100e-003	3.4000e-004	7.7400e-003	1.9700e-003	3.1000e-004	2.2800e-003	0.0000	8.6790	8.6790	1.8300e-003	1.4500e-003	9.1571
<b>Total</b>	<b>0.0237</b>	<b>0.0313</b>	<b>0.2310</b>	<b>1.4000e-004</b>	<b>7.4100e-003</b>	<b>3.4000e-004</b>	<b>7.7400e-003</b>	<b>1.9700e-003</b>	<b>3.1000e-004</b>	<b>2.2800e-003</b>	<b>0.0000</b>	<b>8.6790</b>	<b>8.6790</b>	<b>1.8300e-003</b>	<b>1.4500e-003</b>	<b>9.1571</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4141	2.9626	1.2027	0.0167		0.1802	0.1802		0.1802	0.1802	0.0000	149.4168	149.4168	0.0337	0.0000	150.2600
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.4141</b>	<b>2.9626</b>	<b>1.2027</b>	<b>0.0167</b>		<b>0.1802</b>	<b>0.1802</b>		<b>0.1802</b>	<b>0.1802</b>	<b>0.0000</b>	<b>149.4168</b>	<b>149.4168</b>	<b>0.0337</b>	<b>0.0000</b>	<b>150.2600</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.5 Paving - 2004****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0237	0.0313	0.2310	1.4000e-004	7.4100e-003	3.4000e-004	7.7400e-003	1.9700e-003	3.1000e-004	2.2800e-003	0.0000	8.6790	8.6790	1.8300e-003	1.4500e-003	9.1571
<b>Total</b>	<b>0.0237</b>	<b>0.0313</b>	<b>0.2310</b>	<b>1.4000e-004</b>	<b>7.4100e-003</b>	<b>3.4000e-004</b>	<b>7.7400e-003</b>	<b>1.9700e-003</b>	<b>3.1000e-004</b>	<b>2.2800e-003</b>	<b>0.0000</b>	<b>8.6790</b>	<b>8.6790</b>	<b>1.8300e-003</b>	<b>1.4500e-003</b>	<b>9.1571</b>

**3.5 Paving - 2005****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2778	2.0000	0.8638	0.0129		0.1266	0.1266		0.1266	0.1266	0.0000	115.6777	115.6777	0.0227	0.0000	116.2444
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.2778</b>	<b>2.0000</b>	<b>0.8638</b>	<b>0.0129</b>		<b>0.1266</b>	<b>0.1266</b>		<b>0.1266</b>	<b>0.1266</b>	<b>0.0000</b>	<b>115.6777</b>	<b>115.6777</b>	<b>0.0227</b>	<b>0.0000</b>	<b>116.2444</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.5 Paving - 2005****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0126	0.0161	0.1286	7.0000e-005	5.7400e-003	1.5000e-004	5.8900e-003	1.5200e-003	1.4000e-004	1.6700e-003	0.0000	6.4016	6.4016	1.0100e-003	8.0000e-004	6.6657
<b>Total</b>	<b>0.0126</b>	<b>0.0161</b>	<b>0.1286</b>	<b>7.0000e-005</b>	<b>5.7400e-003</b>	<b>1.5000e-004</b>	<b>5.8900e-003</b>	<b>1.5200e-003</b>	<b>1.4000e-004</b>	<b>1.6700e-003</b>	<b>0.0000</b>	<b>6.4016</b>	<b>6.4016</b>	<b>1.0100e-003</b>	<b>8.0000e-004</b>	<b>6.6657</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2778	2.0000	0.8638	0.0129		0.1266	0.1266		0.1266	0.1266	0.0000	115.6775	115.6775	0.0227	0.0000	116.2442
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.2778</b>	<b>2.0000</b>	<b>0.8638</b>	<b>0.0129</b>		<b>0.1266</b>	<b>0.1266</b>		<b>0.1266</b>	<b>0.1266</b>	<b>0.0000</b>	<b>115.6775</b>	<b>115.6775</b>	<b>0.0227</b>	<b>0.0000</b>	<b>116.2442</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.5 Paving - 2005****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0126	0.0161	0.1286	7.0000e-005	5.7400e-003	1.5000e-004	5.8900e-003	1.5200e-003	1.4000e-004	1.6700e-003	0.0000	6.4016	6.4016	1.0100e-003	8.0000e-004	6.6657
<b>Total</b>	<b>0.0126</b>	<b>0.0161</b>	<b>0.1286</b>	<b>7.0000e-005</b>	<b>5.7400e-003</b>	<b>1.5000e-004</b>	<b>5.8900e-003</b>	<b>1.5200e-003</b>	<b>1.4000e-004</b>	<b>1.6700e-003</b>	<b>0.0000</b>	<b>6.4016</b>	<b>6.4016</b>	<b>1.0100e-003</b>	<b>8.0000e-004</b>	<b>6.6657</b>

**3.6 Architectural Coating - 2005****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	7.0023					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0617	0.3511	0.1704	2.4400e-003		0.0315	0.0315		0.0315	0.0315	0.0000	20.9367	20.9367	5.0500e-003	0.0000	21.0629
<b>Total</b>	<b>7.0640</b>	<b>0.3511</b>	<b>0.1704</b>	<b>2.4400e-003</b>		<b>0.0315</b>	<b>0.0315</b>		<b>0.0315</b>	<b>0.0315</b>	<b>0.0000</b>	<b>20.9367</b>	<b>20.9367</b>	<b>5.0500e-003</b>	<b>0.0000</b>	<b>21.0629</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.6 Architectural Coating - 2005****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0864	0.1102	0.8787	4.8000e-004	0.0392	1.0400e-003	0.0402	0.0104	9.6000e-004	0.0114	0.0000	43.7443	43.7443	6.9300e-003	5.4700e-003	45.5490
<b>Total</b>	<b>0.0864</b>	<b>0.1102</b>	<b>0.8787</b>	<b>4.8000e-004</b>	<b>0.0392</b>	<b>1.0400e-003</b>	<b>0.0402</b>	<b>0.0104</b>	<b>9.6000e-004</b>	<b>0.0114</b>	<b>0.0000</b>	<b>43.7443</b>	<b>43.7443</b>	<b>6.9300e-003</b>	<b>5.4700e-003</b>	<b>45.5490</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	7.0023					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0617	0.3511	0.1704	2.4400e-003		0.0315	0.0315		0.0315	0.0315	0.0000	20.9367	20.9367	5.0500e-003	0.0000	21.0628
<b>Total</b>	<b>7.0640</b>	<b>0.3511</b>	<b>0.1704</b>	<b>2.4400e-003</b>		<b>0.0315</b>	<b>0.0315</b>		<b>0.0315</b>	<b>0.0315</b>	<b>0.0000</b>	<b>20.9367</b>	<b>20.9367</b>	<b>5.0500e-003</b>	<b>0.0000</b>	<b>21.0628</b>



## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.6 Architectural Coating - 2005****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0864	0.1102	0.8787	4.8000e-004	0.0392	1.0400e-003	0.0402	0.0104	9.6000e-004	0.0114	0.0000	43.7443	43.7443	6.9300e-003	5.4700e-003	45.5490
<b>Total</b>	<b>0.0864</b>	<b>0.1102</b>	<b>0.8787</b>	<b>4.8000e-004</b>	<b>0.0392</b>	<b>1.0400e-003</b>	<b>0.0402</b>	<b>0.0104</b>	<b>9.6000e-004</b>	<b>0.0114</b>	<b>0.0000</b>	<b>43.7443</b>	<b>43.7443</b>	<b>6.9300e-003</b>	<b>5.4700e-003</b>	<b>45.5490</b>

**3.6 Architectural Coating - 2006****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.3910					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0211	0.1199	0.0582	8.3000e-004		0.0108	0.0108		0.0108	0.0108	0.0000	7.1491	7.1491	1.7200e-003	0.0000	7.1922
<b>Total</b>	<b>2.4121</b>	<b>0.1199</b>	<b>0.0582</b>	<b>8.3000e-004</b>		<b>0.0108</b>	<b>0.0108</b>		<b>0.0108</b>	<b>0.0108</b>	<b>0.0000</b>	<b>7.1491</b>	<b>7.1491</b>	<b>1.7200e-003</b>	<b>0.0000</b>	<b>7.1922</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.6 Architectural Coating - 2006****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0295	0.0376	0.3000	1.6000e-004	0.0134	3.5000e-004	0.0137	3.5600e-003	3.3000e-004	3.8900e-003	0.0000	14.9371	14.9371	2.3700e-003	1.8700e-003	15.5533
<b>Total</b>	<b>0.0295</b>	<b>0.0376</b>	<b>0.3000</b>	<b>1.6000e-004</b>	<b>0.0134</b>	<b>3.5000e-004</b>	<b>0.0137</b>	<b>3.5600e-003</b>	<b>3.3000e-004</b>	<b>3.8900e-003</b>	<b>0.0000</b>	<b>14.9371</b>	<b>14.9371</b>	<b>2.3700e-003</b>	<b>1.8700e-003</b>	<b>15.5533</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.3910					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0211	0.1199	0.0582	8.3000e-004		0.0108	0.0108		0.0108	0.0108	0.0000	7.1491	7.1491	1.7200e-003	0.0000	7.1922
<b>Total</b>	<b>2.4121</b>	<b>0.1199</b>	<b>0.0582</b>	<b>8.3000e-004</b>		<b>0.0108</b>	<b>0.0108</b>		<b>0.0108</b>	<b>0.0108</b>	<b>0.0000</b>	<b>7.1491</b>	<b>7.1491</b>	<b>1.7200e-003</b>	<b>0.0000</b>	<b>7.1922</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.6 Architectural Coating - 2006****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0295	0.0376	0.3000	1.6000e-004	0.0134	3.5000e-004	0.0137	3.5600e-003	3.3000e-004	3.8900e-003	0.0000	14.9371	14.9371	2.3700e-003	1.8700e-003	15.5533
<b>Total</b>	<b>0.0295</b>	<b>0.0376</b>	<b>0.3000</b>	<b>1.6000e-004</b>	<b>0.0134</b>	<b>3.5000e-004</b>	<b>0.0137</b>	<b>3.5600e-003</b>	<b>3.3000e-004</b>	<b>3.8900e-003</b>	<b>0.0000</b>	<b>14.9371</b>	<b>14.9371</b>	<b>2.3700e-003</b>	<b>1.8700e-003</b>	<b>15.5533</b>

**4.0 Operational Detail - Mobile****4.1 Mitigation Measures Mobile**

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	10.2417	24.5699	119.8562	0.1550	5.4794	0.4494	5.9288	1.4693	0.4264	1.8957	0.0000	7,246.9166	7,246.9166	1.0788	0.8515	7,527.6229
Unmitigated	10.2417	24.5699	119.8562	0.1550	5.4794	0.4494	5.9288	1.4693	0.4264	1.8957	0.0000	7,246.9166	7,246.9166	1.0788	0.8515	7,527.6229

**4.2 Trip Summary Information**

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	4.27	10.72	11.98	13,429	13,429
Single Family Housing	5,248.64	5,304.24	4753.80	14,617,649	14,617,649
Total	5,252.91	5,314.96	4,765.78	14,631,078	14,631,078

**4.3 Trip Type Information**

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Single Family Housing	10.80	7.30	7.50	38.40	22.60	39.00	86	11	3

**4.4 Fleet Mix**

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.445143	0.090887	0.165130	0.187970	0.045320	0.007055	0.014780	0.012618	0.000711	0.000220	0.019746	0.001150	0.009270
Single Family Housing	0.445143	0.090887	0.165130	0.187970	0.045320	0.007055	0.014780	0.012618	0.000711	0.000220	0.019746	0.001150	0.009270

**5.0 Energy Detail**

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

Historical Energy Use: Y

**5.1 Mitigation Measures Energy**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	786.2653	786.2653	0.0664	8.0400e-003	790.3215
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	786.2653	786.2653	0.0664	8.0400e-003	790.3215
NaturalGas Mitigated	0.0721	0.6158	0.2621	3.9300e-003		0.0498	0.0498		0.0498	0.0498	0.0000	713.2008	713.2008	0.0137	0.0131	717.4390
NaturalGas Unmitigated	0.0721	0.6158	0.2621	3.9300e-003		0.0498	0.0498		0.0498	0.0498	0.0000	713.2008	713.2008	0.0137	0.0131	717.4390

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****5.2 Energy by Land Use - NaturalGas****Unmitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.33649e+007	0.0721	0.6158	0.2621	3.9300e-003		0.0498	0.0498		0.0498	0.0498	0.0000	713.2008	713.2008	0.0137	0.0131	717.4390
<b>Total</b>		<b>0.0721</b>	<b>0.6158</b>	<b>0.2621</b>	<b>3.9300e-003</b>		<b>0.0498</b>	<b>0.0498</b>		<b>0.0498</b>	<b>0.0498</b>	<b>0.0000</b>	<b>713.2008</b>	<b>713.2008</b>	<b>0.0137</b>	<b>0.0131</b>	<b>717.4390</b>

**Mitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.33649e+007	0.0721	0.6158	0.2621	3.9300e-003		0.0498	0.0498		0.0498	0.0498	0.0000	713.2008	713.2008	0.0137	0.0131	717.4390
<b>Total</b>		<b>0.0721</b>	<b>0.6158</b>	<b>0.2621</b>	<b>3.9300e-003</b>		<b>0.0498</b>	<b>0.0498</b>		<b>0.0498</b>	<b>0.0498</b>	<b>0.0000</b>	<b>713.2008</b>	<b>713.2008</b>	<b>0.0137</b>	<b>0.0131</b>	<b>717.4390</b>

23412 - 2005 BAU - Tulare County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	4.43352e+006	786.2653	0.0664	8.0400e-003	790.3215
Total		786.2653	0.0664	8.0400e-003	790.3215

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	4.43352e+006	786.2653	0.0664	8.0400e-003	790.3215
Total		786.2653	0.0664	8.0400e-003	790.3215

6.0 Area Detail

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## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****6.1 Mitigation Measures Area**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	106.2853	1.7691	136.4738	0.2494		18.6776	18.6776		18.6776	18.6776	1,833.3665	247.6070	2,080.9735	2.4161	0.1209	2,177.3965
Unmitigated	106.2853	1.7691	136.4738	0.2494		18.6776	18.6776		18.6776	18.6776	1,833.3665	247.6070	2,080.9735	2.4161	0.1209	2,177.3965



## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****6.2 Area by SubCategory****Unmitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.5656					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.9109					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	100.6017	1.7040	131.6858	0.2492		18.6574	18.6574		18.6574	18.6574	1,833.3665	240.8633	2,074.2298	2.4053	0.1209	2,170.3828
Landscaping	0.2072	0.0651	4.7880	2.2000e-004		0.0202	0.0202		0.0202	0.0202	0.0000	6.7437	6.7437	0.0108	0.0000	7.0137
<b>Total</b>	<b>106.2853</b>	<b>1.7691</b>	<b>136.4738</b>	<b>0.2494</b>		<b>18.6776</b>	<b>18.6776</b>		<b>18.6776</b>	<b>18.6776</b>	<b>1,833.3665</b>	<b>247.6070</b>	<b>2,080.9735</b>	<b>2.4161</b>	<b>0.1209</b>	<b>2,177.3965</b>

## 23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****6.2 Area by SubCategory****Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.5656					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.9109					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	100.6017	1.7040	131.6858	0.2492		18.6574	18.6574		18.6574	18.6574	1,833.3665	240.8633	2,074.2298	2.4053	0.1209	2,170.3828
Landscaping	0.2072	0.0651	4.7880	2.2000e-004		0.0202	0.0202		0.0202	0.0202	0.0000	6.7437	6.7437	0.0108	0.0000	7.0137
<b>Total</b>	<b>106.2853</b>	<b>1.7691</b>	<b>136.4738</b>	<b>0.2494</b>		<b>18.6776</b>	<b>18.6776</b>		<b>18.6776</b>	<b>18.6776</b>	<b>1,833.3665</b>	<b>247.6070</b>	<b>2,080.9735</b>	<b>2.4161</b>	<b>0.1209</b>	<b>2,177.3965</b>

**7.0 Water Detail****7.1 Mitigation Measures Water**

23412 - 2005 BAU - Tulare County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	64.4766	1.1849	0.0284	102.5661
Unmitigated	64.4766	1.1849	0.0284	102.5661

**7.2 Water by Land Use****Unmitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 6.5174	4.0454	3.4000e-004	4.0000e-005	4.0663
Single Family Housing	36.2256 / 22.8379	60.4312	1.1845	0.0284	98.4998
<b>Total</b>		<b>64.4766</b>	<b>1.1849</b>	<b>0.0284</b>	<b>102.5661</b>

23412 - 2005 BAU - Tulare County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 6.5174	4.0454	3.4000e-004	4.0000e-005	4.0663
Single Family Housing	36.2256 / 22.8379	60.4312	1.1845	0.0284	98.4998
Total		64.4766	1.1849	0.0284	102.5661

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	141.0605	8.3364	0.0000	349.4713
Unmitigated	141.0605	8.3364	0.0000	349.4713

23412 - 2005 BAU - Tulare County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.47	0.0954	5.6400e-003	0.0000	0.2364
Single Family Housing	694.44	140.9650	8.3308	0.0000	349.2349
Total		141.0605	8.3364	0.0000	349.4713

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.47	0.0954	5.6400e-003	0.0000	0.2364
Single Family Housing	694.44	140.9650	8.3308	0.0000	349.2349
Total		141.0605	8.3364	0.0000	349.4713

9.0 Operational Offroad

---

23412 - 2005 BAU - Tulare County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	-----------	-------------	-------------	-----------

10.0 Stationary Equipment

---

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	------------	-------------	-------------	-----------

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
----------------	--------	----------------	-----------------	---------------	-----------

User Defined Equipment

Equipment Type	Number
----------------	--------

11.0 Vegetation

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## Appendix B

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### Biological Resources Assessment

## Biological Resources Assessment

Lagomarsino Housing Subdivision Project

Assessor Parcel Numbers 172-080-002, 172-010-021, 172-010-022 and 184-020-010  
Tulare, CA



*Prepared for*



**4CREEKS**

324 South Santa Fe Street, Suite A  
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*Prepared by*



1322 E Shaw, Suite 400  
Fresno, CA 93710

**January 31, 2024**



## Executive Summary

4Creeks, Inc. (4Creeks) has tasked Soar Environmental Consulting Inc. (Soar Environmental) to provide a Biological Resource Assessment (BRA) as part of an Initial Study, for a 525-unit Housing Subdivision Development Project (Project) in the City of Tulare (City) in accordance with the California Environmental Quality Act (CEQA) prior to implementation of the proposed Project. The proposed Project is to construct single-family homes on 140.32 acres of land on Assessor Parcel Numbers (APN) 172-080-002, 172-010-021, 172-010-022 and 184-020-010. These parcels are comprised of fallow agricultural fields on the outskirts of the city.

The objectives of this assessment are to: 1) provide a general characterization of biological resources on the property; 2) inventory plant and wildlife species; 3) evaluate the potential for special-status plant and animal species to occur or be impacted by project activities; and 4) describe the property's sensitive biological resources.

This BRA provides information concerning the biological resources within the Project Area. Prior to conducting a Habitat Assessment site survey, Soar Environmental researched the California Natural Diversity Database (CNDDDB) and the United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC), and the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Plants of California, to compile a list of special-status species that could potentially be present in the vicinity of the Project Area. Suitable habitat requirements for the species identified in the records search were reviewed by a Soar Environmental biologist, including species listing status, and proximal observations of special-status plant and wildlife species identified in this report.

No special-status plant or wildlife species were observed in the Project Area during the Habitat Assessment survey conducted on December 12, 2023. However, based on suitable habitat present, and proximity of documented occurrences of special-status species from the data records search and Literature Review section of this report, it was determined that there is potential for burrowing owl (*Athene cunicularia*), San Joaquin kit fox (*Vulpes macrotis mutica*), Swainson's hawk (*Buteo swainsoni*), western mastiff bat (*Eumops perotis*), and western pond turtle (*Actinemys marmorata*) to occur within the vicinity of the Project Area. Based on the findings of this assessment, the proposed development of this property may affect but is unlikely to adversely affect burrowing owl, San Joaquin kit fox, Swainson's hawk, western mastiff bat, or western pond turtle, and will not affect any other listed species identified in this report. Mitigation measures are listed in Section 6 of this report to further minimize the potential for adverse effects to listed species, and their habitats.

## Contents

Executive Summary .....	2
1. Introduction.....	5
1.1 Project Location .....	6
1.2 Project Description.....	8
1.3 Environmental Setting.....	9
2. Methods .....	12
2.1 Literature Review .....	12
2.2 Field Reconnaissance Methodology .....	15
3. Biological Assessment Results.....	15
4. Special-Status Species .....	17
<i>Species with High Potential for Occurrence:</i> .....	18
<i>Species with Low Potential for Occurrence:</i> .....	18
Table 3. Regionally Occurring Special-Status Wildlife Species.....	19
Table 4. Regionally Occurring Special-Status Plant Species .....	24
4.1 Special-Status Species Descriptions.....	26
Special-Status Wildlife Species .....	26
Birds .....	26
Mammals .....	27
Reptiles .....	28
Special-Status Plant Species .....	29
4. Findings.....	29
Critical Habitats.....	29
Project Impacts.....	29
5. Conclusion .....	30
6. Recommendations .....	30
7. Recommended Mitigation Measures .....	30
Mitigation Measure 1: Swainson's Hawk Nesting Habitat .....	30
Mitigation Measure 1a: Nesting Bird, Roosting Bat, Burrowing Owl Survey, San Joaquin kit fox den survey .....	30

Mitigation Measure 1b: Active Nests or Roosts or Burrows or Dens .....	30
Mitigation Measure 1c: Project Delay .....	31
8. Study Limitations .....	31
Works Cited.....	32

#### Figures and Diagram

Figure 1. Project Location .....	7
Diagram A. Site Plan.....	8
Figure 2. Project Area Boundary.....	10
Figure 3. USFWS National Wetlands Inventory (NWI) Map .....	11
Figure 4. CNDDDB Special-Status Species Locations .....	14

#### Tables

Table 1. Wildlife Species Observed on the Project Area .....	16
Table 2. Plant Species Observed on the Project Area .....	17
Table 3. Regionally Occurring Special-Status Wildlife Species.....	19
Table 4. Regionally Occurring Special-Status Plant Species .....	24

#### Appendices

APPENDIX A: Project Area Photographs .....	35
APPENDIX B: U.S. Fish & Wildlife Service IPaC Resource List.....	48
APPENDIX C: California Department of Fish and Wildlife CNDDDB List .....	64
APPENDIX D: California Native Plant Society Rare Plant Inventory .....	66
APPENDIX E: USDA-NRCS Soil Report .....	69
APPENDIX F: Site Plan .....	87

## 1. Introduction

The proposed Project is the construction of a 525-unit housing development on 140.32 acres within the City of Tulare, California. Soar Environmental Consulting Inc. (Soar Environmental) is tasked with providing this Biological Resource Assessment (BRA) in accordance with CEQA requirements.

This Biological Resource Assessment presents the findings of our literature review (including scientific literature and previous reports detailing studies conducted in the area) and the California Department of Fish and Wildlife's (CDFW) Natural Diversity Data Base (CNDDDB), the California Native Plant Society (CNPS) online electronic inventory of rare and endangered plants of California, and the U.S. Fish and Wildlife Service (USFWS) IPaC for reported occurrences of special status vegetation communities, plants and animals. Based on a review of these resources it was determined that a Biological Assessment was necessary to search for the potential suitable habitat or presence for the following special-status species:

### ***Special-Status Wildlife Species***

- Burrowing Owl (*Athene cunicularia*)
- San Joaquin Kit Fox (*Vulpes macrotis mutica*)
- Swainson's hawk (*Buteo swainsoni*)
- Western Mastiff Bat (*Eumops perotis californicus*)
- Western Pond Turtle (*Actinemys marmorata*)

A Habitat Assessment was conducted in the Project Area on December 12, 2023, by a Soar Environmental qualified biologist. The purpose of the Biological Assessment survey was to search for the suitable habitat conditions, or presence of special-status species that have historically been observed within, or surrounding, the Project Area, as well as any other biological or environmentally sensitive resources. The Project Area consists of 74-acres of fallow millet-rice fields, 60-acres of potted blueberries, 0.5-acre pump station stockpond with southern cattail, 3-acres farm equipment storage area, and 2.82-acres of unpaved dirt roads throughout the Project Area. No special-status species were observed during the site visit, and no alkali grassland or shrubland occur in the Project Area.

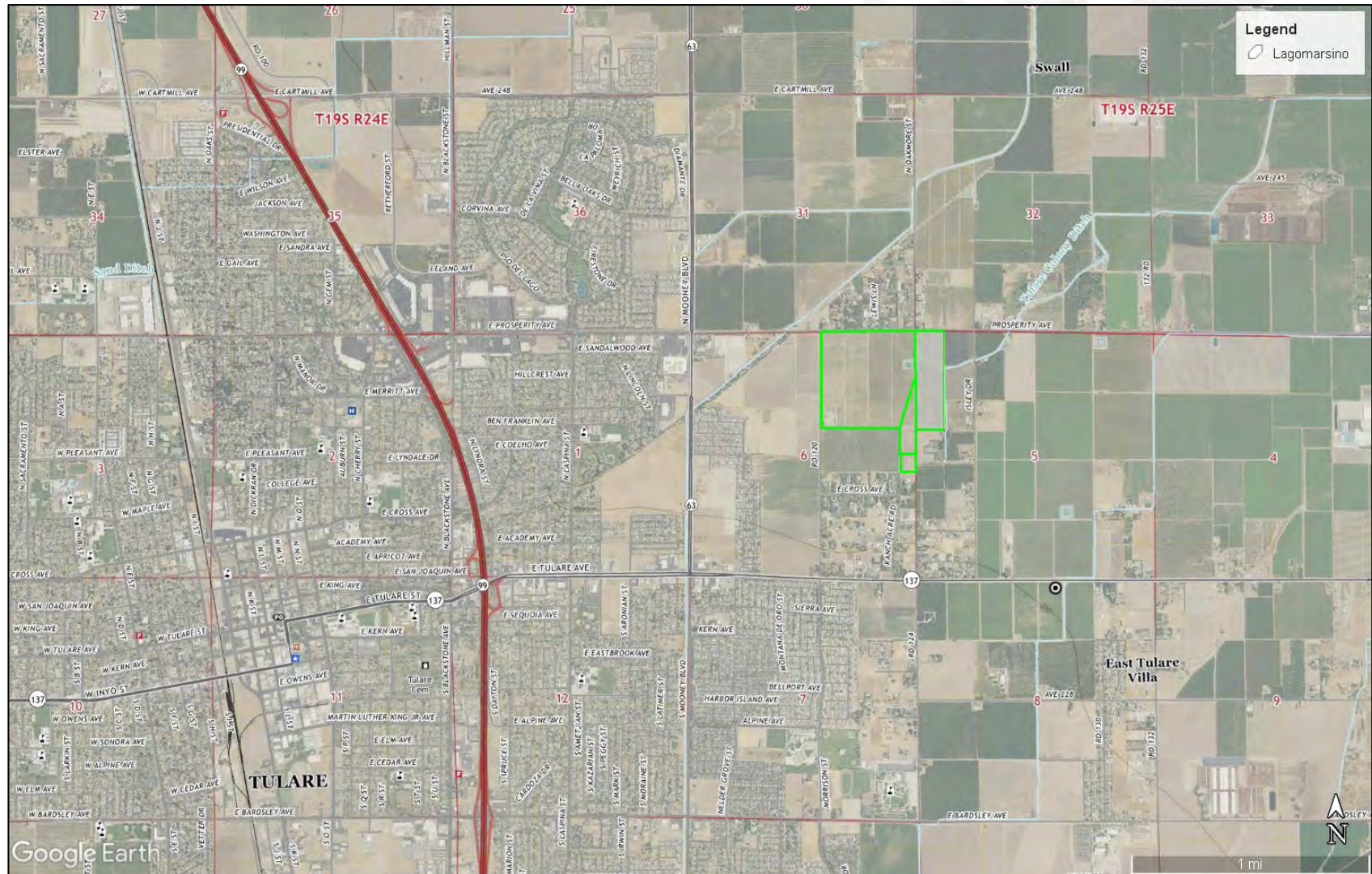
## 1.1 Project Location

The Project Area is located on the corner of Morrison Street and Prosperity Avenue in the City of Tulare, California, Tulare County and is comprised of Assessor Parcel Numbers (APN) 172-080-002m 172-010-021, 172-010-022 and 184-020-010. The Project Area is in the east end of the city limits, approximately 2 miles east of SR-99, 0.5 mile east of SR-65 and 0.45 mile north of SR-137. A man-excavated canal, the Tulare Colony Ditch, runs across east to west through the Project Area on the north side of the property near Prosperity Avenue.

The Project Area is located in the two USGS 7.5-minute quadrangle of in Township 19 South, Range 25 East, in the northeast quarter of Section 6 and in the northwest quarter of Section 5. Row crops surround the Project Area to the northeast and west, fallow fields to the immediate east but commercial and urban residential 0.5 miles east, urban residential to the north, and a mix of rural residential and orchards to the south. The Tulare Colony Ditch connects with Deep Creek 171 feet west, Outside Creek is 5.2 miles east, and Tulare Lake is 30 miles southwest to the Project Area. The irrigation system located on the north boundary of the Project Area has hydrologic connectivity to Tulare Lake, a seasonal lake and playa. A new subdivision including several city streets is being developed on the cleared properties to the east. The Project Area is fairly level and ranges from 295 to 302 feet elevation above mean sea level. The properties have functioned as active farming and irrigated row crops and include a vegetated pump station irrigation pond and an underground irrigation drainage ditch along the northern boundary.



Figure 1. Project Location



Project Area (green) is located on the corner of Morrison Street and Prosperity Avenue in the City of Tulare in Tulare County, Assessor Parcel Numbers 172-080-002 (bottom), 172-010-021 (left), 172-010-022 (center), and 184-020-010 (right).

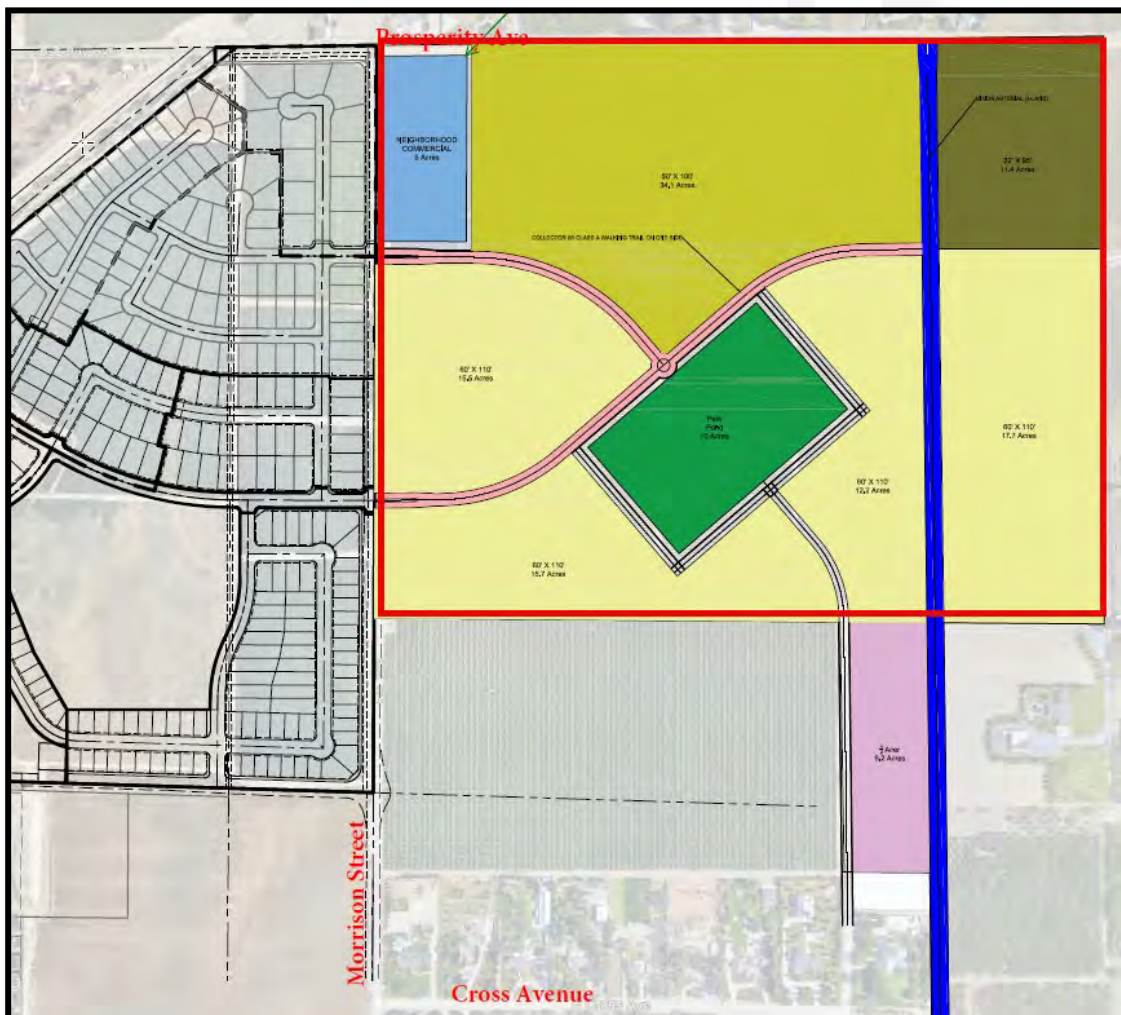


## 1.2 Project Description

The proposed Project is the construction of a 525-unit housing subdivision at the southeast corner of Morrison Street and Prosperity Avenue, in the City of Tulare. The Project Area is limited to a 140.32-acre property currently used for irrigated row crop.

The project will require the development of roads and sidewalks around and throughout the property. A park/pond will be developed on 10 acres in the middle of the Project Area. An additional five acres in the northeast corner of the Project Area will be developed into a neighborhood commercial area according to VMT mitigation. Since the entire property will be graded for the housing project during construction activities, the above ground water basin in the northwest quarter of the property would be removed. The majority of the property has been used for agricultural production and the entire lot has been cleared and maintained. (**Diagram A– Site Plan**)

Diagram A. Site Plan



A detailed development plan is shown in Appendix F.

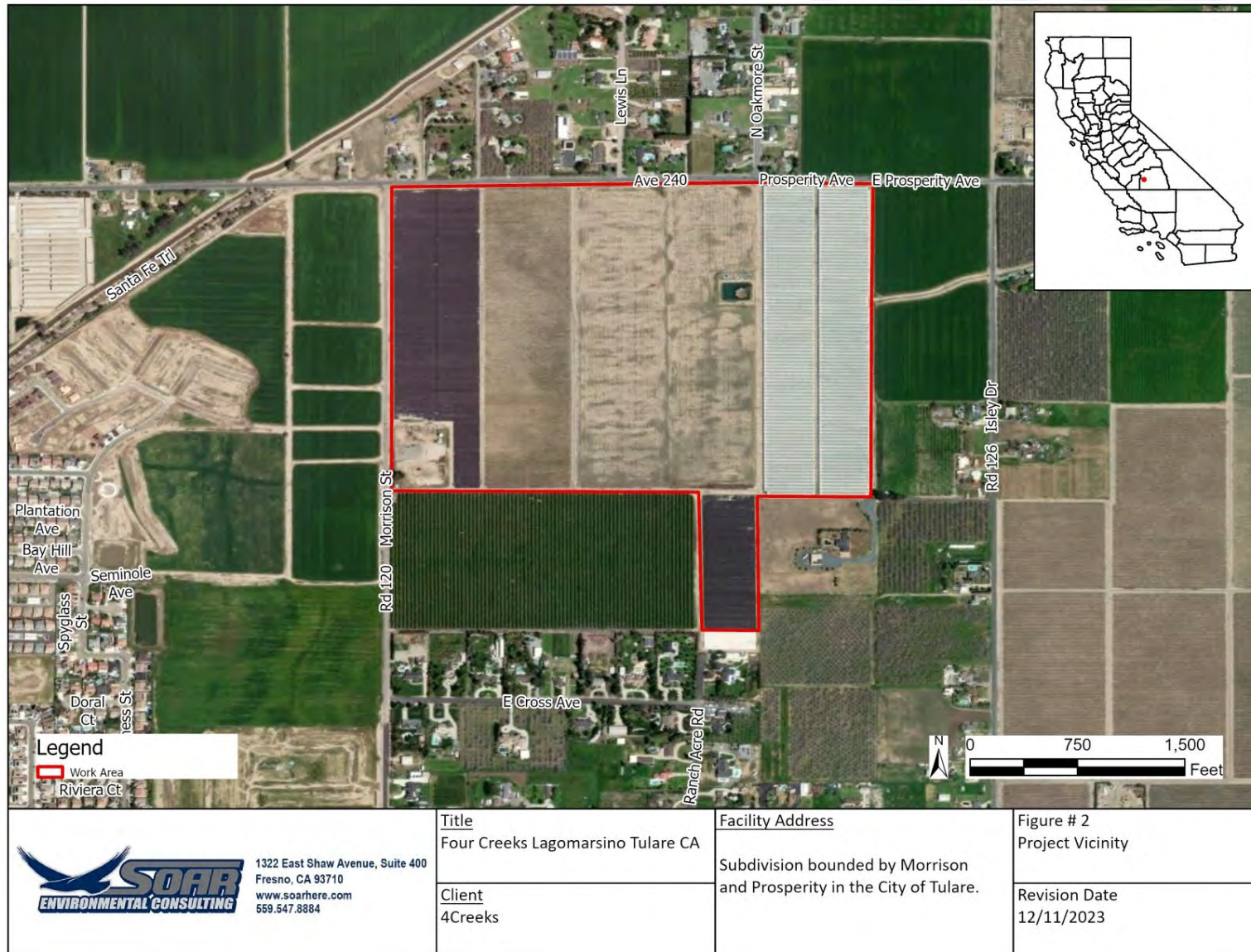
### 1.3 Environmental Setting

The Project Area is surrounded by urban residential properties to the west, north and south, a fallow field planned for further development of rural residential to the west, orchards and row crops to the south and east (**Figure 2**). This area is on the southeastern side of Visalia in the Central Valley near the Sierra Nevada foothills. The property was used for irrigated row crops until recently. Currently the Project Area is primarily bare ground after irrigated row crop removal, with limited disturbance tolerant annual grasses and herbaceous weed in patches, and few remnant landscaped shrubs. The remainder of the property to the west, east and south contains potted blueberries. The ground is covered with a tarp to prevent other plants from occupying the area.

The Project Area is a 140.32-acre disturbed vacant field, composed primarily of bare ground and non-native annual herbs and grasses. A buried underground ditch, the Tulare Colony Ditch, occurs along the north boundary. The topography is relatively flat, ranging from 295 feet above sea level to the south, sloping up to 302 feet above sea level to the north. According to the USDA NRCS Soil Survey (**Appendix E**) the Project Area is composed from two soil types 124 Hanford sandy loam, 0 to 2 percent slopes, and most of the property is mapped as 130 Nord fine sandy loam, 0 to 2 percent slopes.



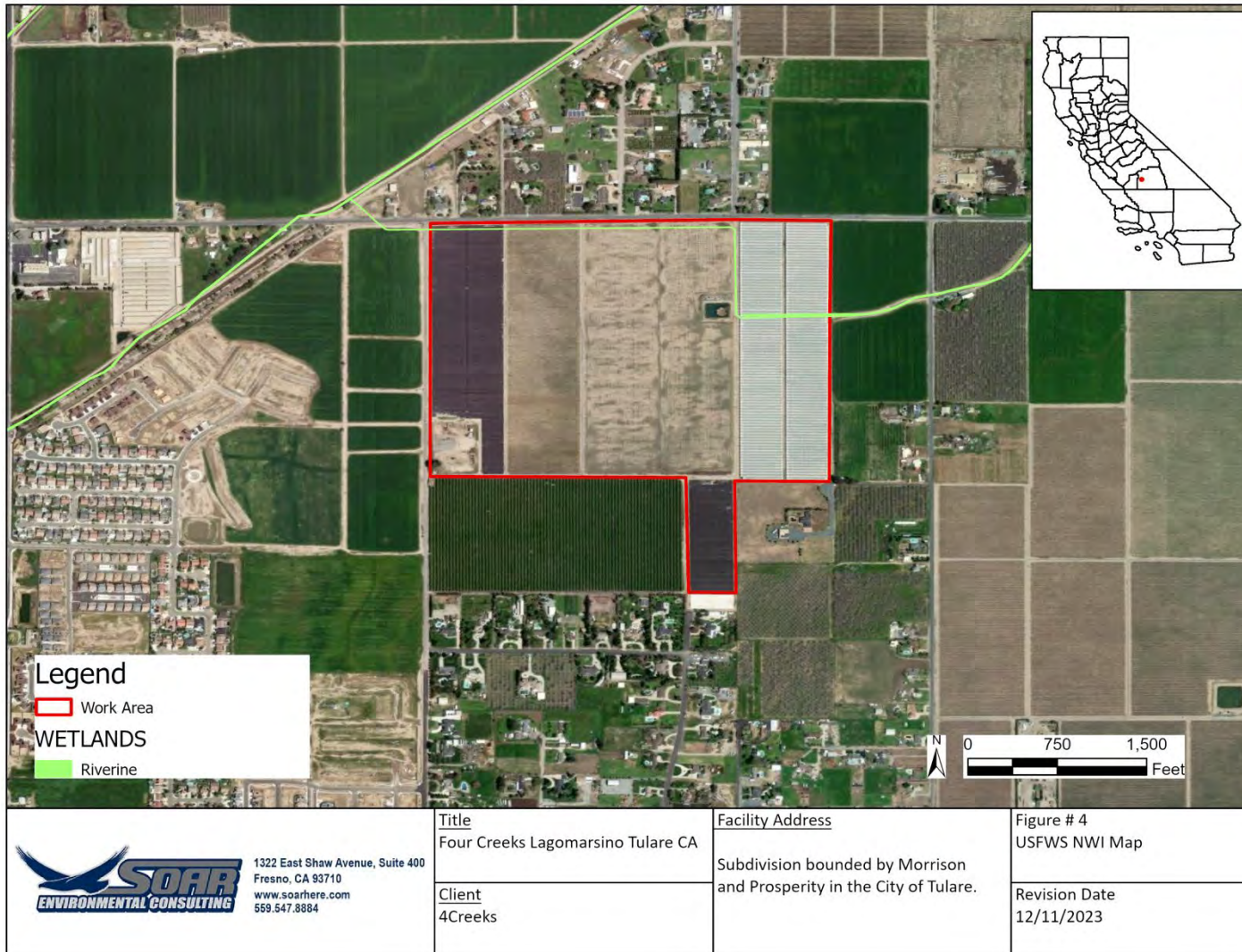
Figure 2. Project Area Boundary



*Project Area: 140.32 acres of fallow agricultural fields, formerly used as irrigated row crops.*



Figure 3. USFWS National Wetlands Inventory (NWI) Map



## 2. Methods

### 2.1 Literature Review

Prior to performing the Biological Assessment, Soar Environmental conducted soil survey analysis (**Appendix E**) a survey of the USFWS National Wetlands Inventory (**Figure 4**) and a CNDDDB records search (**Appendix C**) for threatened or endangered species that could potentially occur in the vicinity of the Project Area. The records search included a review of the California Natural Diversity Database (CNDDDB), the United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC), and the California Native Plant Society (CNPS) Online Rare Plant Inventory. The area covered by the data records search included the USGS 7.5-minute quadrangles of *Cairns Corner*, *Visalia*, *Tulare*, *Exeter*, *Tipton*, *Woodville*, *Paige*, *Goshen* and *Taylor Weir*. From these sources a list of special-status plant and animal species was generated. Proximal locations of known special-status plant and animal species found within 5 miles of the Project Area are shown in **Figure 5**.

A records search of the CNDDDB and IPaC databases showed 12 special-status wildlife species most likely to occur within or near the Project Area would include:

- American Bumble Bee (*Bombus pensylvanicus*)
- Blunt-nosed Leopard Lizard (*Gambelia silus*)
- Buena Vista Lake Ornate Shrew (*Sorex ornatus relictus*)
- California Tiger Salamander (*Ambystoma californiense*)
- Monarch Butterfly (*Danaus plexippus*)
- San Joaquin Kit Fox (*Vulpes macrotis mutica*)
- Swainson's Hawk (*Buteo swainsoni*)
- Tipton Kangaroo Rat (*Dipodomys nitratoide nitratoide*)
- Vernal Pool Fairy Shrimp (*Branchinecta lynchi*)
- Western Mastiff Bat (*Eumops perotis californicus*)
- Western Pond Turtle (*Actinemys marmorata*)
- Western Spadefoot Toad (*Spea hammondi*)

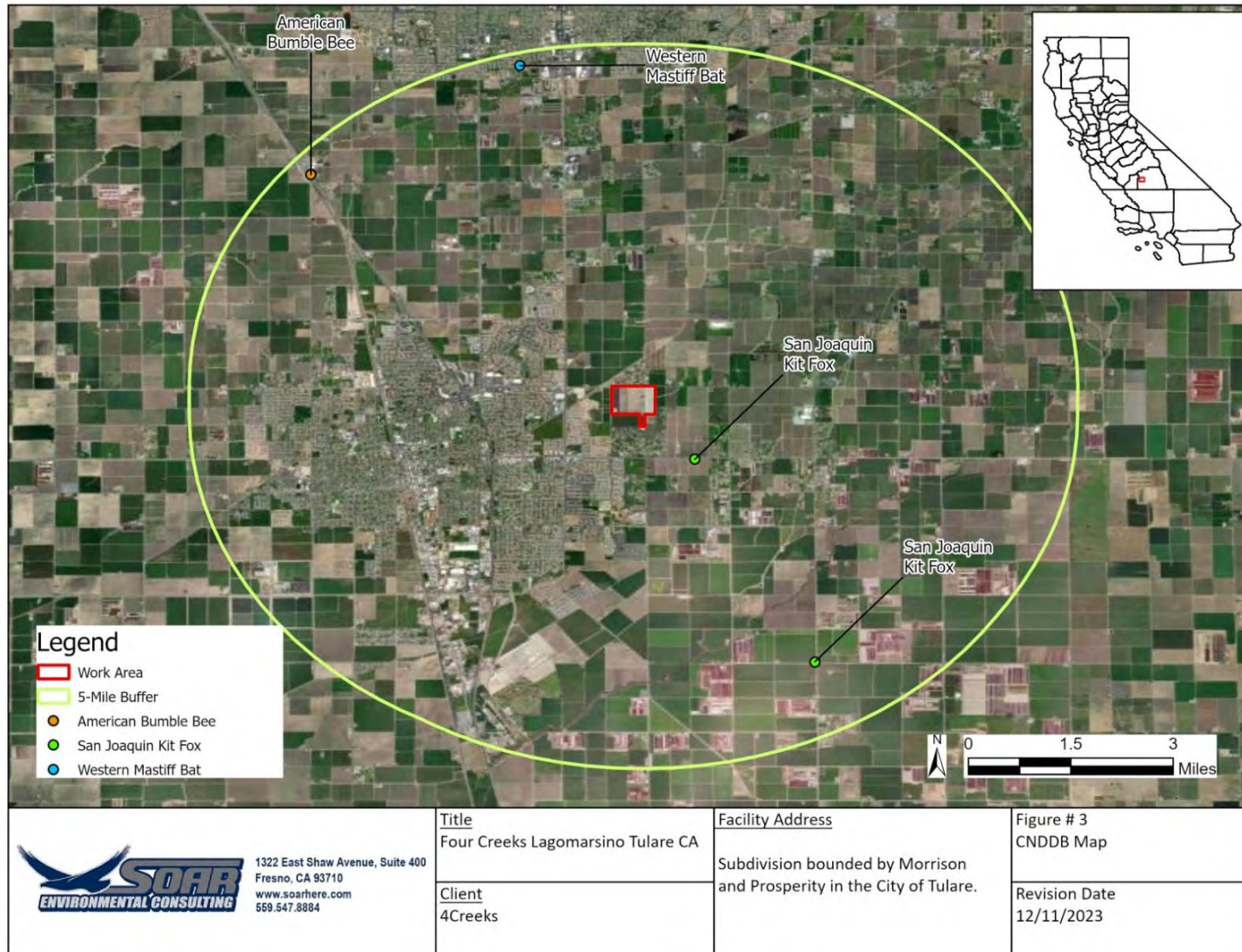
A search of the CNPS Online Rare Plant Inventory named 13 regionally occurring special-status plant species with potential to occur within or near the Project Area. Of these, all 13 plant species were determined to have no potential to occur within the Project Area because the area has been active agricultural land for decades and so it lacks a native seed bank. These special-status plants were determined to have no potential to occur in the Project Area and were excluded from further analysis.

- Alkali-sink Goldfields (*Lasthenia chrysantha*)
- Britblescale (*Atriplex depressa*)
- California Alkali Grass (*Puccinellia simplex*)
- California Jewelflower (*Caulanthus californicus*)
- California Satintail (*Imperata brevifolia*)
- Earlimart Orache (*Atriplex cordulata* var. *erecticaulis*)

- 
- Ewan's Larkspur (*Delphinium hansenii* ssp. *ewanianum*)
  - Heartscale (*Atriplex cordulata* var. *cordulata*)
  - Lesser Saltscall (*Atriplex miniscula*)
  - Recurved Larkspur (*Delphinium recurvatum*)
  - San Joaquin Adobe Sunburst (*Pseudobahia peirsonii*)
  - Spiny-sepaled Button-celery (*Eryngium spinosepalum*)
  - Subtle Orache (*Atriplex subtilis*)



Figure 4. CNDDDB Special-Status Species Locations



*This map shows the closest and most recent special-status species locations from the California Natural Diversity Database (CNDDDB), and California Native Plant Society (CNPS) Online Rare Plant Inventory.*

## 2.2 Field Reconnaissance Methodology

The Habitat Assessment is a diurnal, non-protocol survey. The purpose of the Habitat Assessment Survey was to search for the presence of special-status species or suitable habitat for special-status species identified in the data records search. The site visit for the Habitat Assessment includes observation and noting the plant and wildlife species occurring on and around the Project Area, habitat suitability for the species named in the **Literature Review**, present environmental conditions, and habitat, including microhabitat (only observable from the ground level).

The Habitat Assessment was conducted on December 12, 2023, by Soar Biologist to assess habitat quality for species listed in Section 2.1. Survey efforts emphasized the search for suitable habitats, or presence of special-status species that had documented occurrences in the data records search of the CNDDB, IPaC, and CNPS databases. The site visit consists of walking the perimeter of the property and meandering transects throughout the Project Area. During the site visit, the surveyor identified vegetation, searched for bird nests, possible small mammal dens, vernal pools and other signs of wildlife occupancy or associated suitable habitats. Plants were surveyed during the late blooming period or surveyed outside the blooming period. The biologist also surveyed the surrounding area by vehicle in accessible areas within 0.5 miles of the Project Area to look for biological resources and features that may be conducive for suitable habitat of the identified special-status species. During the survey, the biologist collected photos of the Project boundaries and other points of interest depicting the habitat and potential biological resources (**Appendix A**).

## 3. Biological Assessment Results

During the site visit, there were no observations of special-status plant or wildlife species. Plant and wildlife species that were observed on the property are listed in **Tables 1 & 2**. All 140.32 acres of the Project Area is a bare dirt fallow agricultural field dominated in places by non-native annual grasses or ruderal weeds and potted blueberries with farm laborers present on site and cultivating the fields during the Habitat Assessment. Three bird boxes were observed on power pole lines; two were outside the Project Area and one was found in the middle of the Project Area near the irrigation pump station. A single European starling was observed using the bird box on the adjacent property. Several small mammal burrows were observed within the fallow field where millet-rice was harvested and along the unpaved dirt roads throughout the property. Most of the small mammal burrows were located on the south boundary of the Project Area on the unpaved roads next to an orchard and single-family residential buildings. A strand of native but cultivated trees from the adjacent properties (consisting of coastal redwood, garden rose, valley oak, common fig, glossy privet, and Chinese pistache) has overhanging branches and leaves in the Project Area. The root and trunk systems of the native but cultivated trees are located outside the Project Area in the adjacent properties. The ground is relatively flat and cleared to the surface.

The survey was conducted by a qualified biologist outside of the blooming period for most of the sensitive plant species listed in the Literature Review. However, no special-status plant species were seen within or in the vicinity of the Project Area, and conditions for these species do not appear to be conducive, due to active agriculture uses and the loss of a native seed bank from regular agricultural activity over decades of time (since before the 1980's per Google Earth historic photos).



No special-status plant or wildlife species were observed during the site visit. However, the Soar Biologist saw some common bird species flying around the area, listed in **Table 1** below, along with plant species seen onsite. No other wildlife species were observed during the Biological Assessment.

The Tulare Colony Ditch is shown aerially through Google Earth and is mapped in the National Wetland Inventory. This ditch is shown along the north boundary of the Project Area, but during the Habitat Assessment, no visible sign of the Tulare Colony Ditch was seen. The only evidence of the Tulare Colony Ditch in the Project Area is in the middle of the Project Area where a mud-lined agricultural irrigation pump pond occurs. The pond held water and half of the pond was covered in southern cattail. The area was enclosed in a fence and was locked during the Habitat Assessment.

The status of the three bird boxes is unknown but only one bird box on the adjacent property, outside the Project Area, appeared to be occupied by a single European starling. None of the small mammal burrows had any signs of burrowing owl occupancy such as whitewash or feathers at the mouth of the burrows. However, there was whitewash seen throughout the Project Area including the fallow field. There were areas along the fence line with signs of wildlife crossing where dirt was removed underneath the barbwire fence for a mid-sized animal estimated between 10 and 27 inches tall.

**Table 1. Wildlife Species Observed on the Project Area**

Wildlife Species	Listing Status	Wildlife Species	Listing Status
Northern flicker ( <i>Colaptes auratus</i> )	MBTA	European starling ( <i>Sturnis vulgaris</i> )	None
Anna's hummingbird ( <i>Calypste anna</i> )	MBTA	Black phoebe ( <i>Sayornis nigricans</i> )	MBTA
American crow ( <i>Corvus brachyrhynchos</i> )	MBTA	Yellow-rumped warbler ( <i>Setophaga coronata</i> )	MBTA
House finch ( <i>Haemorhous mexicanus</i> )	MBTA	Savannah sparrow ( <i>Passerculus sandwichensis</i> )	MBTA
California scrub-jay ( <i>Aphelocoma californica</i> )	MBTA	Canadian geese ( <i>Branta canadensis</i> )	MBTA
American robin ( <i>Turdus migratorius</i> )	MBTA	Horned lark ( <i>Eremophila alpestris</i> )	MBTA
Ruby-crowned kinglet ( <i>Corthylio calendula</i> )	MBTA	Domestic dog ( <i>Canis lupus familiaris</i> )	None
American goldfinch ( <i>Spinus tristis</i> )	MBTA	Killdeer ( <i>Charadrius vociferus</i> )	MBTA
Mourning dove ( <i>Zenaida macroura</i> )	MBTA		

Table 2. Plant Species Observed on the Project Area

Plant Species	Listing Status	Plant Species	Listing Status
English black walnut ( <i>Juglans nigra</i> )	Non-Native	Velvet grass ( <i>Lactuca serriola</i> )	Non-Native
Crab grass ( <i>Digitaria</i> sp.)	Non-Native	Pepperweed ( <i>Cardamine hirsuta</i> )	Non-Native
Millet-rice ( <i>Echinochloa colona</i> )	Non-Native, Cultivated	Birdeye pearlwort ( <i>Sagina procumbens</i> )	Non-Native
Marestail ( <i>Erigeron canadensis</i> )	Non-Native	Broadleaf cudweed ( <i>Gamochaeta pensylvanica</i> )	Non-Native
Tumbleweed ( <i>Amaranthus albus</i> )	Non-Native	Silver moss ( <i>Bryum argenteum</i> )	Non-Native
Small nettle ( <i>Urtica urens</i> )	Non-Native	Highbush blueberries ( <i>Vaccinium corymbosum</i> )	Non-Native, Cultivated
Goathead ( <i>Tribulus terrestris</i> )	Non-Native	Nettle-leaved goosefoot ( <i>Chenopodium murale</i> )	Non-Native
Prickly lettuce ( <i>Lactuca serriola</i> )	Non-Native	Coyote melon ( <i>Cucurbita palmata</i> )	Native
Cheeseweed ( <i>Malva parviflora</i> )	Non-Native	Mat amaranth ( <i>Amaranthus blitoides</i> )	Non-Native
Curly dock ( <i>Rumex crispus</i> )	Non-Native	Glossy privet ( <i>Ligustrum lucidum</i> )	Non-Native
Common groundsel ( <i>Senecio vulgaris</i> )	Non-Native	Chinese pistache ( <i>Pistacia chinensis</i> )	Non-Native
Southern cattail ( <i>Typha domingensis</i> )	Native	Coast redwood ( <i>Sequoia sempervirens</i> )	Native, Cultivated
Black nightshade ( <i>Solanum nigrum</i> )	Non-Native	Western redbud ( <i>Cercis occidentalis</i> )	Native
Spiny sowthistle ( <i>Sonchus asper</i> )	Non-Native	Garden rose ( <i>Rosa chinensis</i> )	Non-Native, Cultivated
		Common Fig ( <i>Ficus carica</i> )	Non-Native, Cultivated
		Valley oak ( <i>Quercus lobata</i> )	Native, Cultivated

## 4. Special-Status Species

Special-status plants and animals that have a reasonable possibility to occur in the Project Area based on habitat suitability and requirements, elevation and geographic range, soils, topography, surrounding land uses, and/or proximity of known occurrences in the CNDDDB, IPaC, and CNPS databases to the Project Area are listed in **Tables 3 & 4**. The likelihood for occurrence of special-status species was assessed using information from the various sources listed in **Section 2.1**, as well as the Habitat



Assessment field survey. Narratives are supplied for species for which there are land use planning and regulatory implications.

Results from the data records search found 25 special-status species: 12 wildlife and 13 plant species. However, an analysis of recent occurrences, habitat suitability and proximity within 5-miles to the Project Area showed one special-status wildlife species with high potential to occur and four special-status wildlife species with low potential for occurrence. Special-status species for which there are no regulatory implications (i.e., lack of suitable habitat or no record of historical occurrences within 5 miles) are excluded from further analysis.

*Species with High Potential for Occurrence:*

- Burrowing Owl (*Athene cunicularia*)

*Species with Low Potential for Occurrence:*

- San Joaquin Kit Fox (*Vulpes macrotis mutica*)
- Swainson's Hawk (*Buteo swainsonii*)
- Western Mastiff Bat (*Eumops perotis*)
- Western Pond Turtle (*Actinemys marmorata*)

Special-status species and sensitive habitats include plant and wildlife taxa, or other unique biological features afforded special protection by local land use policies, and/or state and federal regulations. Special-status plant and animal species are those listed as rare, threatened, or endangered under the state or federal Endangered Species Acts or those who are rare enough to become listed in the foreseeable future (Cal. Code Regs. Tit. 14 § 15380). Vegetation communities may call for special status if they are of limited distribution, have high wildlife value, or are particularly vulnerable to disturbance. Listed and special-status species are defined as:

- Listed or proposed for listing under the state or Federal Endangered Species acts.
- Protected under other regulations (e.g., Migratory Bird Treaty Act).
- California Department of Fish & Wildlife (CDFW) Species of Special Concern.
- Listed as species of concern by CNPS or USFWS; and/or
- Receive consideration during environmental review under CEQA.

All species from the Section 2.1 search results are listed below including common and non-listed species. The analysis and following determination are based on Habitat Assessment results and the most recent occurrence and proximity to the Project Area per Section 2.1 (Table 1, Table 2).

- **Present:** Species known to occur on the site, based on CNDDDB records, and/or was observed on the site during the field survey.
- **High:** Species known to occur on or near the site (based on CNDDDB record within 5 miles), and/or there is suitable habitat on the site.
- **Low:** Species known to occur on or near the site (based on CNDDDB record within 5 miles), but there is no suitable habitat onsite.

- **None:** Species is not known to occur on within 5 miles of the site and there is no suitable habitat on the site. -OR- Species was surveyed for during the appropriate season with negative results.

Table 3. Regionally Occurring Special-Status Wildlife Species

Common/ Scientific Name	*Listing Status	Habitat Requirements	Potential for Occurrence
<b>Amphibians</b>			
California Tiger Salamander ( <i>Ambystoma californiense</i> )	FT/ST/-	Grasslands, oak savannah riparian woodlands and lower elevations of coniferous forests, ditches, vernal pools, and wetlands.	<b>None.</b> Dependent on the presence of vernal pool habitat. Active agricultural land has no potential for the species.
Western Spadefoot Toad ( <i>Spea hammondi</i> )	FC/-/SSC	Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.	<b>None.</b> Dependent on the presence of vernal pool habitat. Additionally, lacks food source due to heavy commercial use of pesticide for agriculture.
<b>Birds</b>			
Belding's Savannah Sparrow ( <i>Passerculus sandwichensis beldingi</i> )	-/SE/BCC/MBTA	Inhabits coastal salt marshes, from Santa Barbara south through San Diego County. Nests in Salicornia on and about margins of tidal flats.	<b>None.</b> No salt marsh or pickleweed nesting habitat occur in the Project Area. No tidal flats.
Bullock's Oriole ( <i>Icterus bullockii</i> )	-/-/BCC/MBTA	Found in open broadleaf woods, foraging among leaves in trees.	<b>None.</b> Species is not known to occur on within 5 miles of the site and there is no suitable habitat on the site.
Burrowing Owl ( <i>Athene cunicularia</i> )	-/-/ SSC/BCC/MBTA	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	<b>High.</b> Small mammal burrows between 2 and 3 inches in diameter were found in abundance providing suitable habitat for this species, and a was observed during the KCOK Habitat Assessment in March 2022 (see <b>Appendices G &amp; H</b> ).

Common/ Scientific Name	*Listing Status	Habitat Requirements	Potential for Occurrence
California Gull ( <i>Larus californicus</i> )	-/- /CWL/BCC/MBTA	Littoral waters, sandy beaches, waters and shorelines of bays, tidal mudflats, marshes, lakes, etc. Colonial nesters on islets in large interior lakes, either fresh or strongly alkaline.	<b>None.</b> No habitat occurs for this aquatic bird species.
Marbled Godwit ( <i>Limosa fedoa</i> )	-/-/BCC/MBTA	Shortgrass prairies near wetlands.	<b>None.</b> The Project Area lacks suitable wetland habitat for this species. The Project Area lacks shortgrass prairies near wetlands.
Nuttall's Woodpecker ( <i>Picoides nuttallii</i> )	-/-/BCC/MBTA	Wooded canyons and foothills, river woods. In much of range almost always around oaks, especially where oaks meet other trees along rivers, also in pine-oak woods in foothills.	<b>None.</b> No habitat occurs for this woodland bird species.
Oak Titmouse ( <i>Baeolophus inornatus</i> )	-/-/BCC/MBTA	Woodland dominated by oaks, riparian habitats and coast live oak trees within, nests in tree cavities	<b>None.</b> No habitat occurs for this oak woodland bird species.
Swainson's Hawk ( <i>Buteo swainsoni</i> )	-/ST/SSC BCC/MBTA	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	<b>Low:</b> Species known from a single occurrence over 5 miles from site to the west. Suitable habitat includes bird boxes situated on top of electrical poles and open foraging areas in the fallow fields of row crops.
<b>Invertebrates</b>			
American Bumble Bee ( <i>Bombus pensylvanicus</i> )	-/-/-	Prefers habitats offered by farmlands and open fields where they nest below the grass or underground.	<b>None:</b> The Project Area lacks the native wildflower field nectar habitat needed to support this species.

Common/ Scientific Name	*Listing Status	Habitat Requirements	Potential for Occurrence
Monarch Butterfly ( <i>Danaus plexippus</i> )	FC/-/-	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	<b>None:</b> No roosting, foraging (nectar-flowers) or reproductive host plant habitat (Milkweed, <i>Asclepias</i> sp.) is present in the Project Area.
Vernal Pool Fairy Shrimp ( <i>Branchinecta lynchi</i> )	FT/-/-	Endemic to the vernal pools in grasslands of the Central Valley, Central Coast mountains, and South Coast mountains, in astatic rain-filled pools. Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	<b>None:</b> No seasonal aquatic habitat for this species, such as vernal pools, occurs in the Project Area.
<b>Mammals</b>			
Buena Vista Lake Ornate Shrew ( <i>Sorex ornatus relictus</i> )	FE/SSC/-	Found near water sources in protective groundcover like deep leaf litter, cattails and fallen logs. Found in grassland and desert scrub within a few hundred feet of water sources, or where water is close to the surface and their prey can be found. Also found in lake with a considerable inland body of standing water, rural environments influenced by humans such as agriculture, silvaculture, or aquaculture, wetland areas such as marshes or swamps covered often intermittently or saturated soils, springs or seeps.	<b>None.</b> The irrigation pump pond is an open and exposed area. The Project Area lacks a groundcover and is maintained regularly. Regular use of commercial grade pesticide for agriculture may also reduce prey such as snails and worms.



Common/ Scientific Name	*Listing Status	Habitat Requirements	Potential for Occurrence
San Joaquin Kit Fox ( <i>Vulpes macrotis mutica</i> )	FE/ST/-	Annual grasslands or grassy open stages with scattered shrubby vegetation. Need loose-textured sandy soils for burrowing, and suitable prey base.	<b>Low:</b> Site has dispersal, foraging and denning habitat and a previous record occurring within 5 miles surrounding the Project Area.
Tipton Kangaroo Rat ( <i>Dipodomys nitratoide nitratoide</i> )	FE/SE/-	Saltbrush scrub and sink scrub communities in the Tulare Lake Basin of the southern San Joaquin Valley. Needs soft friable soils which escape seasonal flooding. Digs burrows in elevated soil mounds at bases of shrubs.	<b>None:</b> No alkali scrub or sink scrub habitat occurs in the Project Area. No seed forage habitat occurs in the Project Area. The Project Area is an active agricultural field.
Western Mastiff Bat ( <i>Eumops perotis californicus</i> )	-/-/SSC	Many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, chaparral, etc. Roosts in crevices in cliff faces, high buildings, trees and tunnels.	<b>Low:</b> Limited day/feeding roosting to bird boxes. Open fallow fields provide foraging habitat for this species in the Project Area. Species is known from one bat record 5 miles north of Project Area.
<b>Reptiles</b>			
Blunt-nosed Leopard Lizard ( <i>Gambelia sila</i> )	FE/SE/FP	Resident of sparsely vegetated alkali and desert scrub habitats, in areas of low topographic relief. Seeks cover in mammal burrows, under shrubs or structures such as fence posts; they do not excavate their own burrows.	<b>None:</b> No alkali scrub or desert scrub habitat occurs in the Project Area. The Project Area is an active agricultural field.
Western Pond Turtle ( <i>Actinemys marmorata</i> )	FPT/-/SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6,000 feet of elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	<b>Low:</b> High quality potential habitat in the form of an open water vegetated irrigation pump pond in the middle of the Project Area. Pond is lined with dirt and surrounded by fallow field of row crops providing basking habitat. No CNDDB occurrence recorded.

\*Listing Status Notes:

Federal:

FE – Federally listed Endangered  
FT – Federally listed Threatened  
FC – Federal Candidate Species  
FPT – Federal Proposed Threatened  
FWL – USFWS Watch list  
BCC – USFWS Bird of Conservation Concern  
MTBA – Migratory Bird Treaty Act

State:

SE – State listed Endangered  
ST – State listed Threatened  
SC – State Candidate Species  
SR – State Rare Species  
SA – State Special Animal  
FP – CDFW Fully Protected Species  
SSC – CDFW Species of Special Concern  
CWL – CDFW Watch List

Table 4. Regionally Occurring Special-Status Plant Species

Common/ Scientific Name	*Status Fed/CA/CNPS/ Bloom Period	Habitat Description	Potential for Occurrence
Alkali-sink Goldfields ( <i>Lasthenia chrysantha</i> )	-/-/1B.1 Feb-Apr	Vernal pools, alkaline microhabitat. Found at elevations between 0 and 655 feet.	<b>None:</b> No vernal pool habitat occurs in the Project Area.
Brittlescale ( <i>Atriplex depressa</i> )	-/-/1B.2 Apr-Oct	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland, and vernal pools. Alkaline and clay microhabitat. Found at elevations between 5 and 1,050 feet.	<b>None:</b> No native habitat or vernal pool habitat occurs in the Project Area.
California Alkali Grass ( <i>Puccinellia simplex</i> )	-/-/1B.2 Mar-May	Chenopod scrub, meadows and seeps, valley and foothill grassland and vernal pools. Sinks, alkaline, flats, lake margins, and vernal mesic microhabitats. Found at elevations between 5 and 3,050 feet.	<b>None:</b> No vernal pool habitat or chenopod scrub occurs in the Project Area.
California Jewelflower ( <i>Caulanthus californicus</i> )	FE/CE/1B.1 Feb-May	Chenopod scrub, pinyon and juniper woodland, valley and foothill grassland. Found at elevations between 200 and 3,280 feet.	<b>None:</b> The Project Area is composed entirely from agricultural land and lacks a native seedbank.
California Satintail ( <i>Imperata brevifolia</i> )	-/-/2B.1 Sep-May	Chaparral, coastal scrub, Mojavean desert scrub, meadows and seeps (often alkali), and riparian scrub. Mesic microhabitat. Found at elevations between 0 and 3,985 feet.	<b>None:</b> No wetland habitat or shrub-dominated habitat occurs in the Project Area.
Earlimart Orache ( <i>Atriplex cordulata</i> var. <i>erecticaulis</i> )	-/-/1B.2 Aug-Sep (Nov)	Valley and foothill grassland. Vernal mesic microhabitat. Found at elevations between 130 and 330 feet.	<b>None:</b> Though some grassland occurs in the Project Area it is not within vernal pool or vernal swale habitat. Species not observed during current survey effort.
Ewan's Larkspur ( <i>Delphinium hansenii</i> ssp. <i>ewanianum</i> )	-/-/4.2 Mar-May	Cismontane woodland, valley and foothill grassland. Found at elevations between 195 and 1,970 feet.	<b>None:</b> The Project Area is composed entirely from agricultural land and

Common/ Scientific Name	*Status Fed/CA/CNPS/ Bloom Period	Habitat Description	Potential for Occurrence
			lacks a native seedbank.
Heartscale ( <i>Atriplex cordulata</i> var. <i>cordulata</i> )	-/-/1B.2 Apr-Oct	Chenopod scrub, meadows and seeps, valley and foothill grassland. Microhabitats sometimes saline, sometime alkaline. Found at elevations between 0 and 1,835 feet.	<b>None:</b> The Project Area is composed entirely from agricultural land and lacks a native seedbank.
Lesser Saltscale ( <i>Atriplex miniscula</i> )	-/-/1B.1 May-Oct	Chenopod scrub, playas, valley and foothill grassland. Microhabitats are alkaline or sandy. Found at elevations between 50 and 655 feet.	<b>None:</b> The Project Area is composed entirely from agricultural land and lacks a native seedbank.
Recurved Larkspur ( <i>Delphinium recurvatum</i> )	-/-/1B.2 Mar-Jun	Chenopod scrub, cismontane woodland, valley and foothill grassland. Alkaline microhabitat. Found at elevations between 10 and 2,590 feet.	<b>None:</b> The Project Area is composed entirely from agricultural land and lacks a native seedbank.
San Joaquin Adobe Sunburst ( <i>Pseudobahia peirsonii</i> )	FT/CE/1B.1 Feb-Apr	Cismontane woodland, valley and foothill grassland. Adobe or clay microhabitat. Found at elevations between 295 and 2,625 feet.	<b>None:</b> The Project Area is composed entirely from agricultural land and lacks a native seedbank.
Spiny-sepaed Button-celery ( <i>Eryngium spinosepalum</i> )	-/-/1B.2 Apr-Jun	Vernal pools, valley and foothill grassland. Found at elevations between 260 and 3200 feet.	<b>None:</b> No vernal pool habitat occurs in the Project Area.
Subtle Orache ( <i>Atriplex subtilis</i> )	-/-/1B.2 (Apr) Jun-Sep (Oct)	Valley and foothill grassland. Found at elevations between 130 and 330 feet.	<b>None:</b> The Project Area is composed entirely from agricultural land and lacks a native seedbank.

**\*Listing Status Notes:**

Federal: FE – Federally listed Endangered  
FT – Federally listed Threatened  
FC – Federal Candidate Species

State: CE – State Listed as Endangered  
SE – State listed Endangered  
ST – State listed Threatened  
SC – State Candidate Species  
SR – State Rare Species

CRPR: California Native Plant Society Rare Plant Rank

1A – Considered extirpated in CA

1B – Rare, threatened, or endangered in CA and elsewhere

2 – Rare, threatened, or endangered in CA but common elsewhere

4 – Limited distribution (Watch-list)

CRPR Extensions 0.1 – Seriously endangered in California

0.2 – Fairly endangered in California

0.3 – Not very endangered in California



## 4.1 Special-Status Species Descriptions

This section describes identifiable physical characteristics and habitat requirements for special-status species identified in the CNDDDB records search that were within 5 miles of the Project Area. It also discusses their potential to occur following the findings of the survey.

### Special-Status Wildlife Species

#### Birds

##### Burrowing owl (*A. cunicularia*)

The burrowing owl (*Athene cunicularia*) is federally protected by the Migratory Bird Treaty Act of 1918 in the United States, Canada and Mexico. They are considered by the U.S. Fish and Wildlife Service (USFWS) to be a Bird of Conservation Concern (BCC). These small owls are between 7.5 to 10 inches (19-25 cm) tall with a wingspan of 21 to 24 inches (53-61 cm). They weigh between 4.5 to 9 ounces (128 – 255 grams). Unlike most owls, burrowing owl males are slightly heavier than females and have a longer wingspan.

Burrowing owls typically breed from mid-March through August. If owls are nesting, the site must be avoided until the chicks have fledged or it has been determined the nest failed. Chicks may appear at the burrow entrance when they are about 10 days old. Usually nesting in abandoned ground squirrel burrows, the nest chamber might be lined with excrement, pellets, debris, grass, feathers; sometimes unlined. General habitat includes open dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation.

The Project Area has approximately 76 acres of fallow millet-rice fields and unpaved dirt roads with small mammal burrows which is suitable habitat for this species. The closest and nearest occurrence of burrowing owl is 0.25 miles west, across Morrison Street at the KCOK Phase 9 housing development. During this sighting, a pair of burrowing owls was observed outside a small mammal burrow with whitewash and feathers at the mouth of the burrow. The observation was part of the Habitat Assessment conducted in March 2022 for the KCOK housing development. A follow-up survey in May 2023 noted the burrow collapsed and no burrowing owl was observed.

##### Swainson's hawk (*B. swainsoni*)

Swainson's hawk is listed as Threatened on the State level and is a listed species under the Migratory Bird Treaty Act. However, due to its common distribution throughout the country, it is not listed at the Federal level. This species favors open habitat for foraging such as agricultural fields, pastures, and row crops. They nest in scattered stands of eucalyptus, willow, oak, cottonwood, and conifers. On occasion, Swainson's hawk will nest on a power pole or transmission tower. The location of Swainson's hawk nests is typically on the tallest point in or near an open field, giving this species a full view of its foraging area while nesting.

Due to their late return to California for the breeding season, Swainson's hawk often uses the same

nests for serval breeding seasons and even generations. If a nest is constructed, it is often constructed with loose bundles of sticks and debris quickly stacked together. They are also territorial of their nests and will dive bomb any other species attempting to use their nest. Red-tailed hawk and great horned owls, which overlap in habitat, are species known to use Swainson's hawk nests. The incubation period for Swainson's hawk is approximately 35 days, and the nesting period is 17 to 22 days. The breeding season for this species begins in March and ends in September.

The Project Area is primarily active agricultural land with some potential nesting in the bird box on the electrical poles and foraging habitat in the fallow agricultural fields. The closest and nearest known occurrence of Swainson's Hawk was over 5 miles from the Project Area. A Swainson's hawk and nesting bird survey should be conducted in all of the bird boxes on and near the Project Area prior to ground disturbing activity and removal of poles in the Project Area.

## Mammals

### San Joaquin kit fox (*V. macrotis mutica*)

The San Joaquin kit fox is listed as Threatened at the Federal level and Endangered at the State level. They are petite, light-colored canids, approximately 20 inches in length, with bushy, black-tipped tails, large ears, and pointed snouts.

The San Joaquin kit fox is a desert-adapted species occurring predominantly in arid, flat grasslands, scrublands, and alkali meadows where vegetation structure is relatively short. This species uses dens year-round and needs loose-textured soils suitable for burrowing. They primarily prey on kangaroo rats and other small rodents, and occasionally on large insects and rabbits. A typical kit fox den is anywhere from four to 10 inches in diameter. The shape of the opening to the den is taller than it is wide, often described as a "keyhole" shape. Dens usually have dirt berms and matted vegetation adjacent to the entrances, with tracks and prey remains nearby. They may also utilize man-made structures such as pipes and culverts as dens.

There were no signs of San Joaquin kit fox den sites or activity at the time of the Habitat Assessment. Suitable habitat for this species is medium within the Project Area. A search of CNDDDB records indicates the nearest occurrence of kit fox is 1.07 miles southeast from the Project Area. One other observation of San Joaquin kit fox was recorded 4.07 miles of the Project Area, but all San Joaquin kit fox sightings was between 1972 and 1975. Due to urbanization of the surrounding area, lack of suitable habitat in the form of natural grassland habitat, and distance of other known occurrences from the site, occurrence of San Joaquin kit fox within the vicinity of the Project Area is high, but the proposed Project is unlikely to adversely affect any population of this species.

### Western mastiff bat (*E. perotis californicus*)

Western mastiff bat is a State listed Species of Special Concern. This species has a brown fur body length of 14 to 19 centimeters (5.5 to 7.5 inches), a wingspan of over 56 centimeters (22 inches), and body mass range from 60 to 70 grams (2.1 to 2.5 ounces). Western mastiff bat is the largest native bat in the United States. Thus such morphology allows for rapid, sustained flight but limits maneuverability. This manner of flight is adaptive to flying in open habitats.

Western mastiff bat catches and feeds on insects while in flight. The insects consumed are typically relatively small, low-flying and weak-flying forms. Over rugged terrain western mastiff bats naturally forage at much greater heights of 60 meters (195 feet) above the ground. Crevices in cliff faces, high buildings, trees, and tunnels are required for roosting. When roosting in rock crevices, this species needs vertical faces to drop off to take flight.

Western mastiff bat has yearlong nocturnal activity. They generally go into daily torpor from December through February but usually resumes activity each night to feed, except when temperatures drop below 5°C (41°F). Nocturnal foraging range may exceed 24 kilometers (15 miles) from roost sites. Western mastiff bat rarely uses night roost and has an exceptionally long foraging period, up to 6-7 hours per night. Their echolocationary squeaks can be heard from up to 300 meters (980 feet) away. They are non-migratory with no known home range and no known territory. They are known to roost along or in small colonies with fewer than 100 bats, and commonly shares roost with other large bats such as *Eptesicus fuscus*, *Antrozous pallidus*, and *Tadarida brasiliensis*.

Western mastiff bat can be found in many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, palm oases, chaparral, desert scrub, and urban. Roosts are often found in crevices in cliff faces, buildings, trees and tunnels. Their range includes the southeastern San Joaquin Valley and Coastal Ranges, from Monterey County southward through southern California, and from the coast eastward to the Colorado Desert. Suitable habitat for western mastiff bat consists of extensive open areas with abundant roost locations provided by crevices in rock outcrops and buildings. They need at least 3 meters (9.8 feet) of open space under roosting spot for takeoff.

Nursery roosts are tight rock crevices at least 90 centimeters (35 inches) deep and 5 centimeters (2 inches) wide, or crevices in buildings. The duration of pregnancy is between 80 to 90 days with mating beginning in early spring (March). The gestation period is unknown. Parturition occurs from early April through August or September, and varies more than any other bat species in the United States. One young is produced per female bat per year.

During the field survey, there were no signs of western mastiff bat observed within the Project Site. However, suitable habitat was present for western mastiff bat. The bird boxes on and around the Project Area have openings situated above the ground far enough for this species to takeoff. The openings to the bird box are large and not ideal, but the boxes are large enough to accommodate the bats for day or feeding roosts. A search of CNDDDB records indicates the nearest and most recent occurrence of western mastiff bat is 5 miles to the Project Site. During this occurrence, an individual bat was detected using acoustic diagnostic and night-vision surveys. The bat was observed along the northern bend of the Packwood Creek about 0.5 miles west of Mooney Boulevard in the City of Tulare.

## Reptiles

### Western pond turtle (*A. marmorata*)

The western pond turtle is listed as a Species of Special Concern on the State level. It is found throughout California west of the Pacific Crest, and along the Mojave River watershed, ranging from sea level to 4,500 feet. The western pond turtle's diet consists of plant material and invertebrates-- any life forms found near water sources. Mating typically occurs between April and May, but this species has

been observed relocating to find new food sources or found at breeding locations between March and June. This species requires basking sites and suitable upland habitat for egg-laying.

The irrigation water pump pond lined in dirt with southern cattail provides suitable habitat for this species. The fallow field in combination with the dirt-lined irrigation water pump pond provides several basking sites. No CNDDDB data was available for this species.

### Special-Status Plant Species

There is no potential for special-status plant species to occur in the Project Area because no natural vegetation communities occur in the Project Area and the land has been active agricultural land for more than fifty years, including irrigated row crops, and the Project Area lacks any native seed bank.

## 4. Findings

During the Biological Assessment, Soar Environmental did not observe any of the referenced special-status species within the Project Area or environmental footprint. However, grading of the Project Area will result in removing small mammal burrows and some woodland and aquatic habitat. The findings for this report are summarized below.

### Critical Habitats

No critical habitats occur within the vicinity of the Project's environmental affect area, Project Area or project footprint.

### Project Impacts

The project will cause permanent impacts to active agricultural land in the Project Area. The Project Area contains a bird box, a fallow field of irrigated row crops and several unpaved dirt roads with numerous small mammal burrows. Potential wildlife resources the Project could impact would be aquatic species dependent on the proximity to land such as the western pond turtle, burrowing species such as burrowing owls, open foraging bird species such as Swainson's hawk, and terrestrial species such as San Joaquin kit fox, that may forage and disperse over the property with its ground squirrel burrows. Impacts would include reduction in nesting, foraging and dispersal habitat due to the removal and loss of open agricultural land with its resources such as unpaved dirt roads and the irrigation pump pond.

One agricultural ditch occurs on the property along the entire northern boundary. The irrigation pump pond associated with this ditch has water and vegetation which could provide basking areas for western pond turtle. The agricultural ditch connects and continues through the irrigation pump pond and connects to other waters offsite to the north and west. This agricultural ditch and the affiliated irrigation pump pond is not considered a jurisdictional feature under the Clean Water Act.



## 5. Conclusion

From the information gathered in the data records search and analysis of the habitat on site during the survey there is limited potential for native plant and wildlife habitat occupancy in the Project Area given that the majority of the property is active agricultural land. However, of the regionally occurring species, San Joaquin kit fox, burrowing owl, western pond turtle, western mastiff bat, and Swainson's hawk have the highest potential to occur or be impacted by development of the project.

## 6. Recommendations

The following mitigation measures are intended to reduce and minimize impacts under CEQA, the California Endangered Species Act, and the federal Endangered Species Act for effects on species and habitats. Implementation of the following mitigation measures would reduce project-related affects to covered species and other biological resources to less than significant.

## 7. Recommended Mitigation Measures

### Mitigation Measure 1: Swainson's Hawk Nesting Habitat

If construction, grading, or project-related improvements are to commence between March 1 and September 15, a focused survey for Swainson's hawk nests on the site and within ¼ mile of the site shall be conducted by a qualified biologist no later than 30 days prior to the start of construction work (including clearing and grubbing).

If active nests are found, the CDFW shall be contacted to determine appropriate protective measures, and these measures shall be implemented prior to the start of any ground-disturbing activities. If no active nests are found during the focused survey, no further mitigation will be required.

### Mitigation Measure 1a: Nesting Bird, Roosting Bat, Burrowing Owl Survey, San Joaquin kit fox den survey

If project-related activities are scheduled between February 1 to August 31 (the typical nesting season), a focused survey for nests shall be conducted by a Designated Biologist within fourteen (14) calendar days prior to the beginning of Project-related activities.

The Designated Biologist shall survey: a minimum radius of 500-feet for migratory birds around the Project Area, and for sign of roosting bats, active burrowing owl burrows or active San Joaquin kit fox dens. If no active nests, roosts, burrows or dens are found, project activities may proceed as scheduled.

### Mitigation Measure 1b: Active Nests or Roosts or Burrows or Dens

If an active nest, roost or burrow or den is located, then active nests, roosts or burrows or dens should be avoided, and a no-disturbance or destruction buffer shall be determined and established by a Designated Biologist. The buffer shall be kept in place until after the breeding nesting season or the Designated Biologist confirms the young have fledged, are foraging independently, and the nest or

burrow is no longer active for the season. The extent of these buffers shall be determined by the Designated Biologist and will depend on the species present, the level of noise or construction disturbance, line of sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers.

If an occupied burrowing owl burrow is located the Biologist will consult with CDFW to install one-way doors over the burrow for an individual or an appropriate buffer distance for a nesting pair.

If an active San Joaquin kit fox den is located, then consultation with the USFWS would be required in order to document this federally listed species presence in the Project Area.

#### **Mitigation Measure 1c: Project Delay**

If a lapse in project-related work of thirty (30) calendar days or longer occurs, the Designated Biologist shall complete another focused survey before Project work can be reinitiated.

## **8. Study Limitations**

This Report has been prepared in accordance with generally accepted environmental methodologies and contains all the limitations inherent in these methodologies. The Report documents site conditions that were observed during field reconnaissance and do not apply to future conditions. No other warranties, expressed or implied, are made as to the professional services provided under the terms of our contract and included in this Report.

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## **APPENDIX A:**

### **Project Area Photographs**

Photo 1. Southwest facing photo of above ground water pump on Tulare Colony Ditch.

BRG: 247°SW (T) POS: 11 N 293614 4011254 ±13ft ALT: 304ft



Photo 2. Southwest facing photo of above ground water pump area.

BRG: 225°SW (T) POS: 11 N 293621 4011278 ±13ft ALT: 301ft



**Photo 3. Southwest facing photo of bird box on an abandoned pole**  
**BRG: 245°SW (T) POS: 11 N 293529 4010823 ±26ft ALT: 308ft**



**Photo 4. West facing photo close up of bird box referenced in Photo 3**  
**BRG: 221°SW (T) POS: 11 N 293503 4010860 ±150ft ALT: 304ft**





Photo 5. West facing photo of bird box on pole



Photo 6. West facing photo close up of bird box referenced in Photo 5



**Photo 7. West facing photo of bird box on pole near above ground water pump**

**BRG: 278°W (T) POS: 11 N 293626 4011210 ±9ft ALT: 309ft**



**Photo 8. North facing photo of bird box referenced in Photo 6**

**BRG: 19°N (T) POS: 11 N 293620 4011205 ±13ft ALT: 304ft**





Photo 9. Southeast facing photo of greenhouse on west boundary of Project Area



Photo 10. East facing photo of a small mammal burrow on unpaved dirt roads in the Project Area





Photo 11. South facing photo of a mall mammal burrow on unpaved dirt roads in the Project Area



Photo 12. West facing photo of a mall mammal burrow on unpaved dirt roads in the Project Area





**Photo 13. Unknown animal digging under fence line near the south boundary of the Project Area**

**BRG: 181°S (T) POS: 11 N 293548 4010447 ±193ft ALT: 304ft**



**Photo 14. Northeast facing photo of European sterling using the bird box on the adjacent property**

**BRG: 46°NE (T) POS: 11 N 293607 4010778 ±13ft ALT: 287ft**





Photo 15. North facing photo of Project Area from center

BRG: 5°N (T) POS: 11 N 293551 4011145 ±13ft ALT: 303ft



Photo 16. East facing photo of Project Area from center

BRG: 90°E (T) POS: 11 N 293546 4010865 ±13ft ALT: 304ft





**Photo 17. South facing photo of Project Area from center**  
**BRG: 180°S (T) POS: 11 N 293546 4010865 ±13ft ALT: 305ft**



**Photo 18. West facing photo of Project Area from center**  
**BRG: 280°W (T) POS: 11 N 293545 4010864 ±13ft ALT: 303ft**





**Photo 19. Southwest facing photo of cultivated trees on adjacent property on the southeast boundary of the Project Area**



**Photo 20. Southwest facing photo of potted blueberries in the south section of the Project Area**





Photo 21. West facing photo of the north boundary of Project Area; Prosperity Avenue (right)  
BRG: 268°W (T) POS: 11 N 293167 4011465 ±13ft ALT: 310ft



Photo 22. West facing photo of fallow field

BRG: 267°W (T) POS: 11 N 293301 4011207 ±13ft ALT: 302ft





Photo 23. South facing photo of field workers attending to potted blueberries

BRG: 181°S (T) POS: 11 N 293148 4011244 ±9ft ALT: 298ft



12 Dec 2023, 8:15:43 AM PST

Photo 24. North facing photo of water pump on the Tulare Colony Ditch in the middle of the Project Area

BRG: 355°N (T) POS: 11 N 293571 4011208 ±13ft ALT: 305ft



Water pump for Tulare Colony Ditch

Oakmore Rd & Prosperity Ave  
12 Dec 2023, 7:03:22 AM PST

## **APPENDIX B:**

### **U.S. Fish & Wildlife Service IPaC Resource List**

12/11/23, 7:49 AM

IPaC: Explore Location resources

IPaC

U.S. Fish & Wildlife Service

## IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

### Location

Tulare County, California



### Local office

Sacramento Fish And Wildlife Office

☎ (916) 414-6600

📠 (916) 414-6713

<https://ipac.ecosphere.fws.gov/location/N4E3BQ3FJJF25J3WVR6XVFJN24/resources>

1/15





Corporate Headquarters  
1322 E. Shaw Avenue, Suite 400 Fresno, CA, 93710  
www.soarhere.com • 559.547.8884

12/11/23, 7:49 AM

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Federal Building  
2800 Cottage Way, Room W-2605  
Sacramento, CA 95825-1846

NOT FOR CONSULTATION

<https://ipac.ecosphere.fws.gov/location/N4E3BQ3FJJF25J3WVR6XVFJN24/resources>

2/15



12/11/23, 7:49 AM

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## Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act requires Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can only be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species<sup>1</sup> and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries<sup>2</sup>).

Species and critical habitats under the sole responsibility of NOAA Fisheries are not shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

<https://ipac.ecosphere.fws.gov/location/N4E3BQ3FJJF25J3WVR6XVFJN24/resources>

3/15

12/11/23, 7:49 AM

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2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

## Mammals

NAME	STATUS
Buena Vista Lake Ornate Shrew <i>Sorex ornatus relictus</i> Wherever found There is final critical habitat for this species. Your location does not overlap the critical habitat. <a href="https://ecos.fws.gov/ecp/species/1610">https://ecos.fws.gov/ecp/species/1610</a>	Endangered
San Joaquin Kit Fox <i>Vulpes macrotis mutica</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/2873">https://ecos.fws.gov/ecp/species/2873</a>	Endangered
Tipton Kangaroo Rat <i>Dipodomys nitratoides nitratoides</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/7247">https://ecos.fws.gov/ecp/species/7247</a>	Endangered

## Reptiles

NAME	STATUS
Blunt-nosed Leopard Lizard <i>Gambelia silus</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/625">https://ecos.fws.gov/ecp/species/625</a>	Endangered
Northwestern Pond Turtle <i>Actinemys marmorata</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/1111">https://ecos.fws.gov/ecp/species/1111</a>	Proposed Threatened

## Amphibians

NAME	STATUS
------	--------



12/11/23, 7:49 AM

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California Tiger Salamander *Ambystoma californiense* Threatened  
There is final critical habitat for this species. Your location does not overlap the critical habitat.  
<https://ecos.fws.gov/ecp/species/2076>

## Insects

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a>	Candidate

## Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp <i>Branchinecta lynchi</i> Wherever found There is final critical habitat for this species. Your location does not overlap the critical habitat. <a href="https://ecos.fws.gov/ecp/species/498">https://ecos.fws.gov/ecp/species/498</a>	Threatened

## Flowering Plants

NAME	STATUS
San Joaquin Adobe Sunburst <i>Pseudobahia peirsonii</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/2931">https://ecos.fws.gov/ecp/species/2931</a>	Threatened

## Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

<https://ipac.ecosphere.fws.gov/location/N4E3BQ3FJJF25J3WVR6XVFJN24/resources>

5/15

12/11/23, 7:49 AM

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## Bald & Golden Eagles

There are no documented cases of eagles being present at this location. However, if you believe eagles may be using your site, please reach out to the local Fish and Wildlife Service office.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds  
<https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide conservation measures for birds  
<https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC  
<https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply). To see a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

<https://ipac.ecosphere.fws.gov/location/N4E3BQ3FJJF25J3WVR6XVFJN24/resources>

8/15



12/11/23, 7:49 AM

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What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the [Eagle Act](#) should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

## Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats<sup>3</sup> should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "[Supplemental Information on Migratory Birds and Eagles](#)".

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds  
<https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC  
<https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird

12/11/23, 7:49 AM

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species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Belding's Savannah Sparrow <i>Passerculus sandwichensis beldingi</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <a href="https://ecos.fws.gov/ecp/species/8">https://ecos.fws.gov/ecp/species/8</a>	Breeds Apr 1 to Aug 15
Bullock's Oriole <i>Icterus bullockii</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 21 to Jul 25
California Gull <i>Larus californicus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 1 to Jul 31
Lawrence's Goldfinch <i>Carduelis lawrencei</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9464">https://ecos.fws.gov/ecp/species/9464</a>	Breeds Mar 20 to Sep 20
Marbled Godwit <i>Limosa fedoa</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9481">https://ecos.fws.gov/ecp/species/9481</a>	Breeds elsewhere
Nuttall's Woodpecker <i>Picoides nuttallii</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <a href="https://ecos.fws.gov/ecp/species/9410">https://ecos.fws.gov/ecp/species/9410</a>	Breeds Apr 1 to Jul 20

<https://ipac.ecosphere.fws.gov/location/N4E3BQ3FJJF25J3WVR6XVFJN24/resources>

8/15



12/11/23, 7:49 AM

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Oak Titmouse *Baeolophus inornatus*

Breeds Mar 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9656>

## Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "[Supplemental Information on Migratory Birds and Eagles](#)", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is  $0.25/0.25 = 1$ ; at week 20 it is  $0.05/0.25 = 0.2$ .
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

### Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

<https://ipac.ecosphere.fws.gov/location/N4E3BQ3FJJF25J3WVR6XVFJN24/resources>

9/15

12/11/23, 7:49 AM

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### Survey Effort (!)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

### No Data (-)

A week is marked as having no data if there were no survey events for that week.

### Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



<https://ipac.ecosphere.fws.gov/location/N4E3BQ3FJJF25J3WVR6XVFJN24/resources>

10/15



12/11/23, 7:49 AM

IPaC: Explore Location resources

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the [RAIL Tool](#) and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

<https://ipac.ecosphere.fws.gov/location/N4E3BQ3FJJF25J3WVR6XVFJN24/resources>

11/15



12/11/23, 7:49 AM

IPaC: Explore Location resources

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar

<https://ipac.ecosphere.fws.gov/location/N4E3BQ3FJF25J3WVR6XVFJN24/resources>

12/15

12/11/23, 7:49 AM

IPaC: Explore Location resources

means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

## Facilities

### National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

### Fish hatcheries

There are no fish hatcheries at this location.

## Wetlands in the National Wetlands Inventory (NWI)

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

<https://ipac.ecosphere.fws.gov/location/N4E3BQ3FJJF25J3WVR6XVFJN24/resources>

13/15



12/11/23, 7:49 AM

1PaC: Explore Location resources

This location overlaps the following wetlands:

**RIVERINE**[R4SBCx](#)[R5UBFx](#)

A full description for each wetland code can be found at the [National Wetlands Inventory Website](#)

NOTE: This initial screening does not replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

**Data limitations**

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

**Data exclusions**

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercled worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

**Data precautions**

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies

<https://ipac.ecosphere.fws.gov/location/N4E3BQ3FJJF25J3WVR6XVFJN24/resources>

14/15

12/11/23, 7:49 AM

IPaC: Explore Location resources

concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

<https://ipac.ecosphere.fws.gov/location/N4E3BQ3FJJF25J3WVR6XVFJN24/resources>

15/15

## **APPENDIX C:**

### **California Department of Fish and Wildlife RareFind**



Selected Elements by Common Name  
California Department of Fish and Wildlife  
California Natural Diversity Database



Query Criteria: Quad<span style="color:Red"> IS </span>(Cairns Corner (3611922)<span style="color:Red"> OR </span>Visalia (3611933)<span style="color:Red"> OR </span>Tulare (3611923)<span style="color:Red"> OR </span>Exeter (3611932)<span style="color:Red"> OR </span>Tipton (3611913)<span style="color:Red"> OR </span>Woodville (3611912)<span style="color:Red"> OR </span>Paige (3611924)<span style="color:Red"> OR </span>Goshen (3611934)<span style="color:Red"> OR </span>Taylor Weir (3611914))<br /><span style="color:Red"> AND </span><span>County<span style="color:Red"> IS </span>(Tulare)<br /><span style="color:Red"> AND </span><span>Elevation<span style="color:Red"> IS </span><span>greater than<span style="color:Red"> OR </span><span>equal to "290"<br /><span style="color:Red"> AND </span><span>Elevation<span style="color:Red"> IS </span><span>less than<span style="color:Red"> OR </span><span>equal to "310"

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
alkali-sink goldfields <i>Lasthenia chrysantha</i>	PDAST5L030	None	None	G2	S2	1B.1
American bumble bee <i>Bombus pensylvanicus</i>	IIHYM24260	None	None	G3G4	S2	
California alkali grass <i>Puccinellia simplex</i>	PMPOA53110	None	None	G2	S2	1B.2
California satintail <i>Imperata brevifolia</i>	PMPDA3D020	None	None	G3	S3	2B.1
Earlhart orache <i>Atriplex cordulata</i> var. <i>erecticaulis</i>	PDGHE042V0	None	None	G3T1	S1	1B.2
lesser saltscall <i>Atriplex minuscule</i>	PDGHE042M0	None	None	G2	S2	1B.1
recurved larkspur <i>Delphinium recurvatum</i>	PDRAN0B1J0	None	None	G2?	S2?	1B.2
San Joaquin kit fox <i>Vulpes macrotis mutica</i>	AMAJA03041	Endangered	Threatened	G4T2	S3	
subtle orache <i>Atriplex subtilis</i>	PDGHE042T0	None	None	G1	S1	1B.2
Swainson's hawk <i>Buteo swainsoni</i>	ABNKC19070	None	Threatened	G5	S4	
vernal pool fairy shrimp <i>Branchinecta lynchi</i>	ICBRA03030	Threatened	None	G3	S3	
western mastiff bat <i>Eumops perotis californicus</i>	AMACD00211	None	None	G4G5T4	S3S4	SSC
western spadefoot <i>Spea hammondi</i>	AAABF02020	None	None	G2G3	S3S4	SSC

Record Count: 13



**APPENDIX D:**  
**California Native Plant Society Rare Plant Inventory**



12/11/23, 10:35 AM

CNPS Rare Plant Inventory | Search Results






## CNPS Rare Plant Inventory



### Search Results



13 matches found. Click on scientific name for details

Search Criteria: 9-Quad include [3611922:3611933:3611923:3611932:3611913:3611912:3611924:3611934:3611914], 290 feet between Plant low elevation and high elevation, 310 feet between Plant low elevation and high elevation

SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	CA ENDEMIC	DATE ADDED	PHOTO
<a href="#">Atriplex cordulata var. cordulata</a>	heartscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G3T2	S2	18.2	Yes	1988-01-01	 © 1994 Robert E. Preston, Ph.D.
<a href="#">Atriplex cordulata var. erecticaulis</a>	Earlilmart orache	Chenopodiaceae	annual herb	Aug-Sep(Nov)	None	None	G3T1	S1	18.2	Yes	2001-01-01	 © 2009 Robert E. Preston, Ph.D.
<a href="#">Atriplex depressa</a>	brittscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G2	S2	18.2	Yes	1994-01-01	 © 2009 Zoya Akulova
<a href="#">Atriplex minuscula</a>	lesser saltscale	Chenopodiaceae	annual herb	May-Oct	None	None	G2	S2	18.1	Yes	1994-01-01	 © 2000 Robert E. Preston, Ph.D.
<a href="#">Atriplex subtrilis</a>	subtle orache	Chenopodiaceae	annual herb	(Apr)Jun-Sep(Oct)	None	None	G1	S1	18.2	Yes	1994-01-01	 © 2000 Robert E. Preston, Ph.D.
<a href="#">Caulanthus californicus</a>	California jewelflower	Brassicaceae	annual herb	Feb-May	FE	CE	G1	S1	18.1	Yes	1984-01-01	No Photo Available

https://rareplants.cnps.org/Search/result?fm=T&qi=9&quad=3611922:3611933:3611923:3611932:3611913:3611912:3611924:3611934:3611914.&elev=290:310:fo

1/2

12/11/23, 10:35 AM		CNPS Rare Plant Inventory   Search Results										
<a href="#"><i>Delphinium hansenii</i> ssp. ewanianum</a>	Ewan's larkspur	Ranunculaceae	perennial herb	Mar-May	None	None	G4T3	S3	4.2	Yes	1994-01-01	No Photo Available
<a href="#"><i>Delphinium recurvatum</i></a>	recurved larkspur	Ranunculaceae	perennial herb	Mar-Jun	None	None	G2?	S2?	18.2	Yes	1988-01-01	No Photo Available
<a href="#"><i>Eryngium spinosepalum</i></a>	spiny-sepaled button-celery	Apiaceae	annual/perennial herb	Apr-Jun	None	None	G2	S2	18.2	Yes	1980-01-01	No Photo Available
<a href="#"><i>Imperata brevifolia</i></a>	California satintail	Poaceae	perennial rhizomatous herb	Sep-May	None	None	G3	S3	28.1		2006-12-26	 © 2020 Matt C. Berger
<a href="#"><i>Lasthenia chrysantha</i></a>	alkali-sink goldfields	Asteraceae	annual herb	Feb-Apr	None	None	G2	S2	18.1	Yes	2019-09-30	 © 2009 California State University, Stanislaus
<a href="#"><i>Pseudobahia peirsonii</i></a>	San Joaquin adobe sunburst	Asteraceae	annual herb	Feb-Apr	FT	CE	G1	S1	18.1	Yes	1974-01-01	No Photo Available
<a href="#"><i>Puccinellia simplex</i></a>	California alkali grass	Poaceae	annual herb	Mar-May	None	None	G2	S2	18.2		2015-10-15	No Photo Available

Showing 1 to 13 of 13 entries

**Suggested Citation:**

California Native Plant Society, Rare Plant Program. 2023. Rare Plant Inventory (online edition, v9.5). Website <https://www.rareplants.cnps.org> [accessed 11 December 2023].

## **APPENDIX E:**

### **USDA-NRCS Soil Report**





A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

## Custom Soil Resource Report for Tulare County, Western Part, California

Lagomarsino Housing  
Development



December 11, 2023

## Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2\\_053951](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951)).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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## Contents

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Preface.....	2
How Soil Surveys Are Made.....	5
Soil Map.....	8
Soil Map.....	9
Legend.....	10
Map Unit Legend.....	11
Map Unit Descriptions.....	11
Tulare County, Western Part, California.....	13
124—Hanford sandy loam, 0 to 2 percent slopes.....	13
130—Nord fine sandy loam, 0 to 2 percent slopes.....	14
References.....	17

## How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil



#### Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

Custom Soil Resource Report

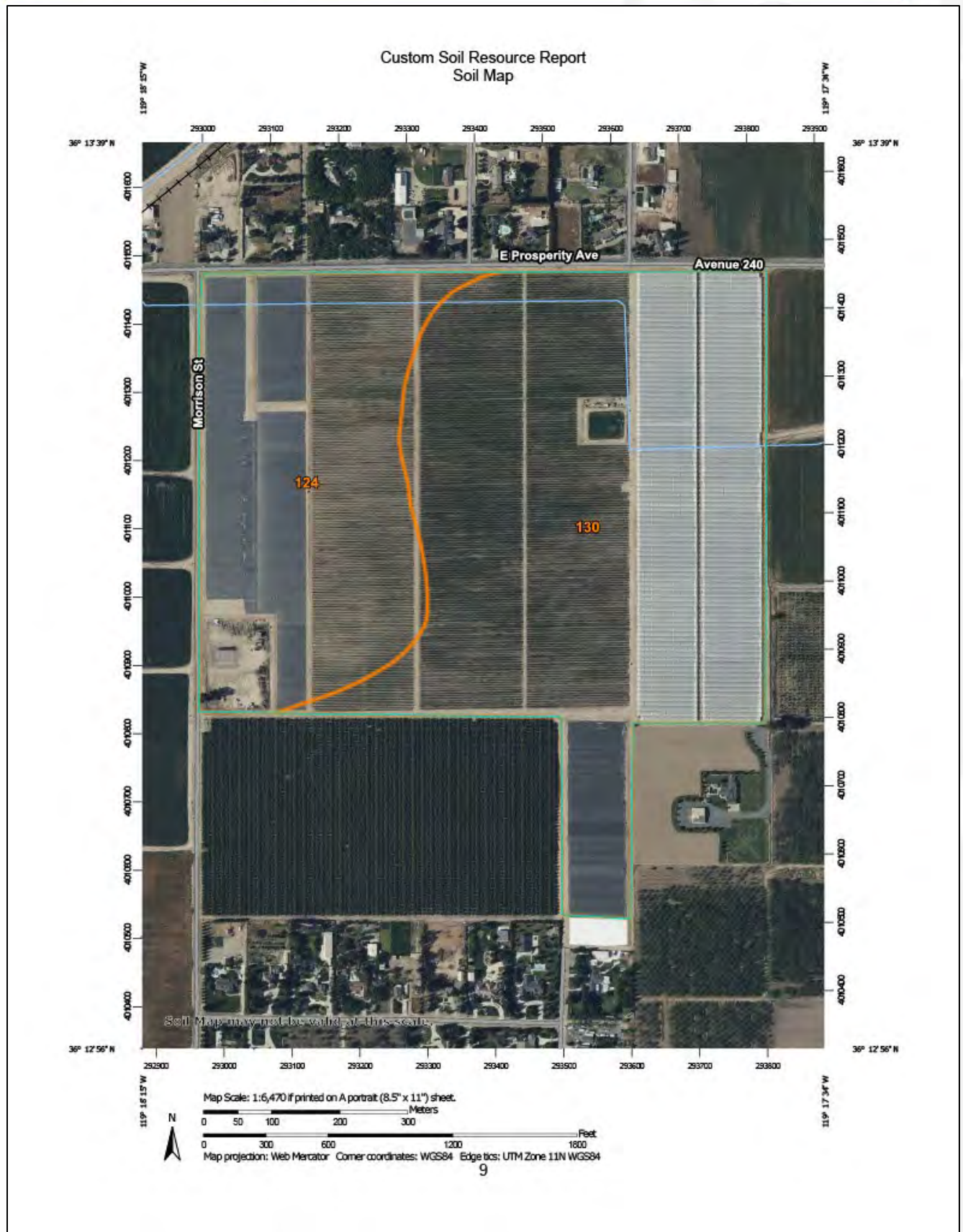
identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

## Soil Map

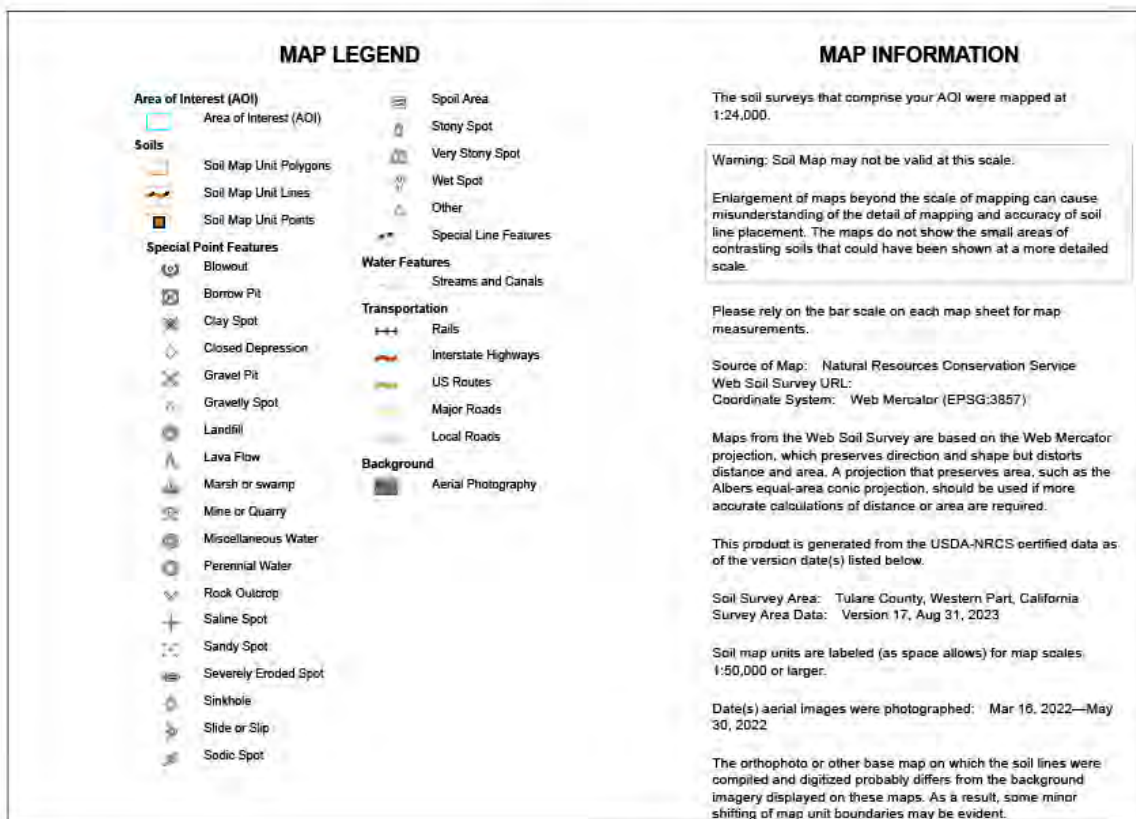
---

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.





Custom Soil Resource Report





## Custom Soil Resource Report

### Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
124	Hanford sandy loam, 0 to 2 percent slopes	49.4	34.7%
130	Nord fine sandy loam, 0 to 2 percent slopes	92.8	65.3%
<b>Totals for Area of Interest</b>		<b>142.2</b>	<b>100.0%</b>

### Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

#### Custom Soil Resource Report

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

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**Tulare County, Western Part, California**

**124—Hanford sandy loam, 0 to 2 percent slopes**

**Map Unit Setting**

*National map unit symbol:* hp4v  
*Elevation:* 220 to 490 feet  
*Mean annual precipitation:* 9 to 12 inches  
*Mean annual air temperature:* 63 to 64 degrees F  
*Frost-free period:* 250 to 280 days  
*Farmland classification:* Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season

**Map Unit Composition**

*Hanford and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Hanford**

**Setting**

*Landform:* Alluvial fans, flood plains  
*Landform position (two-dimensional):* Footslope, toeslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium derived from granitic rock sources

**Typical profile**

*Ap - 0 to 6 inches:* sandy loam  
*C1 - 6 to 30 inches:* fine sandy loam  
*C2 - 30 to 60 inches:* sandy loam

**Properties and qualities**

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Negligible  
*Capacity of the most limiting layer to transmit water (Ksat):* High (2.00 to 6.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* Very rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 2 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 7.0  
*Available water supply, 0 to 60 inches:* Moderate (about 6.6 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 1  
*Land capability classification (nonirrigated):* 3c  
*Hydrologic Soil Group:* A  
*Ecological site:* R017XY906CA - Non-Alkali San Joaquin Valley Desert  
*Hydric soil rating:* No



Custom Soil Resource Report

**Minor Components**

**Tujunga**

*Percent of map unit: 5 percent*  
*Landform: Flood plains*  
*Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans*  
*Hydric soil rating: No*

**Exeter**

*Percent of map unit: 5 percent*  
*Landform: Fan remnants*  
*Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans*  
*Hydric soil rating: No*

**Calgro**

*Percent of map unit: 3 percent*  
*Landform: Fan remnants*  
*Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans*  
*Hydric soil rating: No*

**Yetter**

*Percent of map unit: 2 percent*  
*Landform: Alluvial fans, flood plains*  
*Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans*  
*Hydric soil rating: No*

**130—Nord fine sandy loam, 0 to 2 percent slopes**

**Map Unit Setting**

*National map unit symbol: hp51*  
*Elevation: 190 to 520 feet*  
*Mean annual precipitation: 8 to 12 inches*  
*Mean annual air temperature: 61 to 64 degrees F*  
*Frost-free period: 250 to 275 days*  
*Farmland classification: Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season*

**Map Unit Composition**

*Nord and similar soils: 85 percent*  
*Minor components: 15 percent*  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Nord**

**Setting**

*Landform: Alluvial fans, flood plains*  
*Landform position (two-dimensional): Footslope, toeslope*  
*Landform position (three-dimensional): Base slope*  
*Down-slope shape: Linear*  
*Across-slope shape: Convex, linear*

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*Parent material:* Alluvium derived from mixed

**Typical profile**

*Ap - 0 to 11 inches:* fine sandy loam  
*C1 - 11 to 38 inches:* stratified sandy loam to loam  
*C2 - 38 to 50 inches:* stratified loamy coarse sand to coarse sandy loam  
*2Btb - 50 to 72 inches:* stratified sandy loam to silt loam

**Properties and qualities**

*Slope:* 0 to 1 percent  
*Depth to restrictive feature:* More than 80 inches; More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Negligible  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high  
(0.60 to 2.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* Very rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 4 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 10.0  
*Available water supply, 0 to 60 inches:* Low (about 4.9 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 1  
*Land capability classification (nonirrigated):* 4c  
*Hydrologic Soil Group:* B  
*Ecological site:* R017XY906CA - Non-Alkali San Joaquin Valley Desert  
*Hydric soil rating:* No

**Minor Components**

**Hanford**

*Percent of map unit:* 3 percent  
*Landform:* Alluvial fans, flood plains  
*Ecological site:* R017XY904CA - Subirrigated Deep Alluvial Fans  
*Hydric soil rating:* No

**Tujunga**

*Percent of map unit:* 3 percent  
*Landform:* Flood plains  
*Ecological site:* R017XY904CA - Subirrigated Deep Alluvial Fans  
*Hydric soil rating:* No

**Grangeville, saline-sodic**

*Percent of map unit:* 3 percent  
*Landform:* Alluvial fans, flood plains  
*Ecological site:* R017XY904CA - Subirrigated Deep Alluvial Fans  
*Hydric soil rating:* Yes

**Akers**

*Percent of map unit:* 2 percent  
*Landform:* Fan remnants  
*Ecological site:* R017XY904CA - Subirrigated Deep Alluvial Fans  
*Hydric soil rating:* No

**Colpien**

*Percent of map unit:* 2 percent

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*Landform:* Fan remnants  
*Ecological site:* R017XY904CA - Subirrigated Deep Alluvial Fans  
*Hydric soil rating:* No

**Tagus**

*Percent of map unit:* 2 percent  
*Landform:* Fan remnants  
*Ecological site:* R017XY904CA - Subirrigated Deep Alluvial Fans  
*Hydric soil rating:* No

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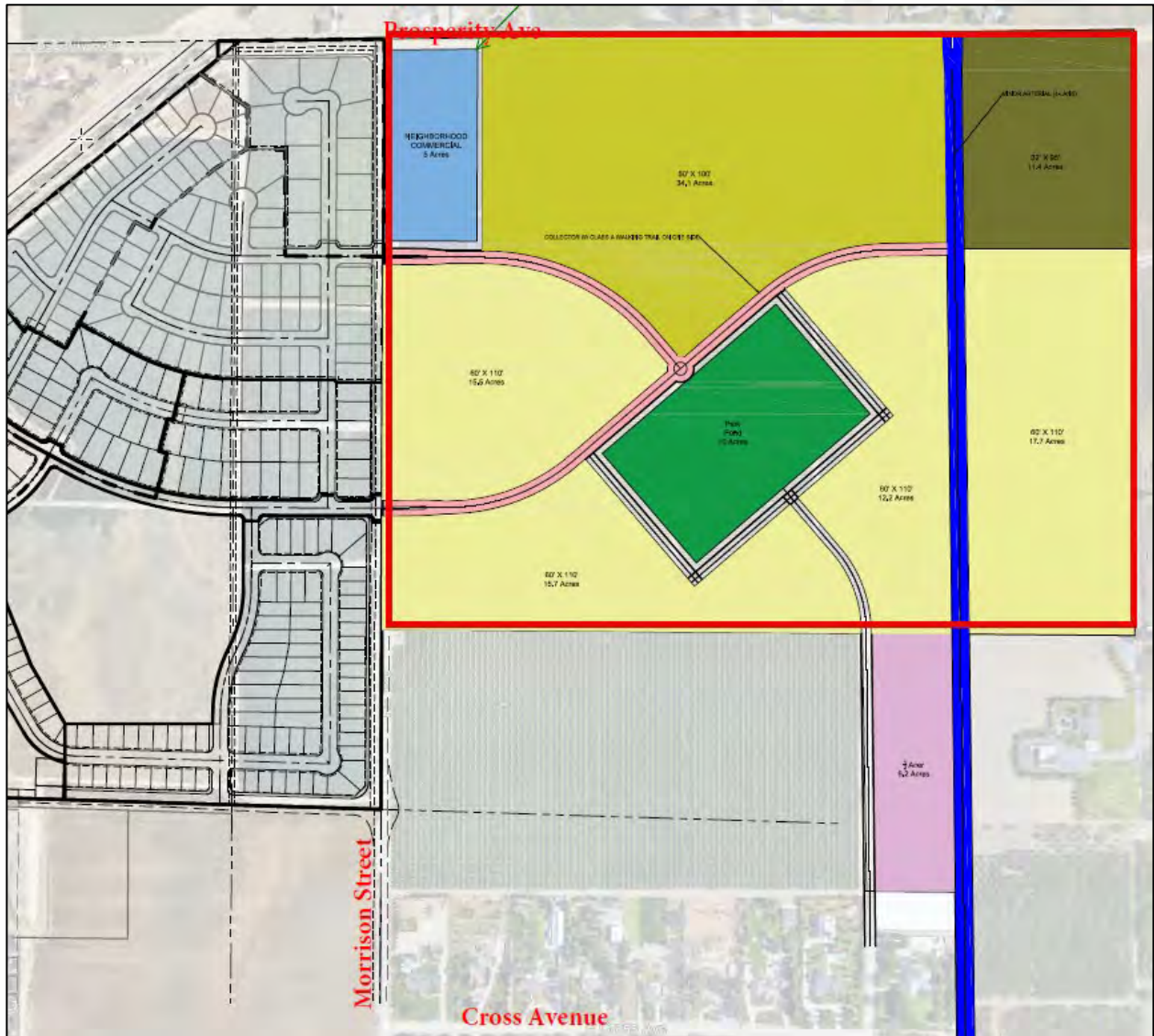
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## APPENDIX F:

## Site Plan



## Appendix C

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### Cultural Resource Assessment



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**Phase I Cultural Resources Assessment  
Lagomarsino Housing Subdivision Project, Tulare, CA 93274  
Assessor Parcel Numbers  
172-080-002, 172-010-021, 172-010-022, and 184-020-010  
Tulare, County, California**

*Prepared for*



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**Heather Froshour, M.A., R.P.A., Senior Archaeologist**

**February 2, 2024**





## **EXECUTIVE SUMMARY**

Soar Environmental Consulting, Inc. (Soar Environmental) has been retained by 4Creeks, Inc. (4Creeks) to prepare a Phase 1 Cultural Resources Assessment (Phase 1 CRA) as part of an Initial Study, for a Housing Subdivision Development Project (Project) in the city of Tulare (City), in accordance with the California Environmental Quality Act (CEQA) prior to implementation of the proposed Project. The proposed project is to construct 525 single family housing units on 140.32-acres on Assessor Parcel Numbers (APNs) 172-080-002, 172-010-021, 172-010-022 and 184-020-010. The purpose of the CRA is to provide an inventory of the known and potentially significant cultural resources within the Project area through a California Historical Records Information search (CHRIS) using the Southern San Joaquin Valley Information Center (SSJVIC), as well as a Sacred Lands File & Native American Contacts List Request through the Native American Heritage Commission (NAHC).

The results of the records search indicate two (2) cultural resources recorded within 0.50-mile of the Project area. The records searches indicate no recorded resources within the Project area. The pedestrian survey identified no existing resources within the Project area. No site testing or mitigation measures are required, unless previously undiscovered cultural resources are detected during construction.

## Contents

EXECUTIVE SUMMARY.....	ii
1.0 INTRODUCTION.....	3
1.1 Project Description.....	4
1.2 Existing Conditions.....	4
2.0 REGULATORY SETTING.....	5
2.1 Federal.....	5
2.2 State of California.....	5
2.3 Local.....	8
3.0 SETTING.....	13
3.1 Environmental Setting.....	13
3.2 Cultural Setting.....	13
3.2.1 Prehistoric Setting.....	14
3.2.2 Ethnographic Setting.....	15
3.2.3 Historic Setting.....	16
4.0 ARCHIVAL RECORDS SEARCH.....	17
4.1 Southern San Joaquin Valley Information Center Records Search.....	17
4.2 Sacred Lands File & Native American Contacts List Request.....	19
4.3 Historic Aerial Image Review.....	19
5.0 PREVIOUS DISTURBANCES IN THE PROJECT AREA.....	20
6.0 FIELD SURVEY METHODS AND RESULTS.....	20
7.0 RECOMMENDED ACTIONS AND MITIGATION MEASURES.....	22
8.0 REFERENCES CITED.....	23

## FIGURES

Figure 1— Project Location, adapted from USGA 7.5’ series Tulare, California, 2021.....	29
Figure 2— Project Vicinity Map.....	30
Figure 3— Assessor Parcel Map.....	31
Figure 4— Soil Types Occurring in the Project area.....	32
Figure 5— Lagomarsino Property Land Use Exhibit Map.....	33
Figure 6— Overview from north northeast corner of Project area, facing southeast.....	34
Figure 7— Overview from northeast corner of Project area, facing southwest.....	35
Figure 8— Overview from northwest corner of parcel 172-010-022, facing southeast.....	36
Figure 9— Overview from north end of Oakmore Rd, facing south.....	37
Figure 10— Overview from southeast corner showing blueberry pots, facing north.....	38
Figure 11— Overview from southeast corner of Project area, facing northwest.....	39
Figure 12— Overview from southwest corner of Project area, facing northeast.....	40
Figure 13— Overview from south edge of fenced pump station stockpond, facing east.....	41
Figure 14— Overview from southwest corner of Project area, facing northeast.....	42
Figure 15— Overview from west edge of Project area, facing east.....	43
Figure 16— Overview from center of Project area, facing north.....	44
Figure 17— Overview from center of Project area, facing west.....	45
Figure 18— Overview from center of Project area, facing east.....	46



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## **TABLES**

Table 1: Survey Reports within the Project area.....	18
Table 2: Survey Reports within 0.5 Mile of the Project area.....	18
Table 3: Resources within 0.5 Mile of Project area.....	19

## **APENDICIES**

Appendix A: Records Search from Southern San Joaquin Valley Information Center.....	47
Appendix B: Sacred Lands File & Native American Contacts List Request.....	60
Appendix C: Staff Resumes.....	78

## 1.0 Introduction

This report details the results of a Phase 1 Cultural Resources Assessment in support of the proposed housing development on 140.32-acres in Tulare, California, on Assessor Parcel Numbers (APNs) 172-080-002, 172-010-021, 172-010-022 and 184-020-010 (Figures 1-5). This Phase 1 report is prepared pursuant to the California Environmental Quality Act (CEQA), PRC Sections 21082, 21083.2, and 21084.1, and California Code of Regulations 15064.5.

Heather Froshour completed the archival review, the Native American consultation, field survey, and prepared this Phase 1 report. Ms. Froshour is Soar Environmental's Senior Archaeologist who meets the professional standards of the U.S. Secretary of the Interior for archaeology (36 CFR 61) and is certified by the Register of Professional Archaeologists. Under direct supervision, Evan Studley, B.S., and Maria Hawley B.A., assisted Ms. Froshour in the Phase 1 pedestrian field survey.

Soar Environmental requested a records search from the Southern San Joaquin Valley Information Center (SSJVIC) for the Project area as well as a 0.50-mile buffer. The archival research for this Phase 1 report was negative for archaeological sites or historical resources within the Project area. The archival record search reported two (2) recorded resources within 0.5-mile radius of the Project area. The records search revealed two (2) previous cultural resources surveys had been conducted in the Project area. A total of four (4) additional cultural resource survey reports have been completed within a 0.50-mile radius of the Project area.

As part of the background research, Soar Environmental also requested a search of the Sacred Lands File (SLF) from the Native American Heritage Commission (NAHC). The results of the records review and SLF search were negative. The NAHC suggested contacting five (5) individuals representing three (3) Native American tribal groups to find out if they have additional information about the Project area. Soar Environmental sent outreach letters to all five (5) recommended tribal individuals. No response was received.

Soar Environmental conducted an intensive pedestrian survey of the project on December 16, 2023. This field survey was negative for surface archaeological resources within the Project area. As currently designed, the proposed project will not impact any known in situ archaeological sites or historical resources.

It is recommended, however, in the event that cultural resources are encountered during construction activities associated with the Project, a qualified archaeologist shall be obtained to assess the significance of the find in accordance with the criteria set forth in CEQA Guidelines 15064.5(f). In addition, Health and Safety Code 7050.5, CEQA 15064.5(e), and Public Resources Code 5097.98 mandate the process to be followed in the unlikely event of an accidental discovery of any human remains in a location other than a dedicated cemetery.

## 1.1 Project Description

The Project proposes the construction of a 525-unit housing subdivision at the northeast corner of Prosperity Avenue and Road 126 and the northwest corner of Prosperity Avenue and Morrison Street, in the city of Tulare (Figures 1-5). The proposed Project to construct single-family homes lies within the combined 140.32-acre parcels, APNs 172-080-002, 172-010-021, 172-010-022 and 184-020-010. These parcels are comprised of fallow agricultural fields on the outskirts of the city. Grading of the area will be accomplished using a backhoe and grader.

The project will require the development of roads and sidewalks around and throughout the property. A park pond will be located in the south-central area of the Project Site surrounded by walking trails (Figure 5). Since the entire property will be graded for the housing project during construction activities, the trees in the southwest section of the property located within a 3-acre farm equipment storage area would be removed (Figures 6-18).

## 1.2 Existing Condition

The Project area is located on two parcels of 140.32-acres combined located approximately 0.68-kilometers north from E Tulare Avenue/Highway 137, Tulare, California, at Assessor Parcel Numbers (APNs) 172-080-002, 172-010-021, 172-010-022 and 184-020-010 (Figure 1-5). The Project area is approximately 6-kilometers south from Cameron Creek. The Project area is located in Tulare County within Sections 5 and 6, Township 20S, Range 25E, Mount Diablo Base Meridian, as depicted on the Tulare, CA 7.5' U. S Geological Survey (USGS) topographical quadrangle (Figures 1-2). Row crops surround the Project Area to the northeast and west, fallow fields to the immediate east with commercial and urban residential areas 0.5 miles east, urban residential to the north, and a mix of rural residential and orchards to the south. The Project area consists of 74-acres of fallow millet-rice fields, 60-acres of potted blueberries, 0.5-acre pump station stockpond with southern cattail, 3-acres farm equipment storage area, and 2.82-acres of unpaved dirt roads throughout the Project area. The Tulare Colony Ditch connects with Deep Creek 171 feet west, Outside Creek is 5.2 miles east, and Tulare Lake is 30 miles southwest to the Project area. The irrigation system located on the north boundary of the Project area has hydrologic connectivity to Tulare Lake, a seasonal lake and playa. A new subdivision, including several city streets, is being developed on the cleared properties to the east.

Surface soils consist primarily of the Nord soil series within the east and the Hanford soil series within the west half of the Project area (Figure 4). The Nord soil series is typically very deep, well-drained, and formed in mixed alluvium dominantly from granite and sedimentary rocks. This soil is made up of grayish brown fine sandy loam at surface with brown fine sandy loam below. The Hanford soil series is typically very deep, well-drained, and formed in moderately coarse alluvium dominantly from granite. This soil is made up of pale brown fine sandy loam at surface with pale brown fine sandy loam below. The elevation of the Project area is fairly level ranges from 295-302 feet (ft) above mean sea level. The properties have functioned as pot farming and irrigated

row crops and include a vegetated pump station irrigation pond and an underground irrigation drainage ditch along the northern boundary.

## **2.0 REGULATORY SETTING**

Federal, State and local governments have developed laws and regulations designed to protect significant cultural resources that may be affected by actions that they undertake or regulate. The National Environmental Policy Act (NEPA), National Historic Preservation Act (NHPA) and the California Environmental Quality Act (CEQA) are the basic federal and state laws governing preservation of historic and archaeological resources of national, regional, State and local significance.

### **2.1 Federal**

Federal regulations for cultural resources are governed primarily by Section 106 of the National Historic Preservation Act (NHPA) of 1966. Section 106 of NHPA requires Federal agencies to take into account the effects of their undertakings on historic properties and affords the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. The Council's implementing regulations, "Protection of Historic Properties" are found in 36 Code of Federal Regulations (CFR) Part 800. The goal of the Section 106 review process is to offer a measure of protection to sites which are determined eligible for listing on the National Register of Historic Places. The criteria for determining National Register eligibility are found in 36 CFR Part 60. Amendments to the NHPA (1986 and 1992) and subsequent revisions to the implementing regulations have, among other things, strengthened the provisions for Native American consultation and participation in the Section 106 review process. While federal agencies must follow federal regulations, most projects by private developers and landowners do not require this level of compliance. Federal regulations only come into play in the private sector if a project requires a federal permit or if it uses federal money.

### **2.2 State of California**

#### **California Register of Historical Resources**

In California, the term "historical resource" includes "any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California" (California PRC § 5020.1[j])(State of California 2021). In 1992, the California legislature established the California Register of Historical Resources (CRHR) "to be used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change" (California PRC § 5024.1(a)). The criteria for listing resources on the CRHR, enumerated in the following text, were developed to be in accordance with previously established criteria developed for listing in the NRHP. According to California PRC § 5024.1(c) (1– 4), a resource is considered historically significant if it (i) retains "substantial



integrity,” and (ii) meets at least one of the following criteria:

- 1) Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage.
- 2) Is associated with the lives of persons important in our past.
- 3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
- 4) Has yielded, or may be likely to yield, information important in prehistory or history

To understand the historic importance of a resource, sufficient time must have passed to obtain a scholarly perspective on the events or individuals associated with the resource. A resource less than 50 years old may be considered for listing in the CRHR if it can be demonstrated that sufficient time has passed to understand its historical importance (14 CCR 4852[d][2]).

The CRHR protects cultural resources by requiring evaluations of the significance of prehistoric and historic resources. The criteria for the CRHR are nearly identical to those for the National Register of Historic Places (NRHP), and properties listed or formally designated as eligible for listing in the NRHP are automatically listed in the CRHR, as are state landmarks and points of interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys.

### **California Health and Safety Code, §7050.5**

California law protects Native American burials, skeletal remains, and associated grave goods, regardless of their antiquity, and provides for the sensitive treatment and disposition of those remains. California Health and Safety Code, §7050.5, requires that if human remains are discovered in any place other than a dedicated cemetery, no further disturbance or excavation of the site or nearby area reasonably suspected to contain human remains can occur until the County Coroner has examined the remains (California Health and Safety Code, §7050.5b). California PRC §5097.98, also outlines the process to be followed in the event that remains are discovered. If the County Coroner determines or has reason to believe the remains are those of a Native American, the County Coroner must contact the California NAHC within 24 hours (California Health and Safety Code, §7050.5c)(State of California 2021). The NAHC will notify the most likely descendant. With the permission of the landowner, the most likely descendant may inspect the site of discovery. The inspection must be completed within 48 hours of notification of the most likely descendant by the NAHC. The most likely descendant may recommend means of treating or disposing of, with appropriate dignity, the human remains, and items associated with Native Americans.

## **California State Assembly Bill 52**

Assembly Bill (AB) 52 of 2014 amended California PRC § 5097.94, and added California PRC §21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2, and 21084.3. AB 52 established that tribal cultural resources must be considered under CEQA and also provided for additional Native American consultation requirements for the lead agency. California PRC §21074, defines tribal cultural resources as follows:

(a) Section 21074 of the Public Resources Code states that “tribal cultural resources” are either of the following:

(1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:

(A) Included or determined to be eligible for inclusion in the California Register of Historical Resources.

(B) Included in a local register of historical resources as defined in subdivision (k) of §5020.1.

(2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of §5024.1. In applying the criteria set forth in subdivision (c) of §5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe. A cultural landscape that meets the criteria of subdivision:

(a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.

(b) A historical resource described in §21084.1, a unique archaeological resource as defined in subdivision (g) of §21083.2, or a “nonunique archaeological resource” as defined in subdivision (h) of §21083.2 may also be a tribal cultural resource if it conforms with the criteria of subdivision (a).

AB 52 formalizes the lead agency–tribal consultation process, requiring the lead agency to initiate consultation with California Native American tribes located on the contact list maintained by the Native American Heritage Commission (NAHC). This includes California Native American groups that are traditionally and culturally affiliated with the project, including tribes that may not be federally recognized. Lead agencies are required to begin consultation prior to the release of a negative declaration, mitigated negative declaration, or environmental impact report (EIR).

Section 9 of AB 52 establishes that “a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a



significant effect on the environment.” Section 6 of AB 52 added §21080.3.2 to the California PRC, which states that parties may propose mitigation measures “capable of avoiding or substantially lessening potential significant impacts to a tribal cultural resource or alternatives that would avoid significant impacts to a tribal cultural resource.” Further, if a California Native American tribe requests consultation regarding Project alternatives, mitigation measures, or significant effects to tribal cultural resources, the consultation shall include those topics (California PRC §21080.3.2[a]). The environmental document and the mitigation monitoring and reporting program (where applicable) shall include any mitigation measures that are adopted (California PRC §21082.3[a]).

### **Native American Human Remains**

State law (California PRC §5097 et seq.) addresses the disposition of Native American burials in archaeological sites and protects such remains from disturbance, vandalism, or inadvertent destruction; establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project; and established the NAHC.

In the event that Native American human remains, or related cultural material are encountered, §15064.5(e) of the CEQA Guidelines (as incorporated from PRC §5097.98) and California Health and Safety Code, §7050.5, defines the subsequent protocol. In the event of the accidental discovery or recognition of any human remains, excavation or other disturbances shall be suspended on the site, or any nearby area reasonably suspected to overlie adjacent human remains or related material. Protocol requires that the County Coroner or County-approved Coroner represented be contacted in order to determine if the remains are of Native American origin. Should the coroner determine the remains to be Native American, the coroner must contact the NAHC within 24 hours. The most likely descendant may make recommendations to the landowner or the person responsible for the excavation work for means of treating, with appropriate dignity, the human remains, and any associated grave goods as provided in California PRC §5097.98 (14 CCR 15064.5(e))(State of California 2021).

## **2.3 Local**

### **Tulare County**

Chapter 8.6 of the Tulare County General Plan of 2012 promotes the preservation of cultural and historic resources through managing and protecting sites of cultural and archeological importance for the benefit of present and future generations (County of Tulare 2012).

The following policies are outlined for the preservation of cultural resources:

#### **ERM-6.1 Evaluation of Cultural and Archaeological Resources**

The County shall participate in and support efforts to identify its significant cultural and archaeological resources using appropriate State and Federal standards.

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**ERM-6.2 Protection of Resources with Potential State or Federal Designations**

The County shall protect cultural and archaeological sites with demonstrated potential for placement on the National Register of Historic Places and/or inclusion in the California State Office of Historic Preservation's California Points of Interest and California Inventory of Historic Resources. Such sites may be of Statewide or local significance and have anthropological, cultural, military, political, architectural, economic, scientific, religious, or other values as determined by a qualified archaeological professional.

**ERM-6.3 Alteration of Sites with Identified Cultural Resources**

When planning any development or alteration of a site with identified cultural or archaeological resources, consideration should be given to ways of protecting the resources. Development can be permitted in these areas only after a site specific investigation has been conducted pursuant to CEQA to define the extent and value of resource, and mitigation measures proposed for any impacts the development may have on the resource.

**ERM-6.4 Mitigation**

If preservation of cultural resources is not feasible, every effort shall be made to mitigate impacts, including relocation of structures, adaptive reuse, preservation of facades, and thorough documentation and archival of records.

**ERM-6.5 Cultural Resources Education Programs**

The County should support local, State, and national education programs on cultural and archaeological resources.

**ERM-6.6 Historic Structures and Sites**

The County shall support public and private efforts to preserve, rehabilitate, and continue the use of historic structures, sites, and parks. Where applicable, preservation efforts shall conform to the current Secretary of the Interior's Standards for the Treatment of Historic Properties and Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings.

**ERM-6.7 Cooperation of Property Owners**

The County should encourage the cooperation of property owners to treat cultural resources as assets rather than liabilities, and encourage public support for the preservation of these resources.

**ERM-6.8 Solicit Input from Local Native Americans**

The County shall continue to solicit input from the local Native American communities in cases where development may result in disturbance to sites containing evidence of Native American activity and/or to sites of cultural importance.

**ERM-6.9 Confidentiality of Archaeological Sites**

The County shall, within its power, maintain confidentiality regarding the locations of archaeological sites in order to preserve and protect these resources from vandalism and

the unauthorized removal of artifacts.

#### **ERM-6.10 Grading Cultural Resources Sites**

The County shall ensure all grading activities conform to the County's Grading Ordinance and California Code of Regulations, Title 20, § 2501 et. seq..

### **City of Tulare**

Under Chapter 4, Conservation and Open Space Element, within the General Plan of the City of Tulare states "The General Plan seeks to balance the need for growth with the need for the conservation and enhancement of the area's natural and cultural resources, frequently in cooperation with other agencies." "Cultural resources provide the historical context for the city. The authentic remnants of the city's cultural legacy provide an irreplaceable tangible link to the past. These assets serve as material anchors and their preservation is vital to connecting the present-day community with its historical roots" (City of Tulare 2014).

The following policies are outlined for the preservation of cultural resources:

### **Section B.5. Cultural and Archaeological Resources**

**Goal COS-5** To manage and protect sites of cultural and archaeological importance for the benefit of present and future generations.

#### **Policies**

**COS-P5.1 Archaeological Resources.** The City shall support efforts to protect and/or recover archaeological resources.

**COS-P5.2 Evaluation of Historic Resources.** The City shall use appropriate State and Federal standards in evaluating the significance of historical resources that are identified in the city.

**COS-P5.3 Historic Preservation.** The City shall encourage the preservation of historic residences and neighborhoods wherever appropriate.

**COS-P5.4 Historic Buildings.** The City shall encourage the preservation and adaptive use of historic buildings, particularly in the downtown.

**COS-P5.5 Historic Structures and Sites.** The City shall support public and private efforts to preserve, rehabilitate, and continue the use of historic structures, sites, and districts. Where applicable, preservation efforts shall conform to the current Secretary of the Interior's Standards for the Treatment of Historic Properties and Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Building.

**COS-P5.6 Protection of Resources with Potential State or Federal Designations.**

The City shall encourage the protection of cultural and archaeological sites with potential for placement on the National Register of Historic Places and/or inclusion in the California State Office of Historic Preservation's California Points of Interest and California Inventory of Historic Resources. Such sites may be of statewide or local significance and have anthropological, cultural, military, political, architectural, economic, scientific, religious, or other values.

**COS-P5.7 State Historic Building Code.** The City shall utilize the State Historic Building Code for designated properties.

**COS-P5.8 Design Compatibility with Historic Structures.** The City shall ensure design compatibility of new development within close proximity to designated historic structures and neighborhoods.

**COS-P5.9 Discovery of Archaeological Resources.** In the event that archaeological/paleontological resources are discovered during site excavation, grading, or construction, the City shall require that work on the site be suspended within 100 feet of the resource until the significance of the features can be determined by a qualified archaeologist/paleontologist. If significant resources are determined to exist, an archaeologist shall make recommendations for protection or recovery of the resource. City staff shall consider such recommendations and implement them where they are feasible in light of project design as previously approved by the City.

**COS-P5.10 Discovery of Human Remains.** Consistent with Section 7050.5 of the California Health and Safety Code and CEQA Guidelines (Section 15064.5), if human remains of Native American origin are discovered during project construction, it is necessary to comply with State laws relating to the disposition of Native American burials, which fall within the jurisdiction of the Native American Heritage Commission (Public Resources Code Sec. 5097). If any human remains are discovered or recognized in any location on the project site, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until:

- ◆ The Tulare County Coroner/Sheriff has been informed and has determined that no investigation of the cause of death is required; and
- ◆ If the remains are of Native American origin,
  - The descendants of the deceased Native Americans have made a timely recommendation to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98.

- The Native American Heritage Commission was unable to identify a descendant or the descendant failed to make a recommendation within 24 hours after being notified by the commission, or
- The landowner or his or her authorized representative rejects any timely recommendations of the descendant, and mediation conducted by the Native American Heritage Commission has failed to provide measures acceptable to the landowner.

**COS-P5.11 Impact Mitigation.** If preservation of cultural/historical resources is not feasible, the City shall make every effort to mitigate impacts, including relocation of structures, adaptive reuse, preservation of facades, and thorough documentation and archival of records.

**COS-P5.12 Mitigation Monitoring for Historical Resources.** The City shall develop standards for monitoring mitigation measures established for the protection of historical *resources* prior to development.

**COS-P5.13 Alteration of Sites with Identified Cultural Resources.** When planning any development or alteration of a site with identified cultural or archaeological resources, consideration should be given to ways of protecting the resources. The City shall permit development in these areas only after a site specific investigation has been conducted pursuant to CEQA to define the extent and value of resource, and mitigation measures proposed for any impacts the development may have on the resource.

**COS-P5.14 Education Program Support.** The City shall support local, state, and national education programs on cultural and archaeological resources.

**COS-P5.15 Solicit Input from Local Native Americans.** The City shall solicit input from the local Native American communities in cases where development may result in disturbance to sites containing evidence of Native American activity and/or to sites of cultural importance.

**COS-P5.16 Confidentiality of Archaeological Sites.** The City shall, within its power, maintain confidentiality regarding the locations of archaeological sites in order to preserve and protect resources that are determined to exist. An archaeologist/paleontologist shall make recommendations for protection or recovery of the resource. City staff shall consider such recommendations and implement them where they are feasible in light of project design as previously approved by the City.

**COS-P5.17 Cooperation of Property Owners.** The City shall encourage the cooperation of property owners to treat cultural resources as assets rather than liabilities, and encourage public support for the preservation of these resources.



**COS-P5.18 Archaeological Resource Surveys.** Prior to project approval, the City shall require project applicant to have a qualified archaeologist conduct the following activities: (1) conduct a record search at the Regional Archaeological Information Center located at California State University Bakersfield and other appropriate historical repositories, (2) conduct field surveys where appropriate, and (3) prepare technical reports, where appropriate, meeting California Office of Historic Preservation Standards (Archaeological Resource Management Reports).

### 3.0 SETTING

This section of the report summarizes information regarding the physical and cultural setting of the Project area, including prehistoric, ethnographic, and historic contents of the general area. Several factors; including topography, biological resources, and available water sources; affect the nature and distribution of the cultural periods of activity of an area. This background provides a context for understanding the nature of the cultural resources that may be identified within the region of the project.

#### 3.1 Environmental Setting

The Project area is located in west Tulare County, approximately 5.3 miles north-northwest of Tulare, California within the San Joaquin Valley. The San Joaquin Valley is a long, narrow, northwest-trending, alluvial valley that lies between the Sierra Nevada Range to the east, and the Coast Ranges to the west (Wagner, 2002). The region was historically covered with native annual and perennial grasses including San Joaquin saltbush, valley oak savanna, riparian forest, and tule marsh (McNab and Avers, 1996; Munz and Keck, 1973). The climate consists of hot, dry summers with cool, moist winters that provide the best climate for the neighboring pomegranate and citrus orchards and vineyards.

The Project area is best characterized historically as a rural ranching and agricultural region with large populations of both large and small mammals. Prehistorically, the larger mammals inhabiting the Project area would have included mule deer (*Odocoileus hemionus californicus*), black-tailed deer (*O. hemionus columbianus*), tule elk (*Cervus elaphus nannoides*), pronghorn antelope (*Antilocarpa Americana*), mountain lion (*Felis concolor*), and black bear (*Ursus americanus*) (Jameson and Peeters 1988). The small mammals that historically inhabited the Project area included rabbit (*Sylvilagus sp.*), black-tailed jackrabbit (*Lepus californicus*), western gray squirrel (*Sciurus griseus*), coyote (*Canis latrans*), and gray fox (*Urocyon cinereoargenteus*).

The Project site is currently being used for agricultural production and the entire lot has been cleared and maintained aside from several scattered trees.

#### 3.2 Cultural Setting

Cultural resources include prehistoric-era archaeological sites, historic-era archaeological sites, Native American traditional cultural properties, sites of religious and cultural significance, and

historical buildings, structures, objects, and sites. The importance of any single cultural resource is defined by the context in which it was first created, current public opinion and modern yet evolving analysis. From the analytical perspective, temporal and geographic considerations help to define the historical context of the Project area. The importance or significance of a cultural resource is in part described by the context in which it originated or developed. National Park Service Bulletin 16a (1997) describes a historic context as “information about historic trends and properties grouped by an important theme in prehistory or history of a community, state, or the nation during a particular period of time.” A context links an existing property to important historic trends, and this allows a framework for determining the significance of a property. Given this, a major goal of the historian is to determine accurate themes of analysis, a task that can only be undertaken by a thorough review of previous researchers’ thoughts and ideas, as well as reviewing the literature of the resources.

In California, historians have divided the past into broad categories based on climate models, archaeological dating and written histories. Paleontologists divide time into much larger segments, with defined and named periods of time shortening in timespan as the modern era is reached. For the purposes of this analysis, these periods in history have been summarized below.

### **3.2.1 Prehistoric Setting**

During the Early Holocene epoch (9700 to 4000 B.C.), large game hunting societies populated the area. Culturally significant surface finds in the Tulare Basin have yielded some projectile points similar to particular Paleoindian varieties (i.e., Western Clovis), suggesting an initial occupation pre-dating approximately 11,300 years before present (B.P.). The Middle Holocene epoch (4000 to 1000 B.C.) is characterized by Pinto-like points and groundstone tools, although the association between the epoch and specific societies is not certain.

Olsen and Payen (1968) developed a chronology of four temporally distinct complexes for sites found within the southern San Joaquin Valley. The first complex, the Positas Complex, ranges from 3300 to 2600 B.C. and is characterized by small, shaped mortars, short cylindrical pestles, milling stones, perforated flat cobbles, and sea snail shell beads. The second complex is the Pacheco Complex which ranges from approximately 2600 B.C. to 300 A.D. This complex is divided into Phase B and Phase A. Phase B ranges from 2600 B.C. to 1600 B.C. and is characterized by biface arrow points, abalone shell ornaments, and sea snail shell beads. Phase A ranges from 1600 B.C. to 300 A.D. and is represented by more variation in shell bead types, perforated canine teeth, bone awl, whistles, grass saws, large stemmed and side-notched points, and an abundance of milling stones, mortars, and pestles. The third complex, the Gonzaga Complex, ranges from 300 to 1000 A.D. and is characterized by extended burials, bowl mortars, shaped pestles, squared and tapered stem projectile points, bone awls, grass saws, and a shell industry composed of distinctive shell ornaments and beads. Lastly, the Panoche Complex ranges from 1500 A.D. to European contact (mid to late 1700 A.D.) and is characterized by the presence of fewer milling stones, varied mortars and pestles, small side-notched arrow points, clamshell disc beads, bone awls, whistles, saws, and tubes.

### 3.2.2 Ethnographic Setting

Penutian-speaking Yokuts tribal groups occupied the southern San Joaquin Valley region and much of the nearby Sierra Nevada. Ethnographic information about the Yokuts was collected primarily by Powers (1971, 1976 [originally 1877]), Kroeber (1925), Gayton (1930, 1948), Driver (1937), Latta (1977) and Harrington (n.d.). For a variety of historical reasons, existing research information emphasizes the central Yokuts tribes who occupied both the valley and particularly the foothills of the Sierra. The northernmost tribes suffered from the influx of Euro-Americans during the Gold Rush and their populations were in substantial decline by the time ethnographic studies began in the early twentieth century. In contrast, the southernmost tribes were partially removed by the Spanish to missions and eventually absorbed into multi-tribal communities on the Sebastian Indian Reservation (on Tejon Ranch), and later the Tule River Reservation and Santa Rosa Rancheria to the north. The result is an unfortunate scarcity of ethnographic detail on southern Valley tribes, especially in relation to the rich information collected from the central foothills tribes where native speakers of the Yokuts dialects are still found. Regardless, the general details of indigenous lifeways were similar across the broad expanse of Yokuts territory, particularly in terms of environmentally influenced subsistence and adaptation and with regard to religion and belief, which were similar everywhere.

This scarcity of specific detail is particularly apparent in terms of southern valley tribal group distribution. The San Joaquin Valley floor, and thus the study area, was occupied by these southern Valley Yokuts speakers, themselves divided into a series of autonomous “tribelets,” the boundaries of which are not well defined. The Yauelmani Yokuts lived from the Kern River area, in modern Bakersfield, to the southeast corner of the valley, on the Tejon Ranch, thus likely including the study area. The Hometwali were centered around Kern Lake, while the Tulamni occupied the west side of Buena Vista Lake and the foothills of the Temblors, at least to McKittrick. The Tuhohi resided from the Kern River delta north to the Goose Lake area and west to the sloughs near Buttonwillow. Yokuts villages apparently extended up to, but not into, the mouths of the canyons on the northern and western fronts of the Tehachapi Mountains, well into the foothills and lower elevations of the Sierra Nevada on the east, and to the crest of the Temblor Range on the west. The Yokuts are Penutian speakers and are linguistically related to northern occupants of the San Joaquin Valley.

The Yokuts settlement pattern was largely consistent, regardless of specific tribe involved. Winter villages were typically located along lakeshores and major stream courses (as these existed circa AD 1800), with dispersal phase family camps located at elevated spots on the valley floor and near gathering areas in the foothills.

Most Yokuts groups, again regardless of specific tribal affiliation, were organized as a recognized and distinct tribelet; a circumstance that almost certainly pertained to the tribal groups noted above. Tribelets were land-owning groups organized around a central village and linked by shared territory and descent from a common ancestor. The population of most tribelets ranged from about 150 to 500 peoples (Kroeber 1925).

Each tribelet was headed by a chief who was assisted by a variety of assistants, the most



important of whom was the winatum, a herald or messenger and assistant chief. A shaman also served as religious officer. While shamans did not have any direct political authority, as Gayton (1930) has illustrated, they maintained substantial influence within their tribelet.

Shamanism is a religious system common to most Native American tribes. It involves a direct and personal relationship between the individual and the supernatural world enacted by entering a trance or hallucinatory state (usually based on the ingestion of psychotropic plants, such as jimsonweed or more typically native tobacco). Shamans were considered individuals with an unusual degree of supernatural power, serving as healers or curers, diviners, and controllers of natural phenomena (such as rain or thunder). Shamans also produced the rock art of this region, depicting the visions they experienced in vision quests believed to represent their spirit helpers and events in the supernatural realm (Whitley 1992, 2000).

The centrality of shamanism to the religious and spiritual life of the Yokuts was demonstrated by the role of shamans in the yearly ceremonial round. The ritual round performed the same each year, started in the spring with the jimsonweed ceremony, followed by rattlesnake dance and (where appropriate) first salmon ceremony. After returning from seed camps, fall rituals began in the late summer with the mourning ceremony, followed by first seed and acorn rites and then bear dance (Gayton 1930:379). In each case, shamans served as ceremonial officials responsible for specific dances involving a display of their supernatural powers (Kroeber 1925).

Subsistence practices varied from tribelet to tribelet based on the environment of residence. Throughout Native California, and Yokuts territory in general, the acorn was a primary dietary component, along with a variety of gathered seeds. Valley tribes augmented this resource with lacustrine and riverine foods, especially fish and wildfowl. As with many Native California tribes, the settlement and subsistence rounds included the winter aggregation into a few large villages, where stored resources (like acorns) served as staples, followed by dispersal into smaller camps, often occupied by extended families, where seasonally available resources would be gathered and consumed.

Although population estimates vary and population size was greatly affected by the introduction of Euro-American diseases and social disruption, the Yokuts were one of the largest, most successful groups in Native California. Cook (1978) estimates that the Yokuts region contained 27 percent of the aboriginal population in the state at the time of contact; other estimates are even higher. Many Yokuts people continue to reside in the southern San Joaquin Valley today.

### **3.2.3 Historic Setting**

In California, the historic era is divided into three general periods: the Spanish or Mission Period (1769 to 1821), the Mexican or Rancho Period (1821 to 1848), and the American Period (1848 to present). The mission system, which ultimately established 21 missions between 1796 and 1822, consisted of missions, presidios, and pueblos, and was designed to convert the indigenous peoples of California to Christianity and assimilate them under Spanish rule (Gudde 1998).

The Spaniards were the first non-Indians to enter the San Joaquin Valley. Pedro Fages led a group of soldiers through Tejon Pass into the San Joaquin Valley in 1772 (Wallace 1978:459). In 1776, Spanish missionaries visited the area now known as Bakersfield; the event was documented by Franciscan friar Francisco Garcés. Father Garcés described the Kern River, which he named Rio de San Felipe, and visited the Yokuts community of Woilu, a village situated on the land modern Bakersfield would later occupy. While visiting Woilu, Father Garcés performed the first European baptism in the San Joaquin Valley. The Franciscans returned to their base at Mission San Gabriel following a route through the Tehachapi Mountains that functioned as the primary road until 1876, when the Southern Pacific Railroad created an alternate route.

Lieutenant Gabriel Moraga led a group of Spanish explorers into the San Joaquin Valley in 1806 (Clough and Secrest 1984:25–27). Moraga’s party intended to locate new lands for missions, find and return runaway Indians, and relocate stolen livestock. Moraga is credited with naming both the Kings and San Joaquin rivers. By the early 1820s, the expansion of missions in California ceased as a result of Mexico’s independence from Spain (Clough and Secrest 1984:26). In 1827, the 17-man expedition led by Jedediah Smith entered the region and signaled the earliest American presence in the Kern County area (Clark 1998). Smith’s adventures included friendly encounters with the Southern Yokuts near the Kings River and trapping and camping along the San Joaquin River (Clough and Secrest 1984:27). After Smith’s visit, other trappers followed until about 1837, by which time fur-bearing animals had been nearly exterminated from the valley.

In 1852 Tulare County was officially formed from parts of Mariposa County. 20 years later in 1872 Tulare was settled by the Southern Pacific Railroad to serve as its San Joaquin Valley headquarters. Unlike nearby Visalia that served primarily as a supply and agricultural center for the valley the City of Tulare’s driving force was transportation. The early years were not easy for the city. Within the first 14 years of its settlement Tulare burned down three times. Tulare was incorporated by 1888, and just 3 years later faced a new hardship in the form of the Southern Pacific Railroad relocating its valley headquarters to Bakersfield. It was after this shift in the city’s economy that residents turned to agriculture for their livelihood. Faced with the new challenge of providing enough water to supply the new industry residence founded the Tulare Irrigation District and issued \$500,000 in bonds to construct an extensive canal system to carry water from the Sierra Nevada Mountains. In 1903 the town celebrated paying off the bonds with a bond-burning celebration. Today agriculture remains the lifeblood of the local economy with Tulare sitting in the heart of some of the most productive farmland in the region (City of Tulare 2023).

## **4.0 ARCHIVAL RECORDS SEARCH**

### **4.1 Southern San Joaquin Valley Information Center**

The Project area is located in the USGS Tulare 7.5’ Series Quadrangle (USGS 2021). On December 5, 2023, Soar submitted a records search request to the Southern San Joaquin Valley Information Center (SSJVIC) located at the California State University, Bakersfield (Appendix

A). The records search included a 0.5-mile buffer around the Project area. The results from the records search indicate two (2) cultural resource studies have been conducted within the Project area (Table 1), with one (1) negative result cultural resource study outside the far south-west edge of the Project area; TU-00458 (Table 2). According to the information on file, there are no resources within the Project area.

**Table 1. Survey Reports within the Project area**

Report No.	Year	Author(s)/ Affiliation	Title
TU-00041	1995	Self, William / William Self Associates	Class I Overview, Santa Fe Pacific Pipeline Partners, L.P., Proposed Concord to Colton Pipeline Project
TU-01190	1957	Mitchell, Annie R. / Westernlore Press	Jim Savage and the Tulareño Indians

There were four (4) reports identified within a 0.5-mile radius of the Project area (Table 2). There are two (2) recorded resources within the 0.5-mile record search radius (Table 3).

**Table 2. Survey Reports within 0.5 Mile of the Project area**

Report No.	Year	Author(s)/ Affiliation	Title
TU-00458	1987	Schiffman, Robert A./ Bakersfield College	Archaeological Investigation for Ranch Acres No. 2, Tulare County, California
TU-01498	2010	Leach-Palm, Laura, Brandy, Paul, King, Jay, Mikkelsen, Pat, Seil, Libby, Hartman, Lindsay, and Bradeen, Jill / Far Western Anthropological Research Group, Inc.	Cultural Resources Inventory of Caltrans District 6 Rural Conventional Highways in Fresno, Western Kern, Kings, Madera, and Tulare Counties.
TU-01939	2021	Hudlow, Scott M. / Hudlow Cultural Resource Associates	A Phase I Cultural Resource Survey for Derrell's Mini Storage, N. Mooney Boulevard, City of Tulare, California
TU-01956	2020	Sauls, Consuelo Y./ Taylored Archaeology	Cultural Resources Assessment for the KCOK Phase 9 Tentative Subdivision Project, City of Tulare, Tulare County, California

**Table 3. Resources within 0.5 Mile of the Project area**

Primary #	Type	Description
P-54-004632	Structure, Object, Site	Atchison, Topeka, Santa Fe Railroad Branch Line; AH04; AH07; HP19; HP37
P-54-005296	Structure	Tulare Irrigation District Canal; AH06; HP20

There are no recorded cultural resources within the Project area or radius that are listed in the National Register of Historic Places, the California Register of Historical Resources, the California Points of Historical Interest, California Inventory of Historic Resources, or the California State Historic Landmarks.

## 4.2 Sacred Lands File & Native American Contacts List Request

The California Native American Heritage Commission (NAHC) was contacted on December 5, 2023, to conduct a Sacred Lands File (SLF) search, and to obtain a list of tribes culturally and geographically affiliated with the Project area (Appendix B). On January 2, 2024, the NAHC indicated there are no Native American traditional cultural places or sacred sites within or near the Project area. The NAHC provided a list of five (5) Tulare County Native American groups and individuals affiliated with the local tribes. On January 2, 2024 Ms. Froshour sent letters to all individuals describing the location, and the nature of the project. In each letter, Ms. Froshour included a request for information regarding prehistoric, historic, ethnographic land use, as well as contemporary Native American values.

Soar Environmental did not receive comments from the Tulare County Native American groups or affiliated individuals regarding the proposed development at the project location.

## 4.3 Historic Aerial Image Review

Review of the historic aerial imagery reveals structures in the southwest corner project area as early as 1956, with the rest of the Project area being used for agricultural crops. Roadways running along the north and west edges of the project area are also visible at this time. By the 1984 historic aerial these structures were mostly removed from the area, with only one structure still visible. The 1994 aerial shows the area of what is now an agricultural equipment storage area present. Topographic (topo) maps of the project area show waterways and roadways present in the earliest cataloged maps from 1925. In this map two structures are depicted on the east side of Morrison Street on the west edge of the Project area. By 1942 three structures were present in this area, with a fourth in the northeast section off Prosperity Avenue. Between 1951 and 1963 the alignment of the Tulare Colony Ditch shifted from north-south within the Project area to an east-west alignment, following Oakmore Rd in the upper north section of the Project area. In 1971 only two structures and a warehouse/barn were present in the southwest, with the structure in the north no longer depicted. By 2012 no structures are depicted on topo maps within the Project area. Between 2018 and 2021 that this segment of the ditch shifted to follow an

underground path once more on APN 184-020-010 from the parcel east boundary up to Prosperity Avenue (Nationwide Environmental Title Research, LLC 2020).

## **5.0 PREVIOUS DISTURBANCES IN THE PROJECT AREA**

The Project area is located within an area that has undergone anthropogenic modifications, primarily from activities related to residential uses and agricultural activities. Likewise, the surface of the Project area has undergone surface grading and intense subsurface disturbance from previous residential construction and agricultural plowing. In some cases, the graded surface could exceed 24 inches (60 centimeters). This disturbance could exceed 3 feet (0.914 meters) in some areas.

In summary, the following previous disturbances have occurred within or immediately adjacent to the Project area:

- Surface grading and maintenance of current and historic roads
- Subsurface plowing, tilling, and harvesting due to agricultural activities
- Surface grading and subsurface disturbance for main building, outbuilding construction.

## **6.0 FIELD SURVEY METHODS AND RESULTS**

The basic criteria for determining the presence of prehistoric and historic cultural resources in local urban and rural settings generally includes:

- Presence of flaking debris derived from stone tool manufacturing
- Presence of marine shell and/or other faunal remains
- Occurrence of material culture artifacts
- Surface expressions of cultural features
- Bedrock mortars and related milling features/components
- Soil discolorations or atypical soil manifestations
- Stone/adobe features associated with structural remains
- Diagnostic ceramics derived from Spanish, Mexican, or later periods
- Historic iron and glassware, cans, privy pits, domestic occupational debris



This investigation included the following tasks:

- Review of regional history and previous cultural resource sites and studies within the Project area and the vicinity.
- Examination of archival topographic maps and aerial photographs for the Project area and the general vicinity.
- Request of a California Historical Resources Information System data request of the Project area and 0.50-mile radius through the Southern San Joaquin Valley Information Center.
- Request of a NAHC Sacred Lands File Search for the Project area and 0.50-mile radius. Contact with Tribal groups and individuals as named by the NAHC.
- Evaluate the potential for the proposed Project to result in significant impacts to cultural resources including the potential to impact buried cultural resources with no surface expression.
- Intensive Phase 1 pedestrian survey with transect intervals of 50 feet (15 meters) of the Project area.
- Develop recommendations associated with impacts to cultural resources following the guidelines as outlined in the Regulatory Setting.

Ms. Froshour conducted the field survey of the Project area with the aid of Mr. Studley and Ms. Hawley on December 16, 2023. The Project area was examined by systematic pedestrian inspection of the ground surface. Transect intervals varied from 50 feet (15 meters). Surface bioturbation (rodent burrows) was also examined within the Project area. Disturbances immediately adjacent to the Project area were also examined for primary and secondary surface archaeological indicators.

The approximately 140.32-acre Project area consists mostly of undeveloped agricultural fields (Figures 6-18). Irrigation ditches, dirt roads, and contemporary irrigation features (e.g., standing pipes, culverts, pumps) exist within the Project footprint. The Project area consists of 74-acres of fallow millet-rice fields, 60-acres of potted blueberries, 0.5-acre pump station stockpond with southern cattail, 3-acres farm equipment storage area, and 2.82-acres of unpaved dirt roads throughout the Project area. The surface visibility of the Project area, defined as the approximate percentage of native soils visible during field survey of a given project component, was estimated at 90-100% within the dirt roads, open fallow field, and agricultural equipment storage areas within the Project area. The surface visibility of the potted blueberries and pump station stockpond was estimated at 0-10%.

In summary, no *in situ* cultural resources, or isolate materials potentially derived from a primary or secondary archaeological contexts, were observed on the surface of the Project area.

## **7.0 RECOMMENDED ACTIONS AND MITIGATION MEASURES**

There appears to be a low possibility for subsurface cultural resources in the Project area, based on the results of the archival research, and the fact that no known resource have been detected during previous disturbances within the Project area. There are no recorded cultural resources within the 0.5-mile buffer radius that are listed in the National Register of Historic Places, the California Register of Historical Resources, the California Points of Historical Interest, California Inventory of Historic Resources, or the California State Historic Landmarks. No site testing or mitigation measures are recommended or required, unless previously undiscovered cultural resources are detected during construction.

The intensive Phase I pedestrian survey was conducted on December 16, 2023, with parallel transects spaced at 50 feet (15-meter) intervals walked across the entire Project area. No other cultural resources of any kind were identified during a Phase I study of the Project area. The proposed 4 Creeks Lagomarsino Housing Subdivision Project therefore does not have the potential to result in adverse impacts to known historical properties.

A potential always exists to encounter previously undetected cultural resources. If cultural materials (prehistoric and/or historic artifacts) are detected during the course of ground disturbances associated with this project, all work in the immediate area of the find shall be halted until a qualified archaeologist can inventory and assess the significance of the find(s). At that point, the resources shall be evaluated in accordance with the procedures set forth in the California Environmental Quality Act (CEQA) 21083.2, sections 15064.5 and 15126.4, and the criteria regarding resource eligibility to the California Register of Historic Resources (CRHR).

If a resource cannot be avoided, then the resource must be examined vis-à-vis the provisions in the County Guidelines, and CEQA Sections 15064.5 and 15126.4 and the eligibility criteria as an “important” or “unique archaeological resource,” as appropriate. In many cases, determination of a resource’s eligibility can only be made through extensive research and archaeological testing.

Human remains are addressed by State of California Health and Safety Code Section 7050.5. This code section states that no further disturbance shall occur until the County Coroner has made a determination of the origin and disposition of the remains, pursuant to Public Resources Code Section 5097.98. The County Coroner must be notified of the find immediately. If the human remains are determined to be prehistoric/ethnohistoric Native American remains, the Coroner will notify the Native American Heritage Commission (NAHC), which will determine and notify a Most Likely Descendent (MLD). The MLD shall complete the inspection of the site within 24 hours of notification, and may potentially recommend scientific removal, reburial, nondestructive analysis of human remains, and/or specific treatment of associated burial goods.

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## FIGURES

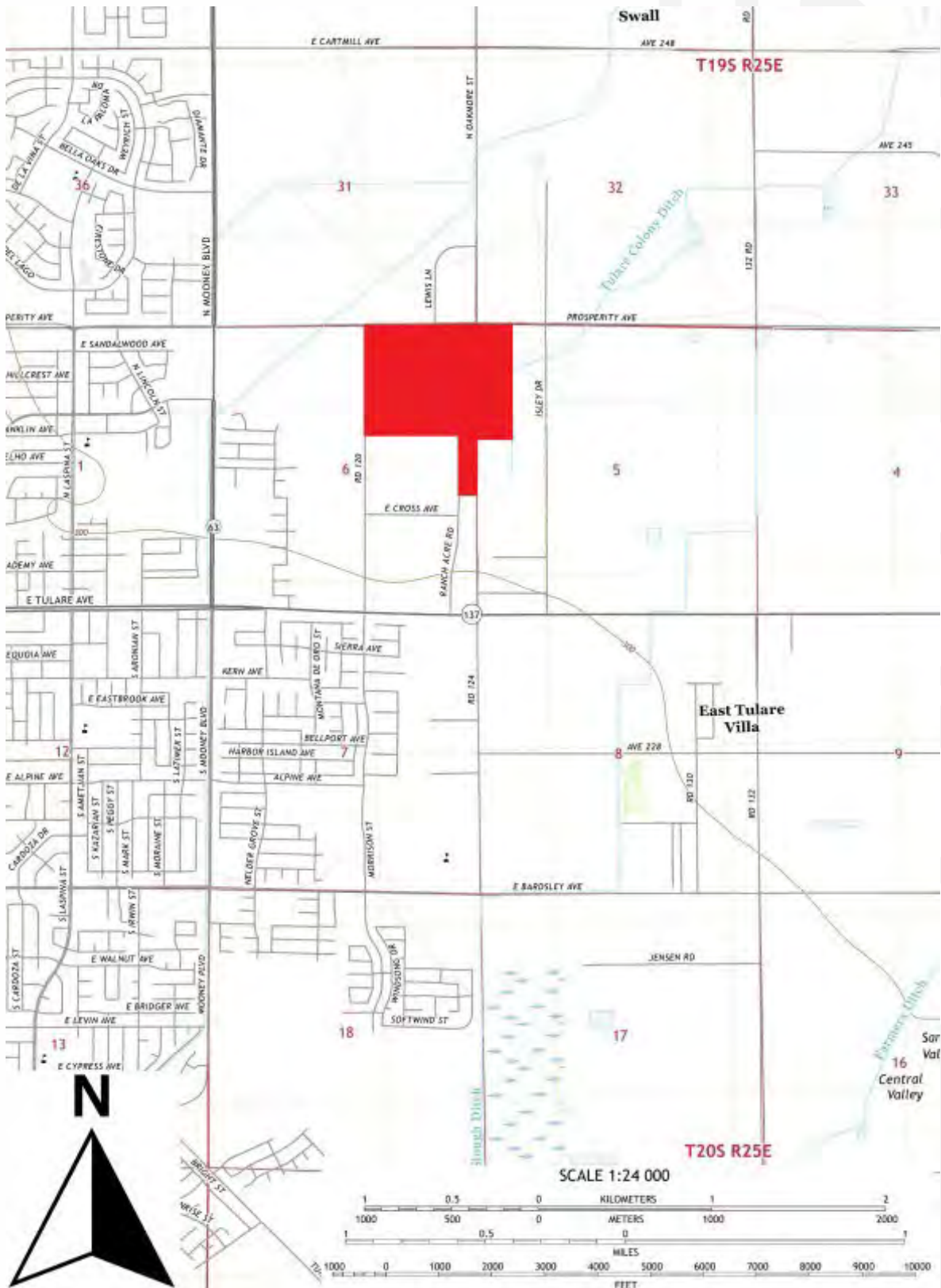
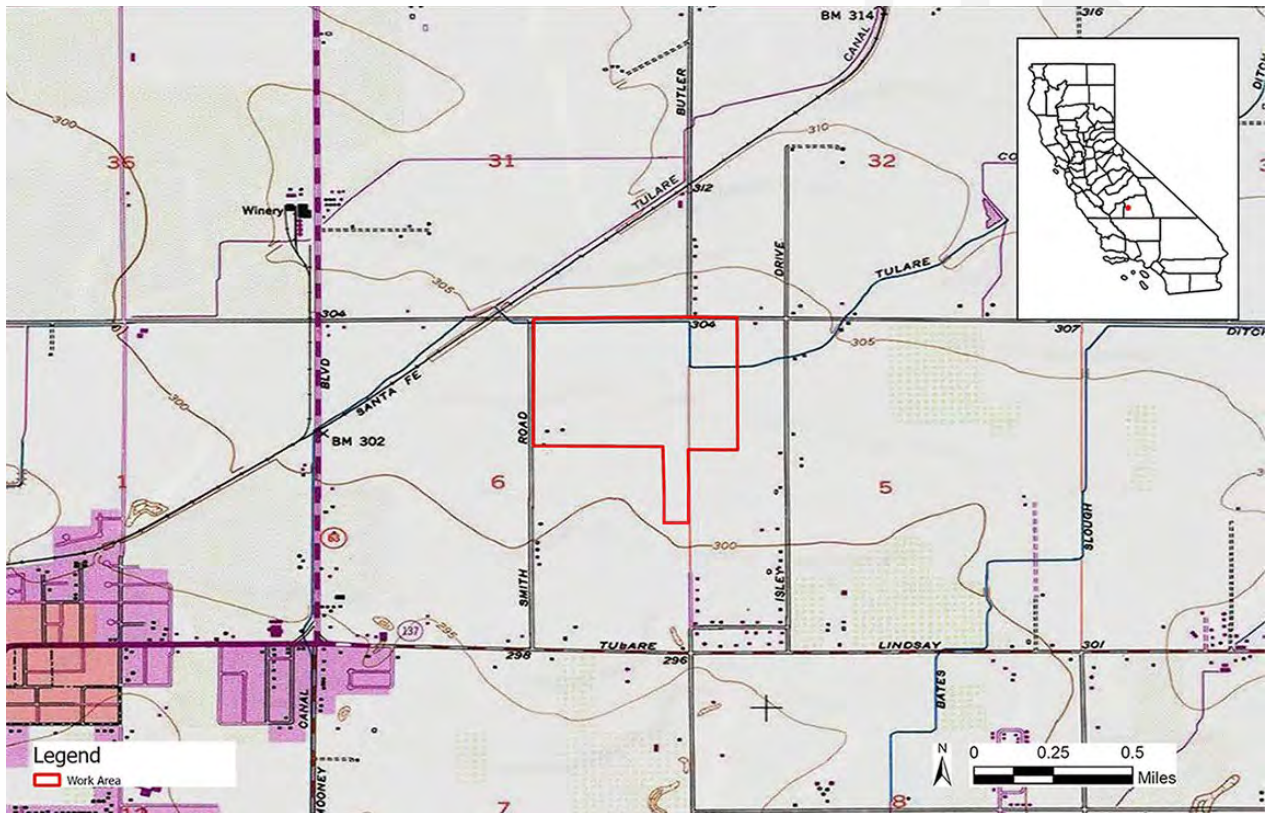


Figure 1— Project Location, adapted from USGA 7.5' series Tulare, California, 2021





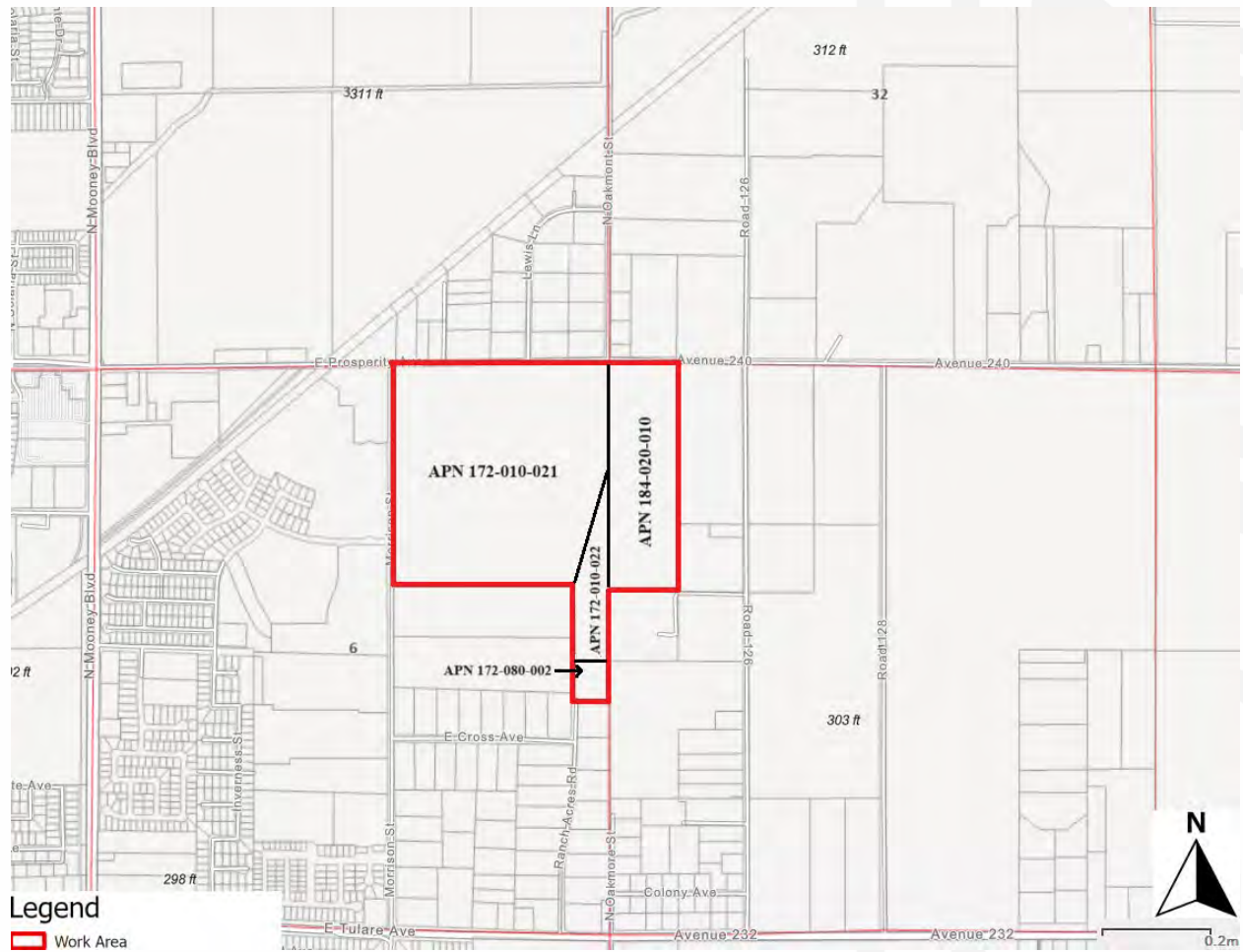


Figure 3—Assessor Parcel Map



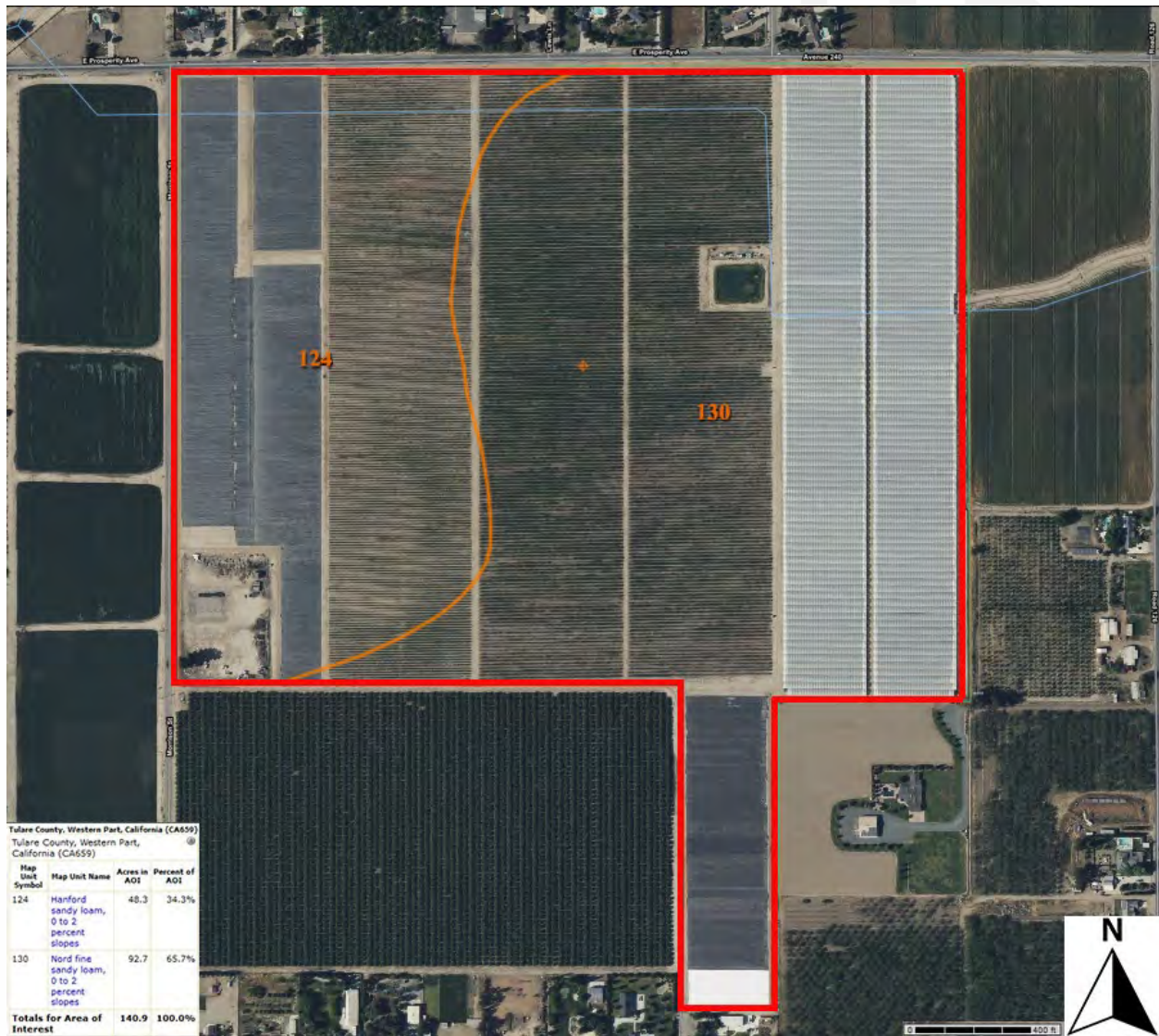


Figure 4— Soil Types Occurring in the Project area

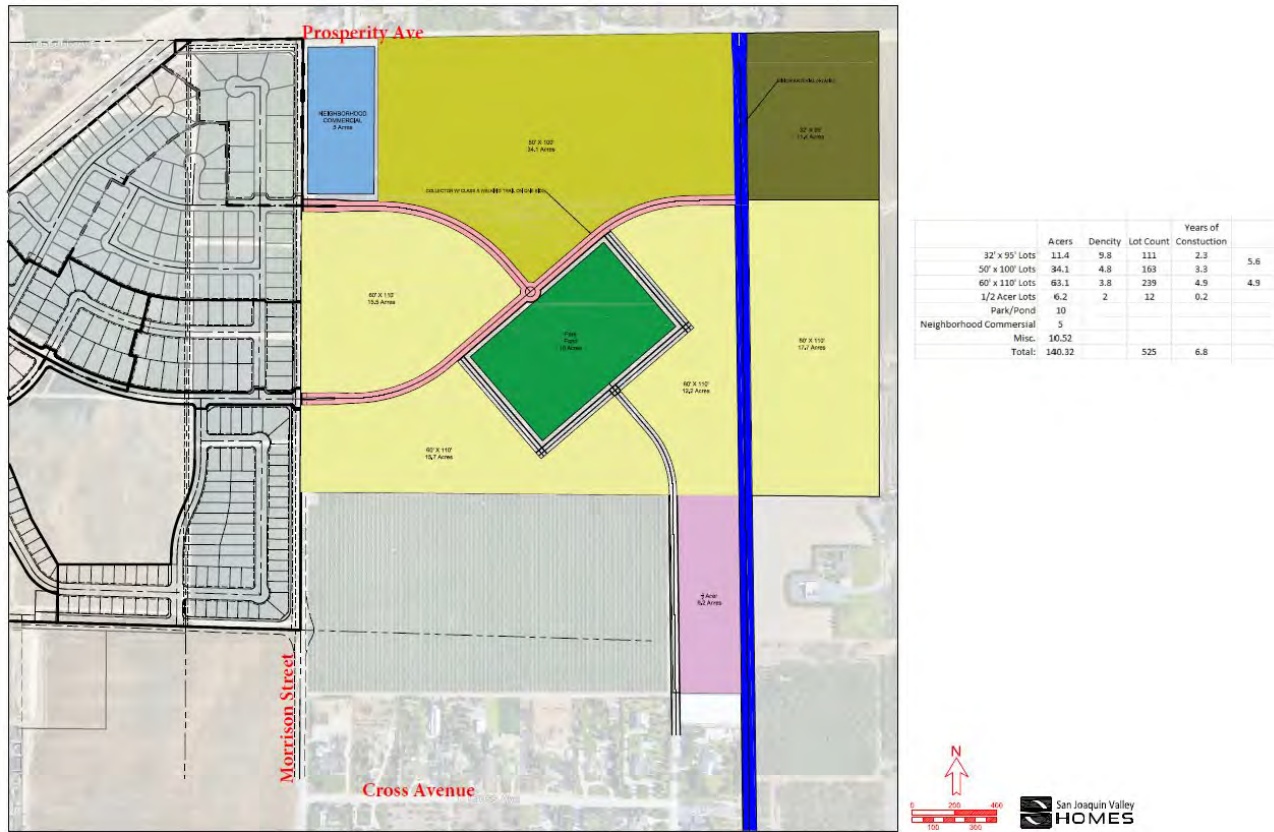


Figure 5— Lagomarsino Property Land Use Exhibit Map





Figure 6— Overview from north northeast corner of Project area, facing southeast



Figure 7— Overview from northeast corner of Project area, facing southwest



Figure 8— Overview from northwest corner of parcel 172-010-022, facing southeast





Figure 9— Overview from north end of Oakmore Rd, facing south



Figure 10— Overview from southeast corner showing blueberry pots, facing north





Figure 11— Overview from southeast corner of Project area, facing northwest





Figure 12— Overview from southwest corner of Project area, facing northeast



Figure 13— Overview from south edge of fenced pump station stockpond, facing east





Figure 14— Overview from southwest corner of Project area, facing northeast



Figure 15— Overview from west edge of Project area, facing east





Figure 16— Overview from center of Project area, facing north



Figure 17— Overview from center of Project area, facing west





Figure 18— Overview from center of Project area, facing east





Corporate Headquarters  
1322 E. Shaw Avenue, Suite 400 Fresno, CA, 93710  
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## **APPENDIX A**

Southern San Joaquin Valley Information Center Records Search



**Corporate Headquarters**  
1322 E. Shaw Avenue, Suite 400 Fresno, CA, 93710  
[www.soarhere.com](http://www.soarhere.com) • 559.547.8884

## Cultural Resources Records Search Request

Tuesday, December 5, 2023

Southern San Joaquin Valley Information Center  
California State University Bakersfield  
Mail Stop: 72DOB  
9001 Stockdale Highway  
Bakersfield, CA 93311-1022  
Tel: 661.654.2289  
[ssjvic@csub.edu](mailto:ssjvic@csub.edu)

**RE: Phase I CEQA Cultural Resource Assessment Report for proposed housing development bounded by Morrison St. and Prosperity Ave., Tulare, CA, 93274. APNs 172-080-002, 172-010-021, 172-010-022, & 184-020-010.**

Dear Celeste,

Please find attached one project location map, shapefiles, and the SSJVIC/CHRIS Data Request Form for the proposed housing development project in Tulare, CA.. The proposed project is situated on the Tulare, California (2022), USGS 7.5' Series Quadrangle, T20S, R 25E, S 5 & 6. The 140-acre project area is located on APNs 172-010-021, 172-010-022, & 184-020-010 and is bounded by Morrison St. and Prosperity Ave. in Tulare, California. The project is for a proposed housing development with a center at approximately WGS 84 11N 293417E 4011151N.

Please conduct a normal rate records search, including no more than a 0.50-mile radius buffer, of the project location illustrated on the attached map. Please provide the following information:

- PDF of all site records and associated survey reports (Note: PDF/photocopy only those site reports that appear to be pertinent to the immediate project location and search area; surveys and other site/resources can be listed, with full reports requested later if necessary).
- A list of all previous sites and surveys within the search area.
- A confirmation of any sites, structures, or linear features on local, state, and/or federal registers/lists in the project location or the 0.50-mile search area that are not yet mapped on the GIS.

If the normal records search costs will exceed \$500.00, or if you have any questions or comments, please e-mail me at [hfroshour@soarhere.com](mailto:hfroshour@soarhere.com). Please contact me as soon as possible if there will be any delays with the records search, as the client may request an expedited search. Please email the encrypted search results in PDF format to: [hfroshour@soarhere.com](mailto:hfroshour@soarhere.com).

Many thanks in advance for your assistance with this project.

Most Sincerely,

Heather Froshour, M.A., R.P.A.  
Sr. Archaeologist  
Soar Environmental Consulting, Inc.  
207.232.8912

**CHRIS Data Request Form**

**ACCESS AND USE AGREEMENT NO.:** \_\_\_\_\_ **IC FILE NO.:** \_\_\_\_\_

To: \_\_\_\_\_ Information Center

Print Name: \_\_\_\_\_ Date: \_\_\_\_\_

Affiliation: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ Email: \_\_\_\_\_

Billing Address (if different than above): \_\_\_\_\_

Billing Email: \_\_\_\_\_ Billing Phone: \_\_\_\_\_

Project Name / Reference: \_\_\_\_\_

Project Street Address: \_\_\_\_\_

County or Counties: \_\_\_\_\_

Township/Range/UTMs: \_\_\_\_\_

USGS 7.5' Quad(s): \_\_\_\_\_

PRIORITY RESPONSE (Additional Fee): yes / no

TOTAL FEE NOT TO EXCEED: \$ \_\_\_\_\_

(If blank, the Information Center will contact you if the fee is expected to exceed \$1,000.00)

Special Instructions:

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***Information Center Use Only***

Date of CHRIS Data Provided for this Request: \_\_\_\_\_

Confidential Data Included in Response: yes / no

Notes: \_\_\_\_\_

## CHRIS Data Request Form

Mark the request form as needed. Attach a PDF of your project area (with the radius if applicable) mapped on a 7.5' USGS topographic quadrangle to scale 1:24000 ratio 1:1 neither enlarged nor reduced and include a shapefile of your project area, if available. Shapefiles are the current CHRIS standard for submitting digital spatial data for your project area or radius. **Check with the appropriate IC for current availability of digital data products.**

- Documents will be provided in PDF format. Paper copies will only be provided if PDFs are not available at the time of the request or under specially arranged circumstances.
- Location information will be provided as a digital map product (Custom Maps or GIS data) unless the area has not yet been digitized. In such circumstances, the IC may provide hand drawn maps.
- In addition to the \$150/hr. staff time fee, client will be charged the Custom Map fee when GIS is required to complete the request [e.g., a map printout or map image/PDF is requested and no GIS Data is requested, or an electronic product is requested (derived from GIS data) but no mapping is requested].

For product fees, see the CHRIS IC Fee Structure on the [OHP website](#).

## 1. Map Format Choice:

Select One: Custom GIS Maps ☐ GIS Data ☐ Custom GIS Maps and GIS Data ☐ No Maps ☐

**Any selection below left unmarked will be considered a "no."**

## Location Information:

	Within project area	Within _____	radius
<b>ARCHAEOLOGICAL Resource Locations<sup>1</sup></b>	yes / no	yes / no	
<b>NON-ARCHAEOLOGICAL Resource Locations</b>	yes / no	yes / no	
<b>Report Locations<sup>1</sup></b>	yes / no	yes / no	
<b>"Other" Report Locations<sup>2</sup></b>	yes / no	yes / no	

## 3. Database Information:

(contact the IC for product examples, or visit the [SSJVIC website](#) for examples)

	Within project area	Within _____	radius
<b>ARCHAEOLOGICAL Resource Database<sup>1</sup></b>			
List (PDF format)	yes / no	yes / no	
Detail (PDF format)	yes / no	yes / no	
Excel Spreadsheet	yes / no	yes / no	
<b>NON-ARCHAEOLOGICAL Resource Database</b>			
List (PDF format)	yes / no	yes / no	
Detail (PDF format)	yes / no	yes / no	
Excel Spreadsheet	yes / no	yes / no	
<b>Report Database<sup>1</sup></b>			
List (PDF format)	yes / no	yes / no	
Detail (PDF format)	yes / no	yes / no	
Excel Spreadsheet	yes / no	yes / no	
Include "Other" Reports <sup>2</sup>	yes / no	yes / no	

## 4. Document PDFs (paper copy only upon request):

	Within project area	Within _____	radius
ARCHAEOLOGICAL Resource Records <sup>1</sup>	yes / no	yes / no	
NON-ARCHAEOLOGICAL Resource Records	yes / no	yes / no	
Reports <sup>1</sup>	yes / no	yes / no	
"Other" Reports <sup>2</sup>	yes / no	yes / no	

## CHRIS Data Request Form

## 5. Eligibility Listings and Documentation:

	Within project area	Within _____	radius
<b>OHP Built Environment Resources Directory<sup>3</sup>:</b>			
Directory listing only (Excel format)	yes / no	yes / no	
Associated documentation <sup>4</sup>	yes / no	yes / no	
<b>OHP Archaeological Resources Directory<sup>1,5</sup>:</b>			
Directory listing only (Excel format)	yes / no	yes / no	
Associated documentation <sup>4</sup>	yes / no	yes / no	
<b>California Inventory of Historic Resources (1976):</b>			
Directory listing only (PDF format)	yes / no	yes / no	
Associated documentation <sup>4</sup>	yes / no	yes / no	

## 6. Additional Information:

The following sources of information may be available through the Information Center. However, several of these sources are now available on the [OHP website](#) and can be accessed directly. The Office of Historic Preservation makes no guarantees about the availability, completeness, or accuracy of the information provided through these sources. Indicate below if the Information Center should review and provide documentation (if available) of any of the following sources as part of this request.

<b>Caltrans Bridge Survey</b>	yes / no
<b>Ethnographic Information</b>	yes / no
<b>Historical Literature</b>	yes / no
<b>Historical Maps</b>	yes / no
<b>Local Inventories</b>	yes / no
<b>GLO and/or Rancho Plat Maps</b>	yes / no
<b>Shipwreck Inventory</b>	yes / no
<b>Soil Survey Maps</b>	yes / no

<sup>1</sup> In order to receive archaeological information, requestor must meet qualifications as specified in Section III of the current version of the California Historical Resources Information System Information Center Rules of Operation Manual and be identified as an Authorized User or Conditional User under an active CHRIS Access and Use Agreement.

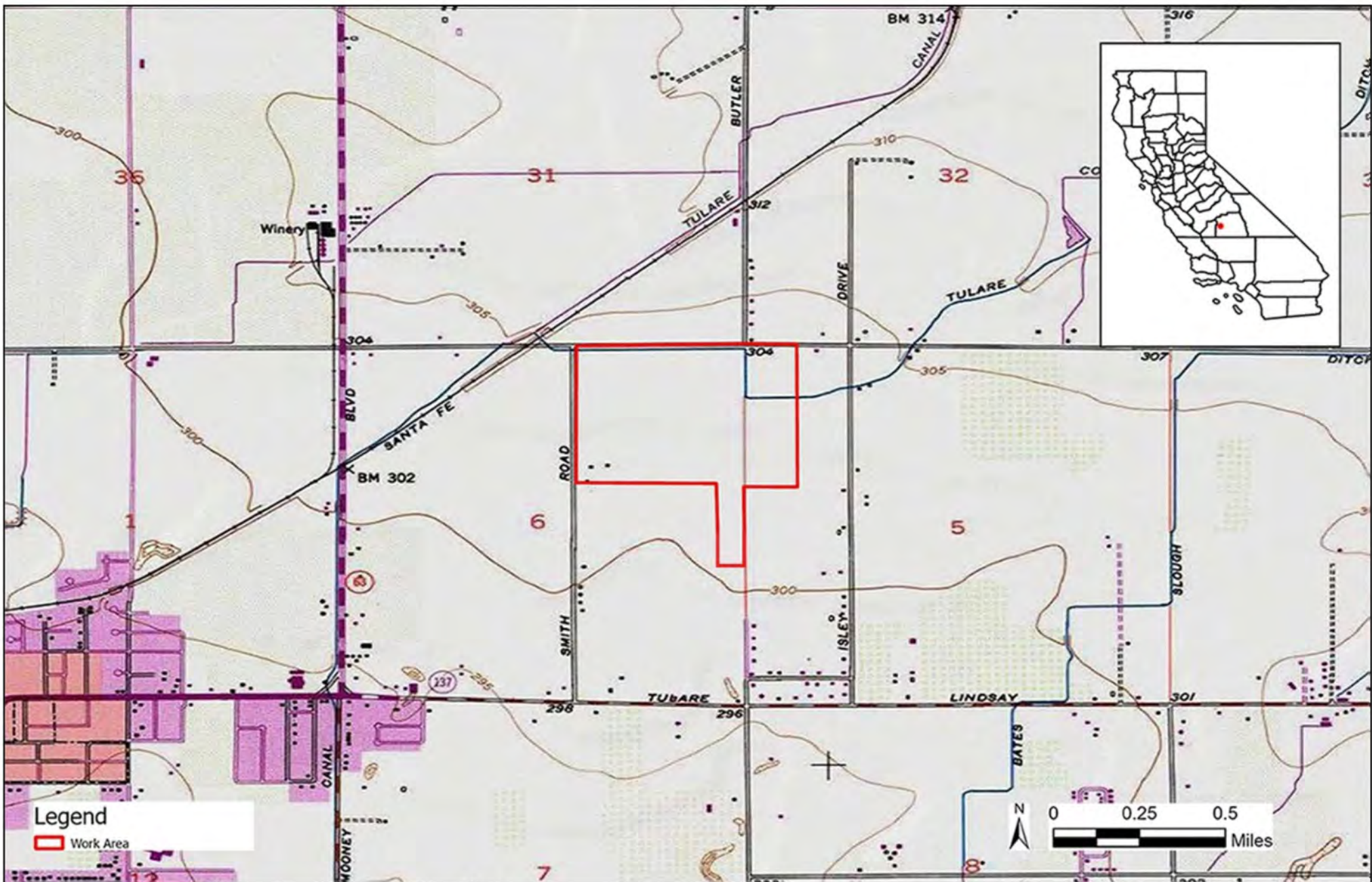
<sup>2</sup> "Other" Reports GIS layer consists of report study areas for which the report content is almost entirely non-fieldwork related (e.g., local/regional history, or overview) and/or for which the presentation of the study area boundary may or may not add value to a record search.


<sup>3</sup> Provided as Excel spreadsheets with no cost for the rows; the only cost for this component is IC staff time. Includes, but not limited to, information regarding National Register of Historic Places, California Register of Historical Resources, California State Historical Landmarks, California State Points of Historical Interest, and historic building surveys. Previously known as the HRI and then as the HPD, it is now known as the Built Environment Resources Directory (BERD). The Office of Historic Preservation compiles this documentation and it is the source of the official status codes for evaluated resources.

<sup>4</sup> Associated documentation will vary by resource. Contact the IC for further details.

<sup>5</sup> Provided as Excel spreadsheets with no cost for the rows; the only cost for this component is IC staff time. Previously known as the Archaeological Determinations of Eligibility, now it is known as the Archaeological Resources Directory (ARD). The Office of Historic Preservation compiles this documentation and it is the source of the official status codes for evaluated resources.





 <p>1322 East Shaw Avenue, Suite 400 Fresno, CA 93710 www.soarhere.com 559.547.8884</p>	<p>Title Project Location</p>	<p>Facility Address Subdivision bounded by Morrison and Prosperity in the City of Tulare.</p>	<p>Figure # 1 Project Location</p>
	<p>Client 4Creeks</p>		<p>Revision Date 12/05/2023</p>



12/18/2023

Heather Froshour  
Soar Environmental Consulting  
1322 East Shaw Ave., Suite 400  
Fresno, CA 93710

Re: Phase I Cultural Resources Assessment Report Lagomarsino  
Records Search File No.: 23-495

The Southern San Joaquin Valley Information Center received your record search request for the project area referenced above, located on the Tulare USGS 7.5' quad. The following reflects the results of the records search for the project area and the 0.5 mile radius:

As indicated on the data request form, the locations of resources and reports are provided in the following format: ☒ custom GIS maps ☐ GIS data

Resources within project area:	None
Resources within 0.5 mile radius:	P-54-004632, 005296
Reports within project area:	TU-00041, 01190
Reports within 0.5 mile radius:	TU-00458, 01498, 01939, 01956

**Resource Database Printout (list):**

☒ enclosed ☐ not requested ☐ nothing listed

**Resource Database Printout (details):**

☐ enclosed ☒ not requested ☐ nothing listed

**Resource Digital Database Records:**

☐ enclosed ☒ not requested ☐ nothing listed

**Report Database Printout (list):**

☒ enclosed ☐ not requested ☐ nothing listed

**Report Database Printout (details):**

☐ enclosed ☒ not requested ☐ nothing listed

**Report Digital Database Records:**

☐ enclosed ☒ not requested ☐ nothing listed

**Resource Record Copies:**

☒ enclosed ☐ not requested ☐ nothing listed

**Report Copies:**

☒ enclosed ☐ not requested ☐ nothing listed

**OHP Built Environment Resources Directory:**

☐ enclosed ☐ not requested ☒ nothing listed

**Archaeological Determinations of Eligibility:**

☐ enclosed ☐ not requested ☒ nothing listed

**CA Inventory of Historic Resources (1976):**

☐ enclosed ☐ not requested ☒ nothing listed



**Caltrans Bridge Survey:**

Not available at SSJVIC; please see <https://dot.ca.gov/programs/environmental-analysis/cultural-studies/california-historical-bridges-tunnels>

**Ethnographic Information:**

Not available at SSJVIC

**Historical Literature:**

Not available at SSJVIC

**Historical Maps:**

Not available at SSJVIC; please see <http://historicalmaps.arcgis.com/usgs/>

**Local Inventories:**

Not available at SSJVIC

**GLO and/or Rancho Plat Maps:**

Not available at SSJVIC; please see <http://www.glorerecords.blm.gov/search/default.aspx#searchTabIndex=0&searchByTypeIndex=1 and/or http://www.oac.cdlib.org/view?docId=hb8489p15p;developer=local;style=oac4;doc.view=items>

**Shipwreck Inventory:**

Not available at SSJVIC; please see <https://www.slc.ca.gov/shipwrecks/>

**Soil Survey Maps:**

Not available at SSJVIC; please see <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Invoices for Information Center services will be sent under separate cover from the California State University, Bakersfield Accounting Office.

Thank you for using the California Historical Resources Information System (CHRIS).

Sincerely,



Jeremy E David  
Assistant Coordinator

## Report List

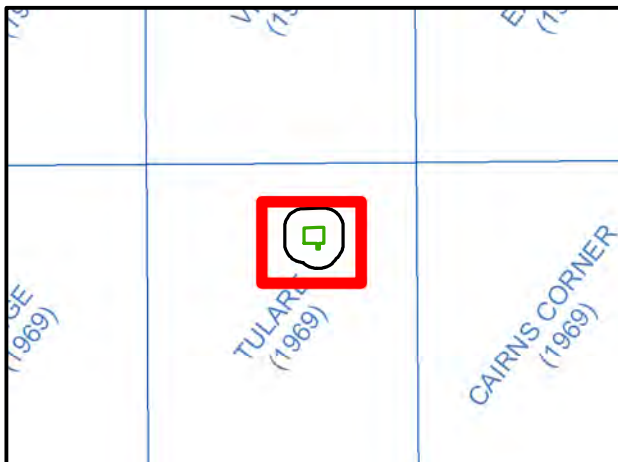
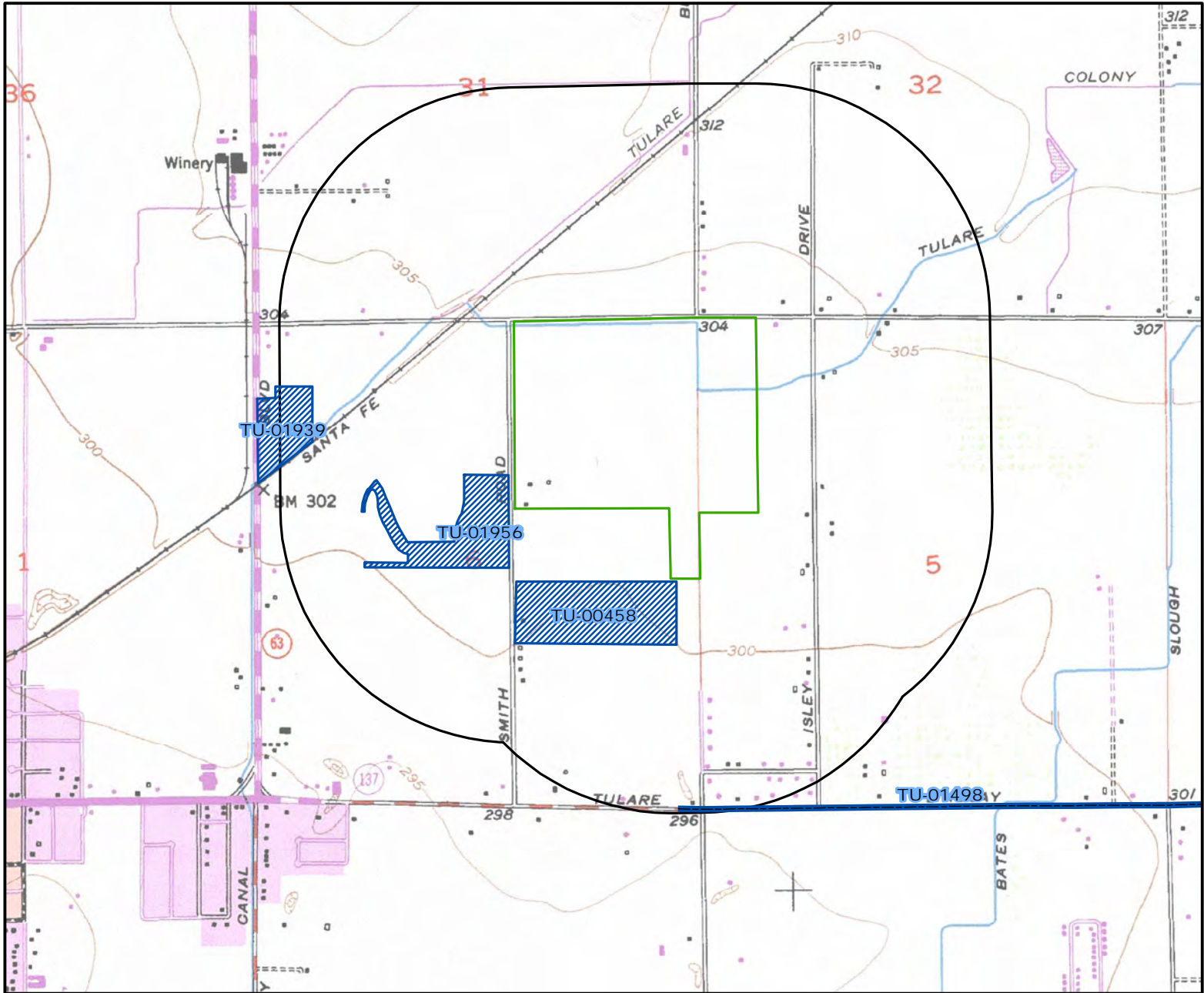
### SSJVIC Record Search 23-495

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
TU-00041	BLM - Permit No. CA-95-01-0004; NADB-R - 1141258	1995	Self, William	Class I Overview, Santa Fe Pacific Pipeline Partners, L.P., Proposed Concord to Colton Pipeline Project	William Self Associates	
TU-00458		1987	Schiffman, Robert A.	Archaeological Investigation for Ranch Acres No. 2, Tulare County, California	Bakersfield College	
TU-01190		1957	Mitchell, Annie R.	Jim Savage and the Tulareño Indians	Westernlore Press	
TU-01498	Submitter - Contract No. 06A1106; Submitter - Expenditure Authorization No. 06-0A7408	2010	Leach-Palm, Laura, Brandy, Paul, King, Jay, Mikkelsen, Pat, Seil, Libby, Hartman, Lindsay, and Bradeen, Jill	Cultural Resources Inventory of Caltrans District 6 Rural Conventional Highways in Fresno, Western Kern, Kings, Madera, and Tulare Counties.	Far Western Anthropological Research Group, Inc.	54-000580, 54-001091, 54-001479, 54-004595, 54-004611, 54-004614, 54-004619, 54-004629, 54-004630
TU-01939		2021	Hudlow, Scott M.	A Phase I Cultural Rseource Survey for Derrell's Mini Storage, N. Mooney Boulevard, City of Tulare, California	Hudlow Cultural Resource Associates	
TU-01956		2020	Sauls, Consuelo Y.	Cultural Resources Assessment for the KCOK Phase 9 Tentative Subdivision Project, City of Tulare, Tulare County, California	Taylorred Archaeology	

## Resource List

SSJVIC Record Search 23-495

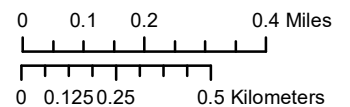
Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-54-004632	CA-TUL-002885H	Other - JIU-204; Resource Name - Atchison, Topeka, Santa Fe Railroad Branch Line; Other - Historic Railroad Segment; Resource Name - Santa Fe Railroad Grade	Structure, Object, Site	Historic	AH04; AH07; HP19; HP37	1995 (Carrie D. Wills, Allen Estes, William Self Associates); 2001 (S. Ashkar, C. Fish, Jones & Stokes); 2007 (M. Armstrong, R. Ottenhoff, P. Paramoure, L. MacDonald, Pacific Legacy, Inc.); 2009 (Steven J. Melvin, Rebecca Flores, JRP Historical Consulting, LLC.); 2012 (M. O'Neill, M. Walton, Pacific Legacy, Inc.); 2019 (Denise Ruzicka, CAL FIRE); 2019 (Robert Azpitarte, ASM Affiliates, Inc.)	TU-01889, TU-01929
P-54-005296	CA-TUL-003103H	Resource Name - Tulare Irrigation District Canal; Resource Name - CWA20-221-1; SB-97-H1; SB-97-H2; SB-97-H3; Resource Name - Old 99 Ditch of the Tulare Irrigation District; Resource Name - North Branch of the Kaweah Canal; Resource Name - Main Canal, Section 29	Structure	Historic	AH06; HP20	1997 (Emily Anderson, David Livingstone, KEA Environment); 1997 (Emily Adnerson, David Livingstone, KEA Environment); 1997 (Emily Anderson, David Livingstone, KEA Environment); 2007 (Matthew Armstrong, Randy Ottenhoff, Pacific Legacy, Inc.); 2009 (Rebecca S. Orfila, RSO Consulting); 2016 (Alberto Foglia and Annemarie Cox, PanGIS, Inc.); 2017 (Randy Baloian, Applied EarthWorks, Inc); 2022 (Karana Hattersley-Drayton, Taylored Archaeology)	TU-01837, TU-01936



May depict confidential cultural resource locations. Do not distribute.

Map pages depicting no data have been excluded.

- Project Area
- Record Search radius



#### Reports Map

SSJV Information Center Record Search 23-495

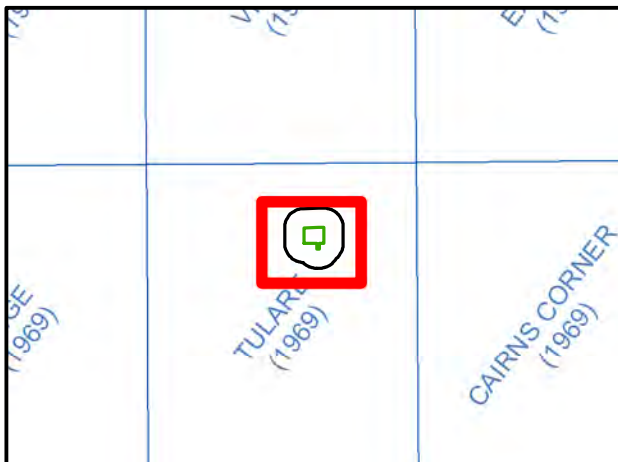
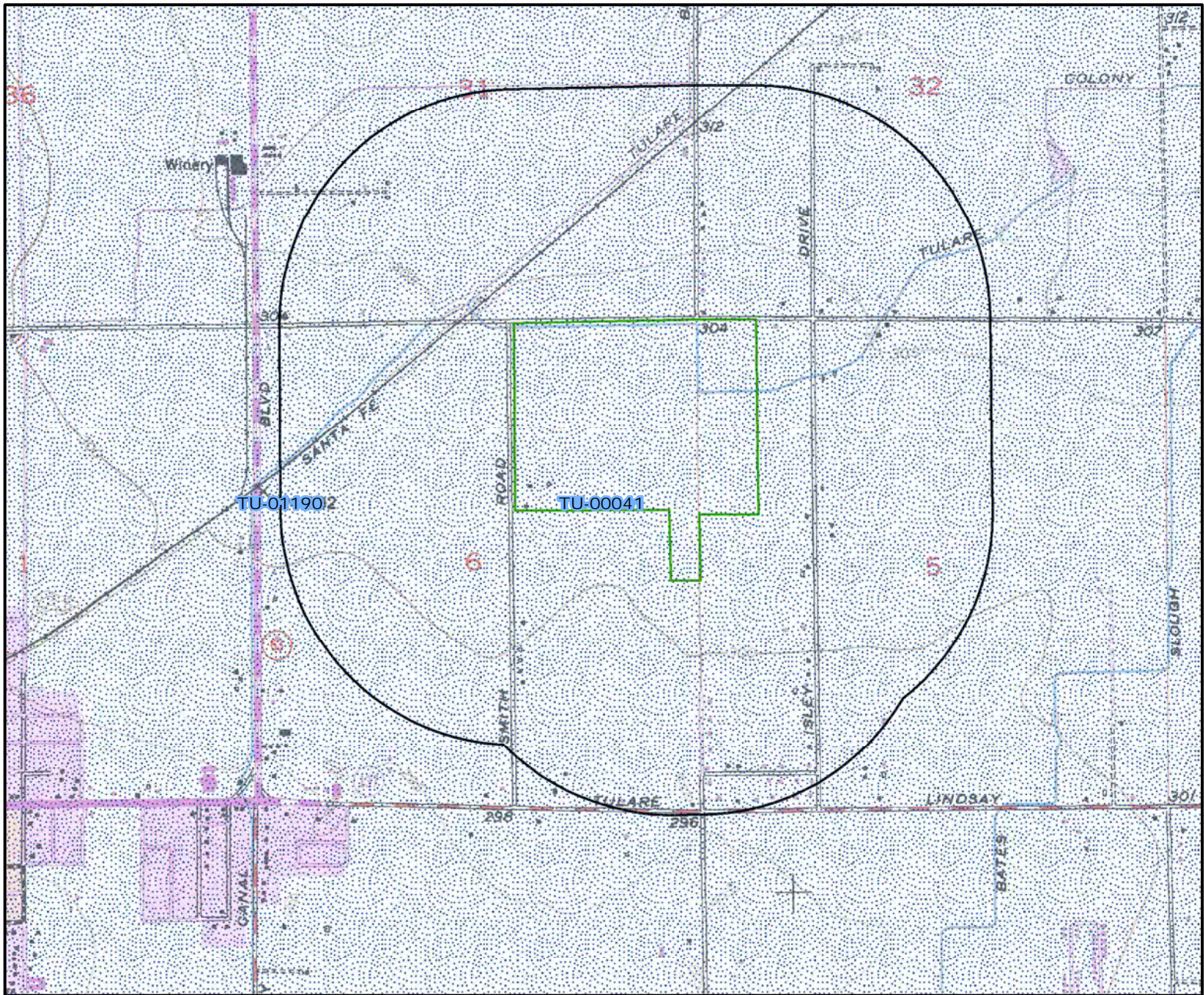
Requester: Heather Froshour; Soar Environmental Consulting, Inc.

Project Name: Phase I Cultural Resources Assessment Report Lagomarsino

USGS 7.5' Quad(s): Tulare

County: Tulare

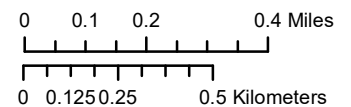




May depict confidential cultural resource locations. Do not distribute.

Map pages depicting no data have been excluded.

-  Project Area
-  Record Search radius



#### "Other" Reports Map

SSJV Information Center Record Search 23-495

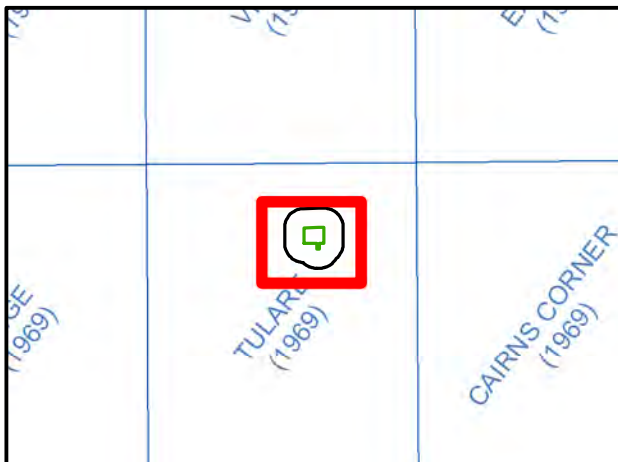
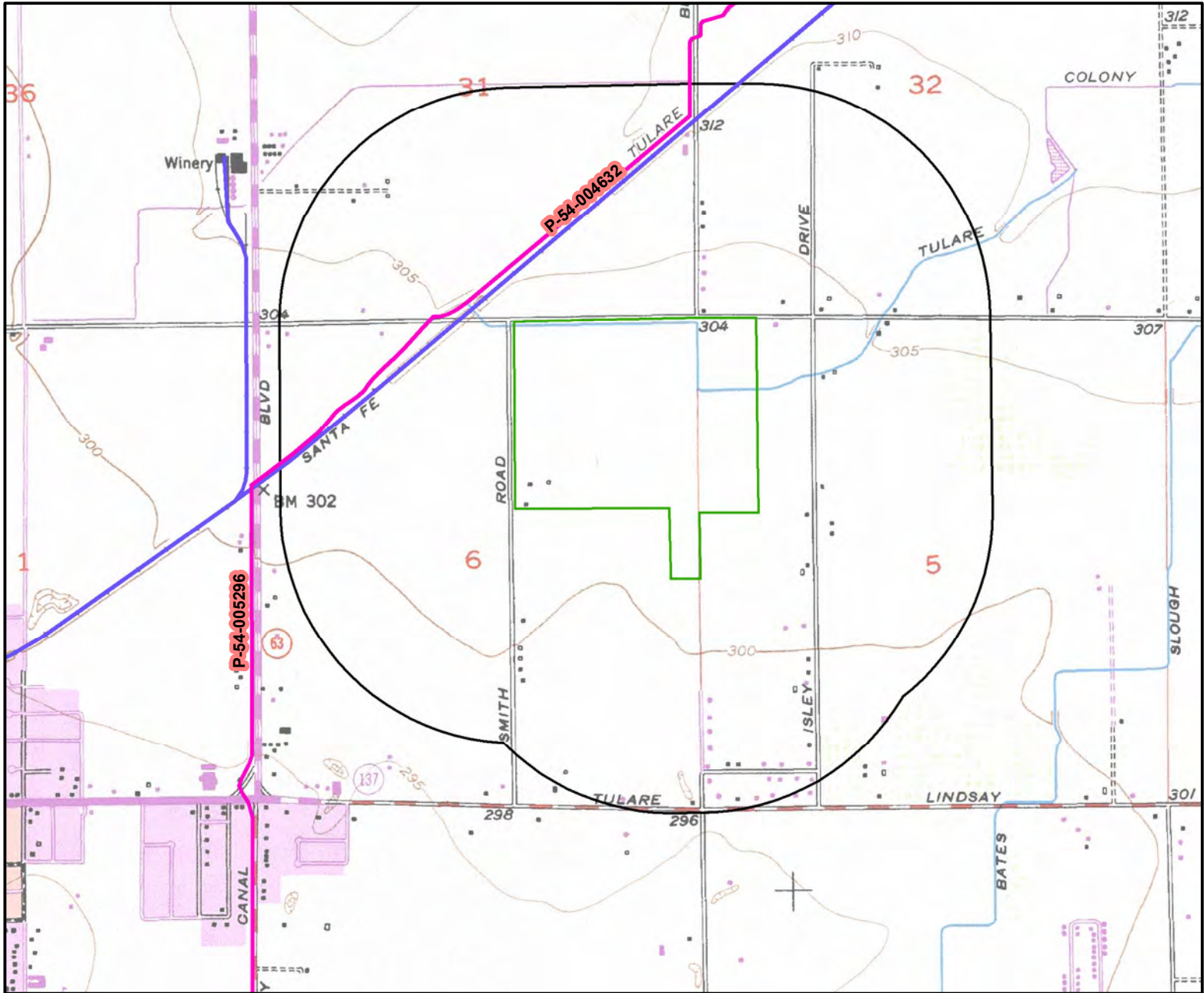
Requester: Heather Froshour; Soar Environmental Consulting, Inc.

Project Name: Phase I Cultural Resources Assessment Report Lagomarsino

USGS 7.5' Quad(s): Tulare

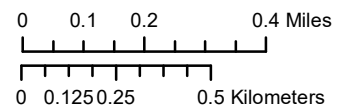
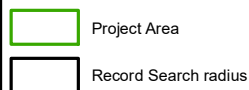
County: Tulare





May depict confidential cultural resource locations. Do not distribute.

Map pages depicting no data have been excluded.



#### Resources Map

SSJV Information Center Record Search 23-495

Requester: Heather Froshour; Soar Environmental Consulting, Inc.

Project Name: Phase I Cultural Resources Assessment Report Lagomarsino

USGS 7.5' Quad(s): Tulare

County: Tulare

## **APPENDIX B**

### **Sacred Lands File & Native American Contacts List Request**





**Corporate Headquarters**  
1322 E. Shaw Avenue, Suite 400 Fresno, CA, 93710  
[www.soarhere.com](http://www.soarhere.com) • 559.547.8884

## Sacred Lands File & Native American Contacts List Request

Tuesday, December 5, 2023

Native American Heritage Commission  
1550 Harbor Blvd., Suite 100  
West Sacramento, CA 95691  
Tel: 916.373.3710  
Fax: 916.373.5471  
[nahc@nahc.ca.gov](mailto:nahc@nahc.ca.gov)

**RE: Phase I CEQA Cultural Resource Assessment Report for proposed housing development bounded by Morrison St. and Prosperity Ave., Tulare, CA, 93274. APNs 172-080-002, 172-010-021, 172-010-022, & 184-020-010.**

Dear Sir/Madam,

Please find attached one project location map for the proposed housing development project in Tulare, CA.. The proposed project is situated on the Tulare, California (2022), USGS 7.5' Series Quadrangle, T20S, R 25E, S 5 & 6. The 140-acre project area is located on APNs 172-010-021, 172-010-022, & 184-020-010 and is bounded by Morrison St. and Prosperity Ave. in Tulare, California. The project is for a proposed housing development with a center at approximately WGS 84 11N 293417E 4011151N.

This letter is intended to inform you of the project and to help ensure compliance with the California Environmental Quality Act (CEQA). As part of the Cultural Resources Study for the project, we are requesting your insights on potential Native American cultural properties and resources in and/or near the project.

Please respond at your earliest convenience if you have any information to consider for this study.

Also, we would greatly appreciate if you could review the attached map and indicate to us if there are any concerns you might have or input regarding potentially sensitive cultural heritage values in the project area and vicinity.

Feel free to contact me by email at [hfroshour@soarhere.com](mailto:hfroshour@soarhere.com) or phone at 207.232.8912.

Most Sincerely,

Heather Froshour, M.A., R.P.A.  
Sr. Archaeologist  
Soar Environmental Consulting, Inc.  
207.232.8912

## Sacred Lands File & Native American Contacts List Request

### Native American Heritage Commission

1550 Harbor Blvd, Suite 100

West Sacramento, CA 95691

916-373-3710

916-373-5471 – Fax

[nahc@nahc.ca.gov](mailto:nahc@nahc.ca.gov)

*Information Below is Required for a Sacred Lands File Search*

**Project:** Phase I Cultural Resources Assessment Report Lagomarsino

**County:** Tulare

**USGS Quadrangle Name:** Tulare, California, Tulare County, 7.5' Series

**Township:** 20S    **Range:** 25E    **Section(s):** 5 & 6

**Company/Firm/Agency:** Soar Environmental Consulting Inc.

**Street Address:** 1322 East Shaw Ave. Suite 400

**City:** Fresno                      **Zip:** 93710

**Phone:** (559)547-8884

**Fax:** \_\_\_\_\_

**Email:** hfroshour@soarhere.com

### Project Description:

The 140-acre project area is located on APN 172-080-002, 172-010-021, 172-010-022, & 184-020-010 and is bounded by Morrison St and Prosperity Ave in Tulare, California. The Project proposes a 140 acre housing subdivision with a center at approximately WGS 84 11N 293417E 4011151N.

## Local Government Tribal Consultation List Request

### Native American Heritage Commission

1550 Harbor Blvd, Suite 100  
West Sacramento, CA 95691  
916-373-3710  
916-373-5471 – Fax  
[nahc@nahc.ca.gov](mailto:nahc@nahc.ca.gov)

#### Type of List Requested

- ☐ CEQA Tribal Consultation List (AB 52) – *Per Public Resources Code § 21080.3.1, subs. (b), (d), (e) and 21080.3.2*
- ☐ General Plan (SB 18) - *Per Government Code § 65352.3.*

#### Local Action Type:

\_\_\_ General Plan    \_\_\_ General Plan Element    \_\_\_ General Plan Amendment  
\_\_\_ Specific Plan    \_\_\_ Specific Plan Amendment    \_\_\_ Pre-planning Outreach Activity

#### Required Information

Project Title: \_\_\_\_\_

Local Government/Lead Agency: \_\_\_\_\_

Contact Person: \_\_\_\_\_

Street Address: \_\_\_\_\_

City: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Email: \_\_\_\_\_

#### Specific Area Subject to Proposed Action

County: \_\_\_\_\_ City/Community: \_\_\_\_\_

#### Project Description:

#### Additional Request

- ☐ Sacred Lands File Search - *Required Information:*

USGS Quadrangle Name(s): \_\_\_\_\_

Township: \_\_\_\_\_ Range: \_\_\_\_\_ Section(s): \_\_\_\_\_



## NATIVE AMERICAN HERITAGE COMMISSION

January 2, 2024

Heather Froshour  
Soar Environmental Consulting Inc.Via Email to: [hfroshour@soarhere.com](mailto:hfroshour@soarhere.com)CHAIRPERSON  
Reginald Pagaling  
ChumashVICE-CHAIRPERSON  
Buffy McQuillen  
Yokayo Pomo, Yuki,  
NomlakiSECRETARY  
Sara Dutschke  
MiwokPARLIAMENTARIAN  
Wayne Nelson  
LuiseñoCOMMISSIONER  
Isaac Bojorquez  
Ohlone-CostanoanCOMMISSIONER  
Stanley Rodriguez  
KumeyaayCOMMISSIONER  
Laurena Bolden  
SerranoCOMMISSIONER  
Reid Milanovich  
CahuillaCOMMISSIONER  
VacantEXECUTIVE SECRETARY  
Raymond C.  
Hitchcock  
Miwok, NisenanNAHC HEADQUARTERS  
1550 Harbor Boulevard  
Suite 100  
West Sacramento,  
California 95691  
(916) 373-3710  
[nahc@nahc.ca.gov](mailto:nahc@nahc.ca.gov)  
[NAHC.ca.gov](http://NAHC.ca.gov)

Re: Native American Tribal Consultation, Pursuant to the Assembly Bill 52 (AB 52), Amendments to the California Environmental Quality Act (CEQA) (Chapter 532, Statutes of 2014), Public Resources Code Sections 5097.94 (m), 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2 and 21084.3, Phase I Cultural Resources Assessment Report Lagomarsino Project, Tulare County

Dear Ms. Froshour:

Pursuant to Public Resources Code section 21080.3.1 (c), attached is a consultation list of tribes that are traditionally and culturally affiliated with the geographic area of the above-listed project. Please note that the intent of the AB 52 amendments to CEQA is to avoid and/or mitigate impacts to tribal cultural resources, (Pub. Resources Code §21084.3 (a)) ("Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource.")

Public Resources Code sections 21080.3.1 and 21084.3(c) require CEQA lead agencies to consult with California Native American tribes that have requested notice from such agencies of proposed projects in the geographic area that are traditionally and culturally affiliated with the tribes on projects for which a Notice of Preparation or Notice of Negative Declaration or Mitigated Negative Declaration has been filed on or after July 1, 2015. Specifically, Public Resources Code section 21080.3.1 (d) provides:

*Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section.*

The AB 52 amendments to CEQA law does not preclude initiating consultation with the tribes that are culturally and traditionally affiliated within your jurisdiction prior to receiving requests for notification of projects in the tribe's areas of traditional and cultural affiliation. The Native American Heritage Commission (NAHC) recommends, but does not require, early consultation as a best practice to ensure that lead agencies receive sufficient information about cultural resources in a project area to avoid damaging effects to tribal cultural resources.

The NAHC also recommends, but does not require that agencies should also include with their notification letters, information regarding any cultural resources assessment that has been completed on the area of potential effect (APE), such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

- A listing of any and all known cultural resources that have already been recorded on or adjacent to the APE, such as known archaeological sites;
- Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
- Whether the records search indicates a low, moderate, or high probability that unrecorded cultural resources are located in the APE; and
- If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

- Any report that may contain site forms, site significance, and suggested mitigation measures.

All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code section 6254.10.

3. The result of any Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was negative.

4. Any ethnographic studies conducted for any area including all or part of the APE; and

5. Any geotechnical reports regarding all or part of the APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS are not exhaustive and a negative response to these searches does not preclude the existence of a tribal cultural resource. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the event that they do, having the information beforehand will help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our consultation list remains current.

If you have any questions, please contact me at my email address: [Cameron.vela@nahc.ca.gov](mailto:Cameron.vela@nahc.ca.gov).

Sincerely,  
*Cameron Vela*

Cameron Vela  
Cultural Resources Analyst

Attachment

Native American Heritage Commission  
Native American Contact List  
Tulare County  
1/2/2024

County	Tribe Name	Fed (F) Non-Fed (N)	Contact Person	Contact Address	Phone #	Fax #	Email Address	Cultural Affiliation	Counties	Last Updated
Tulare	Santa Rosa Rancheria Tachi Yokut Tribe	F	Shana Powers, THPO	P.O. Box 8 Lemoore, CA, 93245	(559) 423-3900		spowers@tachi-yokut-nsn.gov	Southern Valley Yokut	Fresno,Kern,Kings,Merced,Monterey,San Benito,San Luis Obispo,Tulare	10/3/2023
	Santa Rosa Rancheria Tachi Yokut Tribe	F	Nichole Escalon, Cultural Specialist I	P.O. Box 8 Lemoore, CA, 93245	(559) 924-1278		nescalone@tachi-yokut-nsn.gov	Southern Valley Yokut	Fresno,Kern,Kings,Merced,Monterey,San Benito,San Luis Obispo,Tulare	10/3/2023
	Santa Rosa Rancheria Tachi Yokut Tribe	F	Samantha McCarty, Cultural Specialist II	P.O. Box 8 Lemoore, CA, 93245	(559) 633-3440		smccarty@tachi-yokut-nsn.gov	Southern Valley Yokut	Fresno,Kern,Kings,Merced,Monterey,San Benito,San Luis Obispo,Tulare	10/3/2023
	Tule River Indian Tribe	F	Neil Peyron, Chairperson	P.O. Box 589 Porterville, CA, 93258	(559) 781-4271	(559) 781-4610	neil.peyron@tulerivertribe-nsn.gov	Yokut	Alameda,Amador,Calaveras,Contra Costa,Fresno,Inyo,Kern,Kings,Madera,Mariposa,Merced,Monterey,Sacramento,San Alameda,Calaveras,Contra Costa,Fresno,Inyo,Kings,Madera,Marin,Mariposa,Merced,Mono,Monterey,San Benito,San	
	Wuksachi Indian Tribe/Eshom Valley Band	N	Kenneth Woodrow, Chairperson	1179 Rock Haven Ct. Salinas, CA, 93906	(831) 443-9702		kwood8934@aol.com	Foothill Yokut Mono		6/19/2023

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and section 5097.98 of the Public Resources Code.

This list is only applicable for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed Phase I Cultural Resources Assessment Report Lagomarsino Project, Tulare County.

Record: PROJ-2024-000015  
Report Type: AB52 GIS  
Counties: Tulare  
NAHC Group: All



**Corporate Headquarters**  
1322 E. Shaw Avenue, Suite 400 Fresno, CA, 93710  
[www.soarhere.com](http://www.soarhere.com) • 559.547.8884

Tuesday, January, 2024

Santa Rosa Rancheria Tachi Yokut Tribe  
P.O. Box 8  
Lemoore, CA, 93245  
Phone: (559) 924-1278  
[nescalone@tachi-yokut-nsn.gov](mailto:nescalone@tachi-yokut-nsn.gov)

**RE: Proposed housing subdivision bounded by Morrison St. and Prosperity Ave., Tulare, CA, 93274. APNs 172-010-021, 172-010-022, & 184-020-010.**

Dear Nichole Escalon, Cultural Specialist I,

Below, please find a description of the proposed project, a map showing the project location, and the name of our project point of contact, pursuant to Public Resources Code (PRC) § 21080.3.1 (d).

The proposed project is situated on the Tulare, California (2022), USGS 7.5' Series Quadrangle, T20S, R 25E, S 5 & 6. The 140-acre project area is located on APNs 172-010-021, 172-010-022, & 184-020-010 and is bounded by Morrison St. and Prosperity Ave. in Tulare, California. The project is for a proposed housing development with a center at approximately WGS 84 11N 293417E 4011151N.

4Creeks, Inc. has requested a Phase 1 Archaeological Resource Assessment (Phase 1) to determine the potential for cultural resources prior to development, pursuant to state and local laws, including the California Environmental Quality Act (CEQA) and Tulare County guidelines. Soar Environmental Consulting Inc. (Soar Environmental) proposes to complete the Phase 1 study for the present project.

An important element of a Phase 1 study is to identify sites, resources, or locations of cultural importance to the local Native American community. As part of the process, Soar Environmental contacted the Native American Heritage Commission (NAHC) on December 5, 2023. On January 2, 2024, Soar received a response letter from the NAHC indicating **negative results** of the Sacred Lands File search. Furthermore, the NAHC identified your organization as a point of contact regarding potentially known recorded sites or cultural resources within Tulare County.

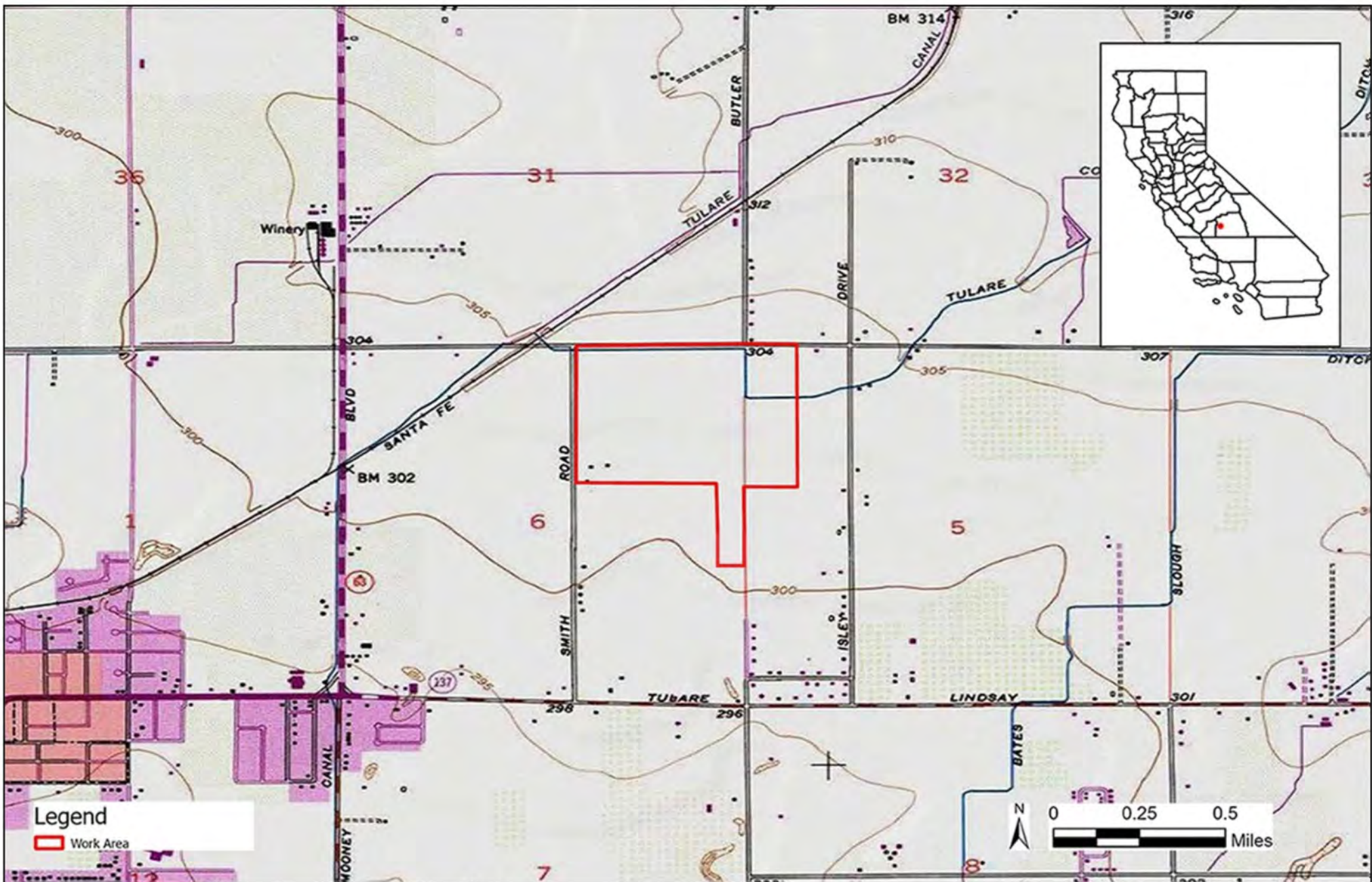
Soar contacted the Southern San Joaquin Valley Information Center (SSJVIC) of the California Historical Resources Information System on December 5, 2023. On December 18, 2023, SSJVIC revealed no historic cultural resources within the project area. No archaeological sites are known within the project area. Two (2) previous surveys have been conducted within the project area. Two (2) historic cultural resources were identified within the ½-mile search radius of the project area. No historic properties on federal, state, or local inventories have been evaluated within the project area. Four (4) previous surveys have been conducted within a ½-mile radius of the project area. On December 16, 2023, Soar conducted an archeological pedestrian field survey of the project area. **No cultural resources** were identified during the field survey, the South Fork Persian Ditch earthenware irrigation ditch.


Soar is contacting you to determine if you have any concerns regarding the proposed development. Pursuant to PRC § 21080.3.1 (d), you have **30 days** from the receipt of this letter to request consultation, in writing, with Soar. Should you have any concerns or knowledge of cultural resources in the specific project area, please contact me at [hfroshour@soarhere.com](mailto:hfroshour@soarhere.com) or at (207) 232-8912 at your earliest convenience. If Soar does not hear from you within this time, we shall assume that you have no comments regarding this project.

Respectfully,

Heather Froshour, M.A., R.P.A.  
Sr. Archaeologist  
Soar Environmental Consulting, Inc.





 <p>1322 East Shaw Avenue, Suite 400 Fresno, CA 93710 www.soarhere.com 559.547.8884</p>	<p><u>Title</u> Project Location</p>	<p><u>Facility Address</u> Subdivision bounded by Morrison and Prosperity in the City of Tulare.</p>	<p>Figure # 1 Project Location</p>
	<p><u>Client</u> 4Creeks</p>		<p>Revision Date 12/05/2023</p>



**Corporate Headquarters**  
1322 E. Shaw Avenue, Suite 400 Fresno, CA, 93710  
[www.soarhere.com](http://www.soarhere.com) • 559.547.8884

Tuesday, January, 2024

Santa Rosa Rancheria Tachi Yokut Tribe  
P.O. Box 8  
Lemoore, CA, 93245  
Phone: (559) 633-3440  
[smccarty@tachi-yokut-nsn.gov](mailto:smccarty@tachi-yokut-nsn.gov)

**RE: Proposed housing subdivision bounded by Morrison St. and Prosperity Ave., Tulare, CA, 93274. APNs 172-010-021, 172-010-022, & 184-020-010.**

Dear Samantha McCarty, Cultural Specialist II,

Below, please find a description of the proposed project, a map showing the project location, and the name of our project point of contact, pursuant to Public Resources Code (PRC) § 21080.3.1 (d).

The proposed project is situated on the Tulare, California (2022), USGS 7.5' Series Quadrangle, T20S, R 25E, S 5 & 6. The 140-acre project area is located on APNs 172-010-021, 172-010-022, & 184-020-010 and is bounded by Morrison St. and Prosperity Ave. in Tulare, California. The project is for a proposed housing development with a center at approximately WGS 84 11N 293417E 4011151N.

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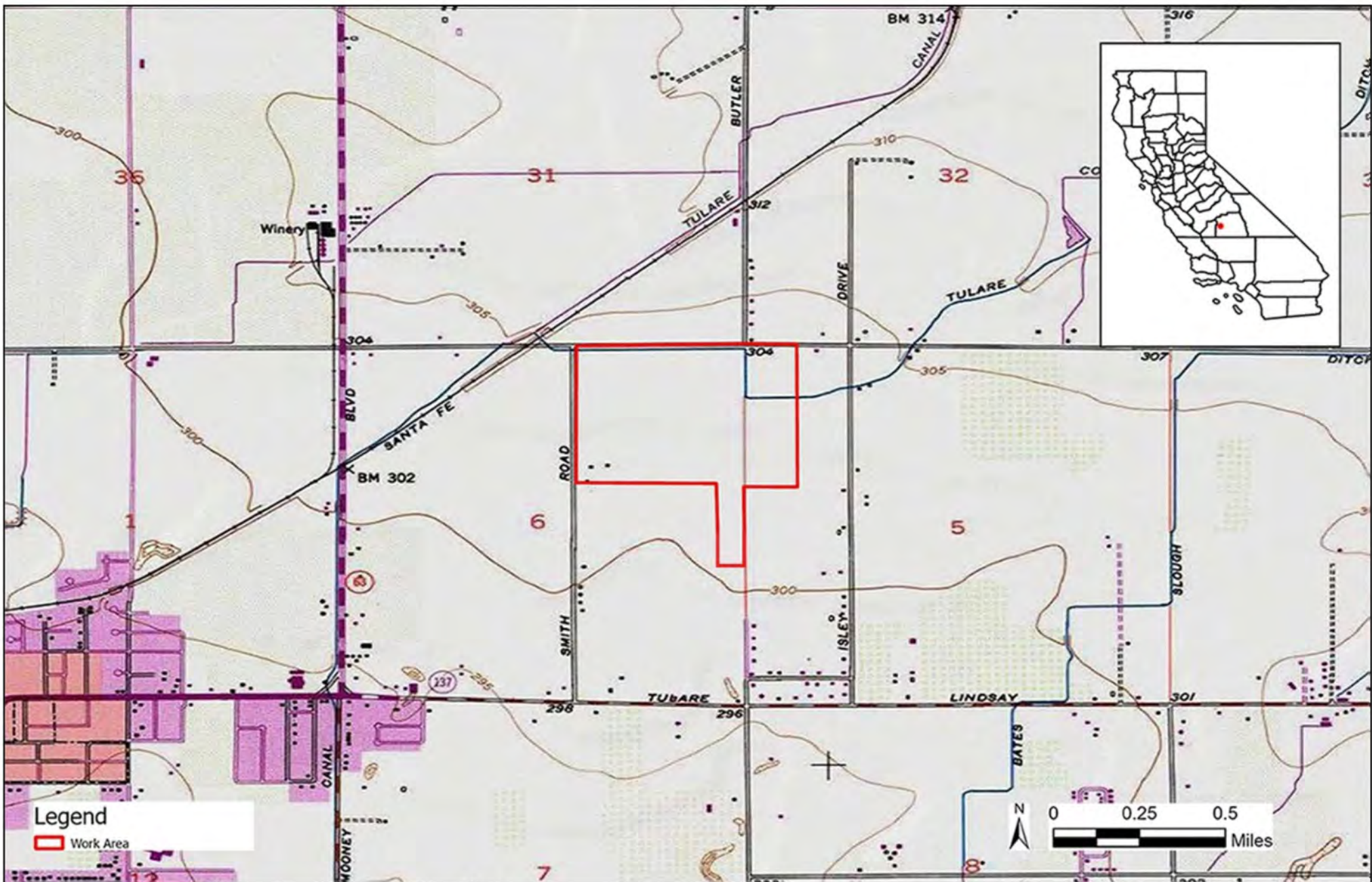
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Soar is contacting you to determine if you have any concerns regarding the proposed development. Pursuant to PRC § 21080.3.1 (d), you have **30 days** from the receipt of this letter to request consultation, in writing, with Soar. Should you have any concerns or knowledge of cultural resources in the specific project area, please contact me at [hfroshour@soarhere.com](mailto:hfroshour@soarhere.com) or at (207) 232-8912 at your earliest convenience. If Soar does not hear from you within this time, we shall assume that you have no comments regarding this project.

Respectfully,

Heather Froshour, M.A., R.P.A.  
Sr. Archaeologist  
Soar Environmental Consulting, Inc.





 <p>1322 East Shaw Avenue, Suite 400 Fresno, CA 93710 www.soarhere.com 559.547.8884</p>	<p>Title Project Location</p>	<p>Facility Address Subdivision bounded by Morrison and Prosperity in the City of Tulare.</p>	<p>Figure # 1 Project Location</p>
	<p>Client 4Creeks</p>		<p>Revision Date 12/05/2023</p>



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Tuesday January 2, 2024

Santa Rosa Rancheria Tachi Yokut Tribe  
P.O. Box 8  
Lemoore, CA, 93245  
Phone: (559) 423-3900  
[spowers@tachi-yokut-nsn.gov](mailto:spowers@tachi-yokut-nsn.gov)

**RE: Proposed housing subdivision bounded by Morrison St. and Prosperity Ave., Tulare, CA, 93274. APNs 172-010-021, 172-010-022, & 184-020-010.**

Dear Shana Powers, THPO,

Below, please find a description of the proposed project, a map showing the project location, and the name of our project point of contact, pursuant to Public Resources Code (PRC) § 21080.3.1 (d).

The proposed project is situated on the Tulare, California (2022), USGS 7.5' Series Quadrangle, T20S, R 25E, S 5 & 6. The 140-acre project area is located on APNs 172-010-021, 172-010-022, & 184-020-010 and is bounded by Morrison St. and Prosperity Ave. in Tulare, California. The project is for a proposed housing development with a center at approximately WGS 84 11N 293417E 4011151N.

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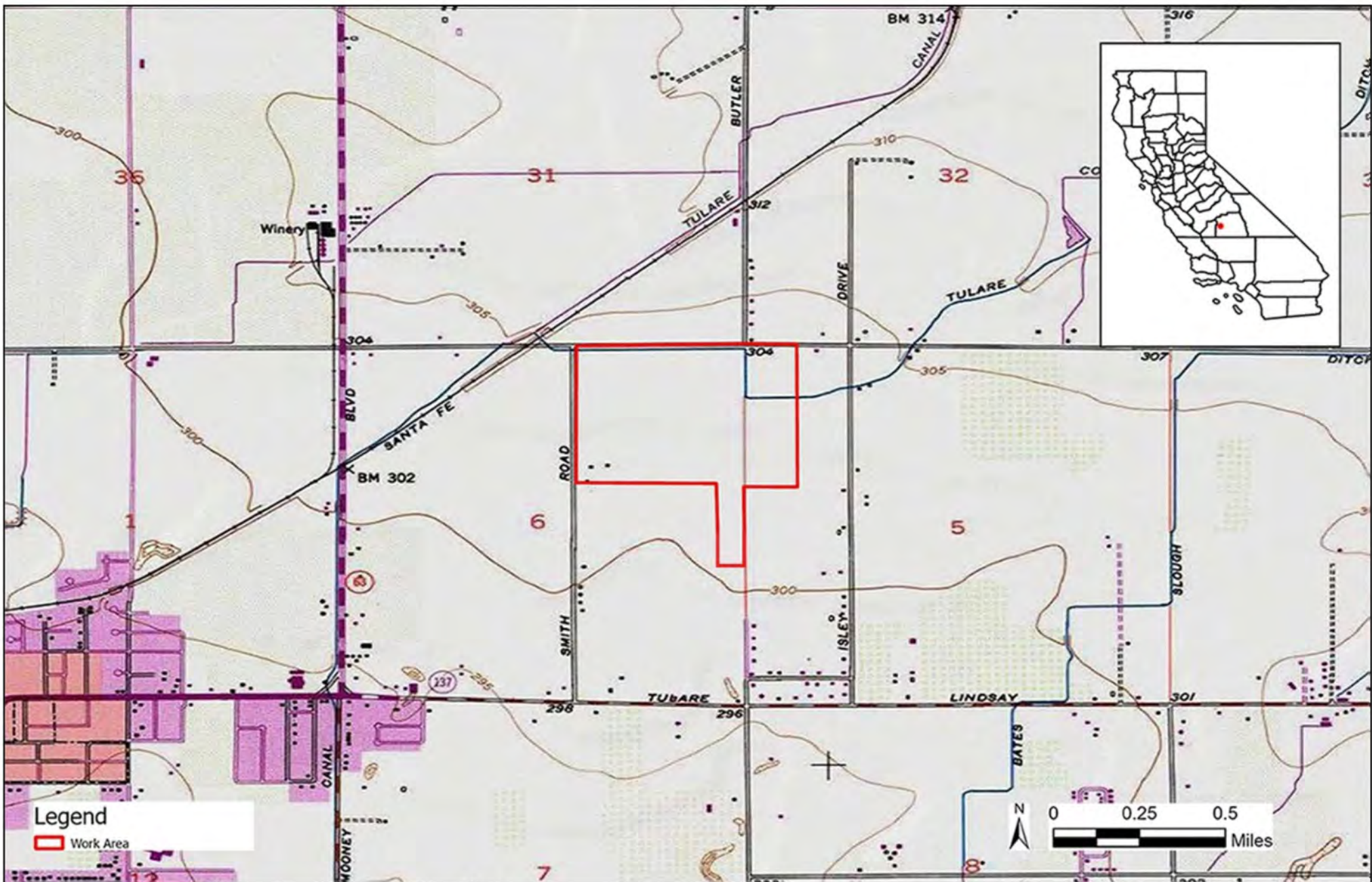
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Heather Froshour, M.A., R.P.A.  
Sr. Archaeologist  
Soar Environmental Consulting, Inc.





 <p>1322 East Shaw Avenue, Suite 400          Fresno, CA 93710          www.soarhere.com          559.547.8884</p>	<b>Title</b> Project Location		<b>Figure # 1</b> Project Location
	<b>Client</b> 4Creeks		<b>Revision Date</b> 12/05/2023
<b>Facility Address</b> Subdivision bounded by Morrison and Prosperity in the City of Tulare.			



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Tuesday, January, 2024

Tule River Indian Tribe  
P.O. Box 589  
Porterville, CA, 93258  
Phone: (559) 781-4271  
[neil.peyron@tulerivertribe-nsn.gov](mailto:neil.peyron@tulerivertribe-nsn.gov)

**RE: Proposed housing subdivision bounded by Morrison St. and Prosperity Ave., Tulare, CA, 93274. APNs 172-010-021, 172-010-022, & 184-020-010.**

Dear Neil Peyron, Chairperson,

Below, please find a description of the proposed project, a map showing the project location, and the name of our project point of contact, pursuant to Public Resources Code (PRC) § 21080.3.1 (d).

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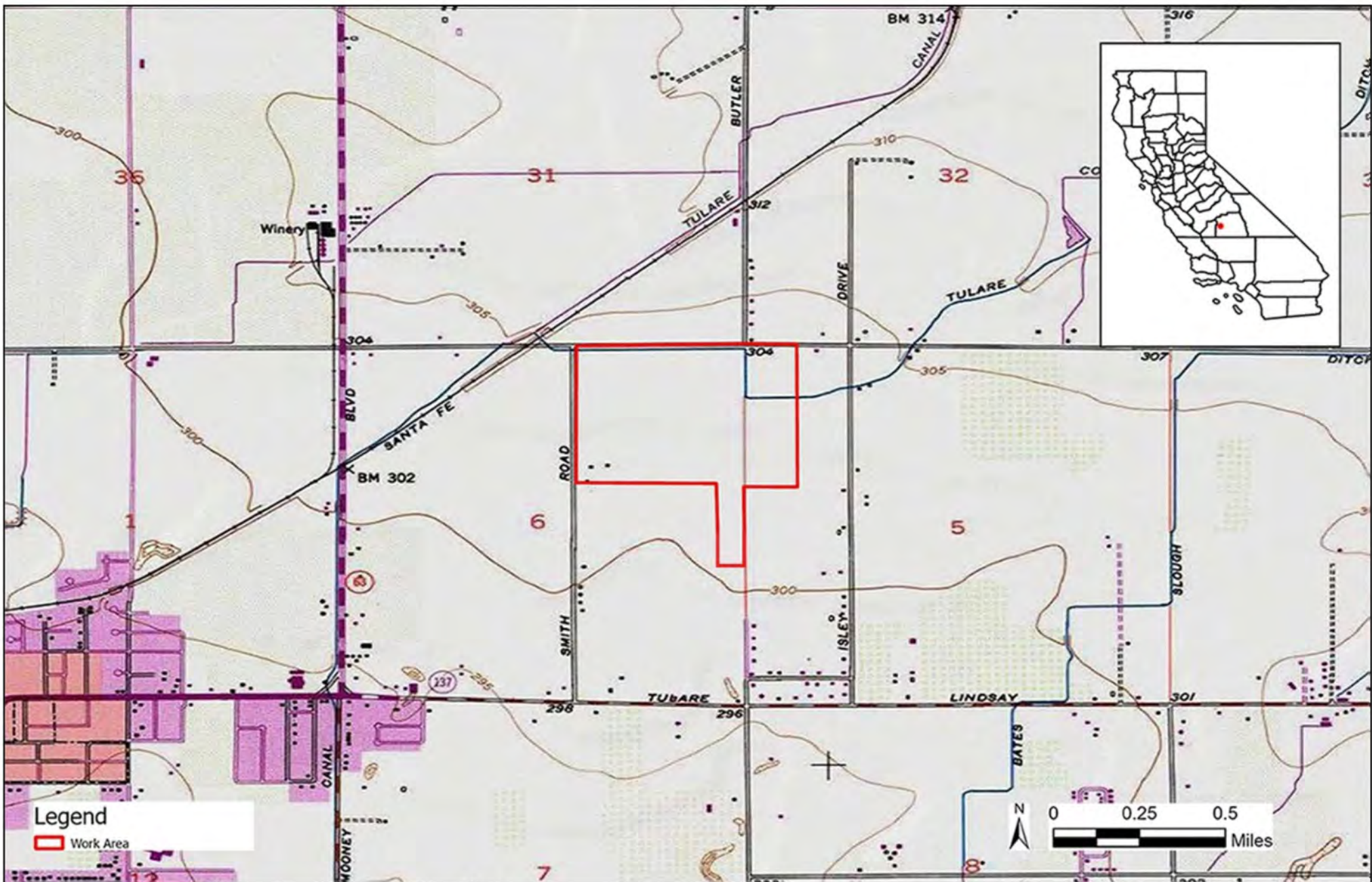
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 <p>1322 East Shaw Avenue, Suite 400 Fresno, CA 93710 www.soarhere.com 559.547.8884</p>	<p><u>Title</u> Project Location</p>	<p><u>Facility Address</u> Subdivision bounded by Morrison and Prosperity in the City of Tulare.</p>	<p>Figure # 1 Project Location</p>
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Tuesday, January, 2024

Wuksachi Indian Tribe/Eshom Valley Band  
1179 Rock Haven Ct.  
Salinas, CA, 93906  
Phone: (831) 443-9702  
kwood8934@aol.com

**RE: Proposed housing subdivision bounded by Morrison St. and Prosperity Ave., Tulare, CA, 93274. APNs 172-010-021, 172-010-022, & 184-020-010.**

Dear Kenneth Woodrow, Chairperson,

Below, please find a description of the proposed project, a map showing the project location, and the name of our project point of contact, pursuant to Public Resources Code (PRC) § 21080.3.1 (d).

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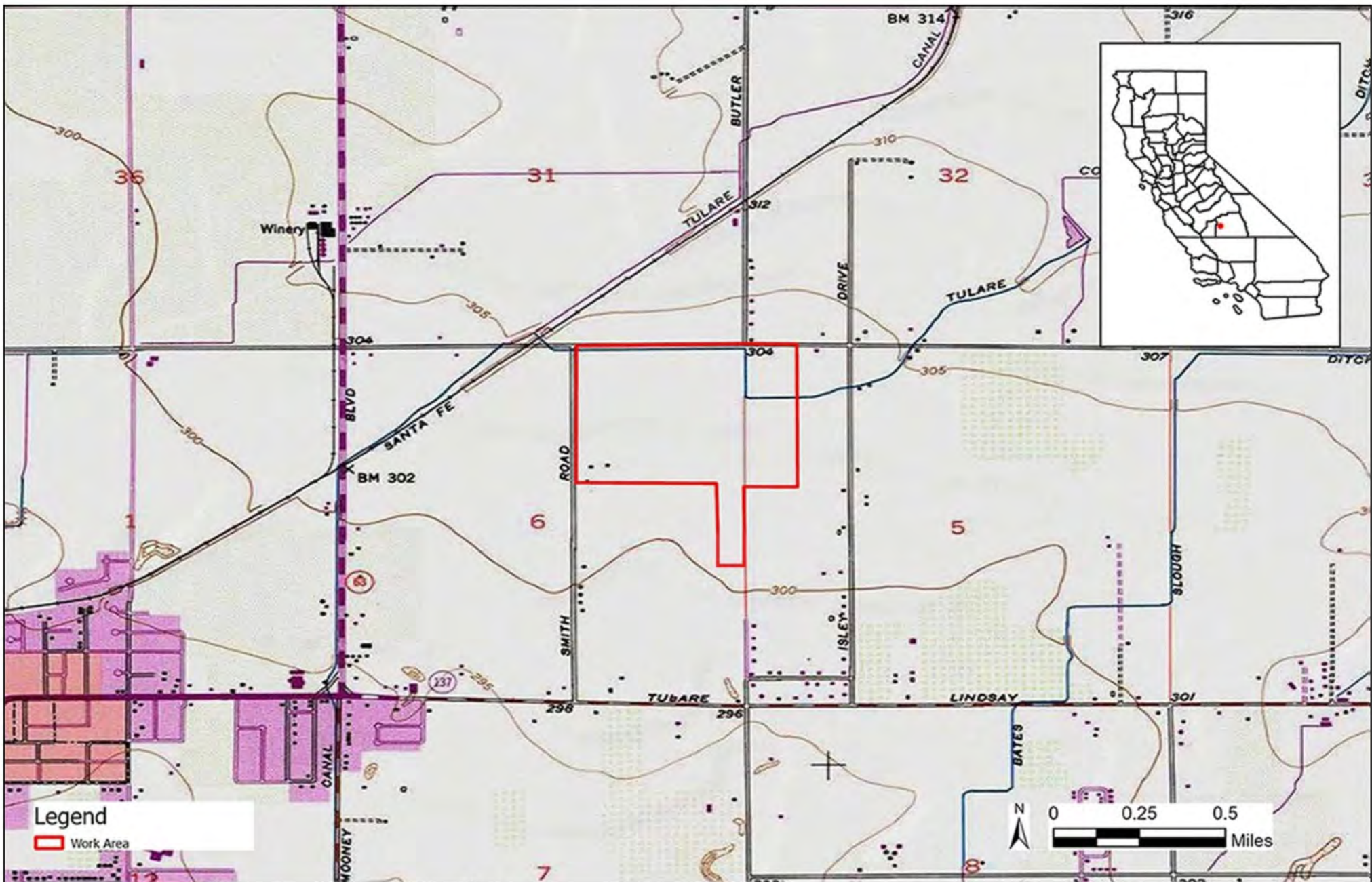
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## APPENDIX C

### Staff Resumes





## Heather Froshour

### Senior Archaeologist

### 12 Years of Relevant Experience

#### Biography

Ms. Froshour's background emphasises archaeology, anthropology, and cultural resources monitoring.

#### Education

- M.A. in Historical Archaeology, November 2014. University of Leicester, Leicester, UK.
- B.A. in Anthropology/Geography, June 2010. University of Southern Maine, Gorham/Portland, ME.

#### Professional Development

- 8 hr training in Wilderness First Aid (Sierra Rescue International)
- Adult, Child, Infant C.A.R.E. CPR & First Aid Training (Sierra Rescue International)
- Driver/Operator

#### Professional Affiliations

- Register of Professional Archaeologists
- CHRIS Qualified Archaeologist
- Society of American Archaeology - SAA
- Society of Historical Archaeology - SHA

#### Technical Expertise

- Lithic Analysis
- Technical Report Writing
- Lab analysis
- Cultural Monitoring
- Site Surveying – Phases 1-3
- Excavation
- Metal Detection
- Auguring
- Research
- MS Office
- Collector for ArchGIS

### Practical Experience

Ms. Froshour is a registered professional archaeologist and cultural resources specialist with extensive experience in field and technical work. This experience including cultural resources monitoring, site survey, phase 1-3 excavations, and anthropology on various projects throughout the United States. She has a combined 8 years of experience in academic, consulting, museum, and public archaeology, and has worked in CRM since 2013 throughout various regions of the United States. Primary states of focus have included Maine, Massachusetts, Louisiana, Georgia, Virginia, Arizona, and California. She routinely assesses cultural resources for project related effects and their significance, provides cultural resource mitigation services, directs archaeological surveys of both excavation and pedestrian methods, and prepares documents for Section 106 of the NHPA, CEQA, and NRHP. Ms. Froshour also has experience working alongside trial monitors through survey with in the Colorado River and Mendocino National Forest regions. She has worked alongside the USDA Forest Service to provide post-fire monitoring and mitigation recommendations.

Ms. Froshour is certified by the Register for Professional Archeologists (Registrant ID: 5457).

### Highlighted Projects

#### **California High-Speed Rail Authority Construction Package 1, Cultural Resources Support, March 2023-Present**

Heather is the Cultural Resources Support for this construction package. As such, she oversees staff archaeologist cultural reporting, monitoring, and artifact processing on the 33-mile right of way in Fresno and Madera Counties.

#### **SOAR Environmental Consulting, Senior Archaeologist, January 2023-Present Senior Archaeologist, Phase I Cultural Resources Assessment, Visalia, California**

Provided desktop research, supervised the 2 person crew site pedestrian survey, full Phase 1 report, and Cultural Resources Initial Study for rezoning and housing subdivision construction project in Tulare County.

#### **Senior Archaeologist, Phase I Cultural Resources Evaluation, Yokuts Valley, California**

Provided desktop research, tribal consultation, and full Phase 1 report for the construction a new saber transmission tower to accompany existing USACE and CAL FIRE structures on a 100 square feet area on top of Bear Mountain in Fresno County.

#### **Senior Archaeologist, Phase I Cultural Resources Evaluation, Shirley Meadows, California**

Provided desktop research, tribal consultation, and full Phase 1 report with DPR forms for the construction a new saber transmission tower, and concrete masonry shelter enclosed in an 8 foot tall wire fence on a 100 square feet area on top of Shirley Peak in Kern County.

#### **Senior Archaeologist, Phase I Cultural Resources Evaluation, Mountain Ranch, California**

Provided desktop research, tribal consultation, and full Phase 1 report with DPR forms for the construction a new saber transmission tower, and propane tank enclosed in an 8 foot tall wire fence on a 100 square feet area on top of Quiggs Mountain in Calaveras County.



**Senior Archaeologist, Phase I Cultural Resources Assessment, Glennville, California**

Provided desktop research, site pedestrian survey, tribal consultation, and full Phase 1 report for the construction a new saber transmission tower, CMU block shelter, and parking lot enclosed in a wire fence on a 100 square feet area on top of Mount Pheasant in Kern County.

**Senior Archaeologist, Phase I Cultural Resources Assessment, Bakersfield, California**

Provided desktop research, site pedestrian survey, and full Phase 1 report for rezoning project and multiple family residence construction project.

**Senior Archaeologist, Phase I Cultural Resources Assessment, Joshua Tree, California**

Provided desktop research, site pedestrian survey, and full Phase 1 report for upscale yurt campground construction project.

**Post Fire Fuels and Priority Heritage Asset Assessment Surveys, Grindstone Region, CA (June 2022-December 2022). The Great Basin Institute, Archaeological Crew Lead.**

Phase I pedestrian surveys and site recording on post-wildfire burned landscapes within the Mendocino National Forest. Overseeing a small crew in the field survey, site recording, and completion of extensive USDA Forest Service site reports and mapping of cultural resources in the area. Ensured that all pertinent data is documented and reported to Forest Services standards with specific attention to current field conditions, disturbances, vegetation, terrain, and geospatial data of cultural resources. Provided day to day support of the crew and worked as a liaison between the Great Basin Institute and Mendocino National Forest personnel. Conducted Section 106 and Section 110 Priority Heritage Asset assessments of archaeological resources throughout the eastern region of the Mendocino. Assisted in final Phase 1 survey report writing.

**Various Cultural Resource Management Survey Projects, GA & NC (June 2021- April 2022). TerraXplorations, Inc., Archaeology Field Director.**

Phase I shovel testing in various locations throughout Georgia, in addition to a single project just outside of Raleigh, NC. These projects include road, bridge, and culvert improvement surveys as well as solar tract, farm, and generator surveys. All projects were conducted in 30m intervals along transect within the ESB of the survey area. All positive shovel tests were then delineated in 15m interval cruciform to determine site boundaries. Several projects required the use of metal detection grids in order to thoroughly survey areas of known Civil War activity. A number of projects for the Georgia Department of Transportation also required the probing of areas within the project ESB that were located within 1km from a known cemetery, with potential anomalies delineated and all results fully recorded. Duties include overseeing and directing field crews in locating, collecting, recording, and interpreting data from the survey. The supervision of personnel, including aiding in hiring and firing, performance reviews, training, work allocation, and problem resolution. Ensuring safe work practices and directing morning safety meetings to address potential hazards and safety concerns in the areas scheduled for fieldwork that day. Participation in field and office meetings with PIs and company owners to address scheduling and management procedures based on client needs as well as those of state and federal regulations and requirements.



**Cultural Resource Management Survey Project, VAM-1 and Glasgow Pipeline Replacement, VA (May 2021-June 2021). TerraXplorations, Inc., Archaeology Crew Chief.**

Phase I shovel test excavations from the replacement of the VAM-1 and Glasgow natural gas pipelines in the Blue Ridge Mountains, near the Appalachian Trail. Evaluated and conducted field work in various conditions in primarily mountainous terrain. Under direct supervision helped to manage and organize field crew in order to complete the project in a timely and efficient manner. Maintained field equipment and assisted in the writing and compilation of all field paperwork. Personally in charge of the majority of all mappings of and oversight of field crew for sites throughout the project area.

**Various Cultural Resource Management Survey Projects, LA & MS (August 2020-May 2021). TerraXplorations, Inc., Archaeology Field Technician.**

Phase I shovel test excavations for bank mitigation in North Eastern Mississippi along the Buttahatchee River. Phase III survey of two projects; the historic St. Amelia Plantation in Welcome, Louisiana and an unnamed prehistoric village in Plaquemine, Louisiana. The phase III projects both required excavating the foundations of various structures, and in the case of the prehistoric site excavating and mapping postholes within pits. The projects also required drawing plan views, and stratigraphic profiles, as well as feature and level write-ups. Unit excavations included 1mx1m to 3mx3m units, with a few requiring the extension of existing units to chase out observed features and artifact clusters.

**Various Cultural Resource Management Survey Projects, ID & WI (June 2020 -July 2020). Tetra Tech, Inc., Archaeology Field Technician.**

Phase I pedestrian surveying of various wind and solar farm projects throughout corn and soybean fields.

**Cultural Resource Management Survey, Acadiana to Gillis, LA (January 2020-March 2020). BGE, Inc., Archaeology Field Technician.**

Phase I shovel test excavations of proposed natural gas pipeline between Acadian and Gillis, Louisiana. This project entailed the excavation of 30mx30m units with distance varying based on HPA and LPA guidelines (a spacing of 30m to 50m respectively). A requirement of the survey was to maintain daily investigation point forms for individual shovel test units. In addition to this, it was required to aid in recording artifacts and photos of sites found throughout the project.

**Various Cultural Resource Management Survey Projects, MN & IA (November 2019-December 2019). In Situ Archeological Consulting LLC, Archaeology Field Technician.**

Phase I pedestrian surveying of various natural gas and cellular tower projects, as well as Phase II field work entailing the excavation of 45cmX45cm test units and GPS data collection. The projects also occasionally required the writing of site forms, and research for future projects at the Minnesota SHPO collections.

**Cultural Resource Management Survey, Ten West Link Project, CA & AZ (August 2019-October 2019). POWER Engineers Inc., Archaeology Field Technician.**

Phase I pedestrian survey of the proposed 500 kV transmission line connecting electrical substations in Tonopah, Arizona and Blythe, California. This project entailed working in one of five teams, and often included 1-2 tribal monitors from the Colorado River Indian Tribes. The right of way crews used a 400ft buffer for the corridor, with each team using a 15m spread to survey the proposed transmission line. This survey required the use of a Trimble GPS system to navigate the corridor and plot both isolate and site locations for GIS and recording crew



- SWPPP
- CPESC
- Fish Habitat
- Biological
- Native Plant
- Groundwater
- Hazardous



## **Evan G. Studley,** **Sr. Project Manager/ Geologist/QSP-** **QISP/HazMat**

### **30 Years of Environmental Consulting**

#### **Biography**

As a Senior Geologist, Evan has experience in developing and managing all facets of Construction Projects, including construction oversight, SWPPP development and monitoring, CEQA and NEPA permitting, conducting geological surveys, Phase I and Phase II Environmental Site Assessments, hydrogeological investigations, fish habitat conservation, stream restoration, biological studies, and soil and groundwater remediation throughout California and Nevada.

#### **Education**

BS, Geology, California State University  
Fresno, Fresno, CA.

#### **Certifications/Workshops**

- Qualified SWPPP Practitioner (QSP) #26898
- Qualified Industrial Stormwater Practitioner (QISP) #01072
- Hazardous Waste in California Certificate
- DOT Hazardous Waste Transportation Certificate

#### **Affiliations**

- Society for California Archaeology
- California Association of Environmental Professionals

#### **Technical Expertise**

- Geological Surveys
- Phase I and II Environmental Site Assessments (ESA)
- Hydrogeological Monitoring

#### **Practical Experience**

As a Senior Geologist, Evan has robust experience in developing and managing all facets of Construction. Evan has experience with Hazardous Materials and Hazardous Waste identification and soil, groundwater, and air sampling. His field experience includes observations of the release of hazardous materials through stressed vegetation, soil staining, leachate, waste material buildup, water discoloration, odor, and sheen identification. Projects include hazardous materials assessments, project management, construction oversight, SWPPP compliance and monitoring, CEQA and NEPA permitting, geological surveys, Environmental Site Assessments, hydrogeological investigations, fish habitat conservation, stream restoration, biological surveys, and soil and groundwater remediation throughout California and Nevada. Evan characterizes soil types, investigates impacts on streams and waterways, and interprets hydrogeological gradients. Evan has investigated unconfined groundwater seasonal variations and analyzed depth to soil/bedrock interface based on groundwater monitoring well datum and field determination of groundwater depth and flow direction. Evan has performed stream restoration of California rivers utilizing natural materials to mimic naturally occurring conditions.

#### **Highlighted Projects**

##### **National Park Service, Yosemite “The Fort” Building Hazardous Materials Assessment Plan – Lead Investigator**

The National Park Service seeks to repopulate 1930’s era building known as “The Fort.” Evan and his team assessed the locations of asbestos, lead, and other substances onsite. His team reviewed previous studies, updated them with current data, and provided a comprehensive technical report to the Park Service.

##### **California High-Speed Rail Del Monte Phase II ESA, Fresno, CA**

Mr. Studley prepared a Phase II ESA for the former Del Monte Food Processing plant site with an underground storage tank that had leaked for 50 years. He screened for contaminants from soil borings, provided recommendations for additional steps, and designed and implemented a remediation strategy.

##### **Caltrans Sacramento I-5 West End Viaduct**

The California Department of Transportation, District 3, sought to strengthen the I-5 West End Viaduct superstructure to increase permitted loads. Caltrans sought out professional and technical services for the project approval and environmental document phase of the project.

Evan led the Soar Environmental team to conduct initial hazardous waste site assessments and investigations, involving interviews with past/present owners, operators, and occupants of the project site, reviewed historical and governmental documentation about the site, and visually inspected the site and adjoining properties. Soar also investigated a hazardous



waste site involving soil, lead-based paint, and asbestos-containing material sampling. Evan's team submitted the draft and final supplemental assessments, necessary technical reports for hazardous waste assessments, and the lead and asbestos investigative reports.

#### **California High-Speed Rail, Construction Package 1 SWPPP/Hazardous Waste Oversight – Fresno**

Evan served as the SWPPP/Hazardous Waste Oversight Manager for the 33-mile Construction Package 1 of the California High-Speed Rail Project. Evan manages the contractor's implementation of the Construction General Permit and SWPPP to ensure compliance with all permits, including water and air quality requirements. He ensured entries in the Stormwater Multiple Application and Report Tracking System (SMARTS) were consistent with field conditions, including Water Pollution Control Drawings, acreage changes, training, and documentation completion. Evan ensures water quality compliance with the Mitigation Monitoring and Reporting Program, evaluates the effectiveness of water quality Environmental Management Systems, and develops reports to demonstrate compliance with final permit measures. His guidance ensures our streams are free of sediment discharge per the SWPPP, General Construction Permit, CWA 401, and 404 Certifications. He provides novel recommendations for BMP improvements in environmentally sensitive areas and maintains successful working relationships with state, federal, and municipal regulatory agencies.

#### **Ahwahnee Hotel Geotechnical Subsurface Investigation – Yosemite National Park**

Evan performed a geotechnical subsurface investigation using seismographs to determine the subsurface soil structure beneath the Ahwahnee Hotel in Yosemite Valley, California, in preparation for building design modifications for seismic retrofit of the historic hotel. During this project, Evan gathered data that provided valuable information on depth to bedrock, depth to decomposed granite, and groundwater beneath the historic Ahwahnee Hotel. The data Evan collected during this field exercise aided in the determination of design parameters for the protection and mitigation from potential damage to the hotel during an earthquake. Evan performed the subsurface survey with an array of seismic sensors spread out in a 50-foot line. The geology team was able to extrapolate subsurface thickness and densities of soil, decomposed granite, groundwater, and solid bedrock data below the Historic Ahwahnee Hotel. In the report, Evan was able to provide engineering design parameters to Yosemite National Park officials to aid in the preservation of historic buildings.

#### **Native Plant Species Adaptive Management Revegetation on Ratzlaff Reach – United States Fish and Wildlife Service**

As a consultant for the United States Fish and Wildlife Service (USFWS), Mr. Studley developed and implemented the native species revegetation on Ratzlaff Reach of the Merced River. The Merced River and Ratzlaff Reach sustained major damage from historic gold mining and dredging. The collaborative project objective was designed to reverse aquatic and riparian habitat degradation from gold dredging and gravel mining and subsequent water embankment within the floodplain and stream channel. After re-channeling, the river around a large floodplain pond, he was tasked with recontouring and revegetating the affected area of floodplain to accommodate a three-year flood release from the upstream reservoir.



use. As part of the recording crew later in the survey, it was also required to conduct thorough site analysis and recordation via site forms and Trimble points of each observed artifact and feature, both historic and prehistoric.

### **Authored Publications**

- 2023 Froshour, Heather. "Phase I Cultural Resources Assessment: Elliot Housing Subdivision Project, Visalia, California."
- 2023 Froshour, Heather. "Phase I Cultural Resources Evaluation: 30811 Bear Mountain Rd., Yokuts Valley, California."
- 2023 Froshour, Heather. "Phase I Cultural Resources Evaluation: Shirley Peak, Rd. 622, Kern County, California."
- 2023 Froshour, Heather. "Phase I Cultural Resources Evaluation: Sierra Vista Lookout, Quiggs Mountain, Mountain Ranch, California."
- 2023 Froshour, Heather. "Phase I Cultural Resources Evaluation: Granite Rd., Mount Pheasant, Glennville, California."
- 2023 Froshour, Heather. "Phase I Cultural Resources Assessment: 4415 Wilson Rd., Bakersfield, California."
- 2023 Froshour, Heather. "Cultural Resources Desktop Assessment: 1941 N. Golden State Blvd., Fresno, California."
- 2023 Froshour, Heather. "Phase I Cultural Resources Assessment: 3174 Bonair Ave., Joshua Tree, California."
- 2023 Froshour, Heather. "Cultural Resources Desktop Assessment: 3200 Rio Linda Blvd., Sacramento, California."
- 2023 Hawley, Maria and Froshour, Heather. "Cultural Resources Assessment, 18644 16<sup>th</sup> Ave., Stratford, California."
- 2022 Lashway, Nick, Hovis, Chad, and Froshour, Heather. "Upper Thomes Forestwide Fuels Phase I Report: U.S.D.A. Forest Service Mendocino National Forest Covelo and Grindstone Ranger Districts, California."

### **Academic Publications**

- 2013 Hamilton, Nathan D. and Froshour, Heather D (presenter). "Explore 5,000 Years of History in Danvers, Massachusetts."
- 2013 Froshour, Heather D. "Preserving the Past: Public and Historical Archaeology at the Rebecca Nurse Homestead, Danvers, Massachusetts."
- 2012 Froshour, Heather D (presenter). "17<sup>th</sup>-18<sup>th</sup> Century Occupations in Danvers, Massachusetts."



**Maria Hawley**  
Staff Archaeologist

## 7 Years of Relevant Experience

### Biography

Maria is an archaeologist specializing in California archaeology, Stone Age to End Middle Age archaeology, Pre-history of the South West, and Museum Methods with vast fieldwork experience in California.

### Education and Professional Development

- BA Anthropology, California State University, Sacramento, CA – 2015
- Wildland Fire Resource Advisor (N-9042) – 2021
- National Incident Management System IS-00700.a FEMA – 2015
- Introduction to Incident Command System IS-00100.b FEMA – 2015
- Basic Incident Command System for Initial Response IS-00200.c FEMA – 2021
- Introduction to Incident Command Center IS-00100.c FEMA – 2021
- Resource Advisor (READ)
- Incident Qualification Card 00000141548
- Driver/Operator

### Technical Expertise

- Cultural Resources Management
- Technical Writing
- Tribal Consultation
- CEQA/NEPA process
- Incident Management
- Trimble GPS
- ArcMap
- Avenza

## Practical Experience

Maria Hawley is an Archaeologist trained in Archaeology, Physical Anthropology, Cultural Anthropology, and Linguistics. She specializes in California archaeology, Stone Age to End Middle Age archaeology, Pre-history of the South West, and Museum Methods. In addition, Maria has vast experience in tribal consultation, conducting cultural resources surveys and monitoring, artifact recovery, preservation, and management, excavation, sampling and testing, in-depth research and investigations, and technical report writing. Across the board, Maria ensures projects are carried out in a safe and timely manner and accordance with all established standards, procedures, and regulations. Maria also currently holds a RED CARD with Resource Advisor (READ) for Fire Archaeology, which means she can advise firefighters, during a fire, on the best route for them to enter a unit without harming resources.

## Highlighted Projects

### **Lassen Volcanic National Park, Mineral, CA (2022): Archaeological Technician**

Determines likely sites of archaeological interest; Prepares Cultural Resource Inventory reports and site forms; Monitors archaeological projects to ensure sufficiency of fieldwork; Conducts inventories of park cultural resources; Researches reference materials such as State and National register files, historical documents, archaeological reports, maps, and aerial photos; Reviews work in progress to ensure standards are being met; Conducts BAER site assessment to determine treatment or monitoring requirements; Prepares archaeological DPR forms, sketch maps, feature sketches and photographic logs; Conducts field surveys; Participates in the restoration and preservation of historic features such as log cabins and rock walls, and; served as crew chief/lead.

### **Bay Area PaleoWest Office, Walnut Creek, CA (2021-present): On-Call Archaeologist**

Monitored archaeological sites to ensure resources would not be harmed while digging trenches; Participated in 1/8th screen wet and dry screening; Identified, and collected human remains, fauna remains chert flakes, and obsidian flakes; Extracted Native American remains and lithics for repatriation; Conducted excavation and testing of archaeological sites, including the careful recovery of sample materials; Identifies, labels, and packages artifacts for curation; Assisted in the preparation of archaeological and historical information to create interpretive materials for display and distribution; Participated in the collection of field data, digital photography, artifact identification, determined and directed the cultural needs for the project, and; Conducted Archaeological pedestrian surveys.

### **Pinon Heritage Solutions LLC, Sacramento, CA (2022): On-Call Archaeologist**

Undertook basic archaeological field surveys; Recorded data and prepared survey records; Researched reference materials such as State and National Register files, historical documents, archaeological reports, maps, and aerial photos; Performed a variety of computations and assessments of standard archaeological data; Produced site and survey maps, and; Advised other employees on methods of cultural resource inventory and provided written instructions, research materials and supplies to all involved.

### **Rincon Consultants, Inc., Sacramento, CA (2020-2022): Archaeological Technician and On-Call Archaeologist**

Monitored archaeological sites to ensure resources would not be harmed while digging trenches; Participated in construction monitoring, including trenching and underground construction; Adequately and professionally communicated with construction crew, senior Sherwood Valley Pomo tribal monitor and senior archaeologist; Prepared California DPR-523 forms; Participated in the collection of field data, digital photography, artifact identification, determined and directed the cultural needs for the project; Executed archaeological surveys, and; Identified and documented late 1800s to early 1900s historic artifacts.



**Mountain G. Enterprises INC., Folsom, CA (2021): Archaeologist**

Performed archaeological surveys and monitoring; aided in the FEMA funded timber salvation program; Prepared and input DPR forms into the NRM database; conducted inventories of Forest cultural resources; Evaluated environmental impacts on archaeological resources, and developed and recommended effective mitigation measures; Assisted in the preparation of archaeological and historical information to create interpretive materials for display and distribution; Actively worked towards building a relationship with local tribes, private contractors, and colleagues; Reviewed work in progress to see that standards for pre-field archaeological research, archaeological survey design, archaeological site recording, archaeological graphics, and archaeological final report are being met; Digitized records and performed basic GIS analysis in ArcMap; Served as field lead for pedestrian survey, collection of field data, digital photography, artifact identification, GPS data collection, and mapping; Evaluated complex archaeological and ethnographic studies; Worked closely with tribal monitors to identify lithics; Determined if historic features were 106 eligible, and; Participated in vegetation management.

**USDA Forest Service, Plumas National Forest, Oroville, CA, and Mendocino National Forest, Willows, CA (2020-2021): Archaeological Technician**

Prepared and input archaeological DPR forms into the NRM database; Conducted inventories of Forest cultural resources; Contributed to the input of heritage data to help support NEPA requirements and programmatic agreements; Performed archaeological surveys, archaeological site recording, and archaeological mapping; Contributed to the forest by reviewing and inputting my suggestions concerning survey contract interpretations to meet Plumas NF Heritage regulations and section 106 compliance; Worked closely and professionally with the Maidu tribal monitors in identifying prehistoric artifacts and features; Volunteered to aid other ecosystems management for cross training purposes; Regularly used Trimble GPS, Avenza maps which included downloading project maps and KMZ files, analog compass for navigation and shooting bearings for mapping, aerial photos to confirm site locations, and LiDAR maps to help read the terrain and identify possible archaeological land features; Flagged exclusionary site boundaries and updated site boundaries based on artifacts and features, and; Aided the logistics and ground support unit in the August Complex fire.

**Cogstone Resource Management, Orange, CA (2020-2021): Paleontologist/Archaeological Surveyor**

Aided several coastal monitoring projects; Surveyed the Merced and Serpatine formations; Carefully and meticulously meandered through the formations noting historical artifacts and pilopleistocene (Jurassic) fossils; Identified geologic structures, bedding contacts, and landform characteristics; Monitored construction site with a native monitor from the Chumash tribe; Observed ground disturbance, and; Communicated with contractors to extract petrified wood fossils.

# Appendix D

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## Energy Calculations

Construction Equipment Energy Use

Phase Name	Off Road Equipment Type	Off Road Equipment Unit Amount <sup>1</sup>	Usage Hours Per Day <sup>1</sup>	Horse Power (lbs/sec) <sup>1</sup>	Load Factor <sup>1</sup>	Total Operational Hours	BSFC <sup>2</sup>	Fuel Used (gallons) <sup>3</sup>	MBTU <sup>4</sup>
Site Preparation	Rubber Tired Dozers	3	8	247	0.4	2880	0.367	14689.50	2041.84035
Site Preparation	Tractors/Loaders/Backhoes	4	8	97	0.37	3840	0.408	7909.63	1099.43898
Grading	Graders	1	8	187	0.41	2480	0.367	9816.00	1364.42445
Grading	Rubber Tired Dozers	1	8	247	0.4	2480	0.367	12649.29	1758.25142
Grading	Excavators	2	8	158	0.38	4960	0.367	15373.75	2136.95172
Grading	Scrapers	2	8	367	0.48	4960	0.367	45107.27	6269.91031
Grading	Tractors/Loaders/Backhoes	2	8	97	0.37	4960	0.408	10216.61	1420.10869
Building Construction	Cranes	1	7	231	0.29	21700	0.367	75045.95	10431.3871
Building Construction	Forklifts	3	8	89	0.2	74400	0.408	76005.42	10564.754
Building Construction	Generator Sets	1	8	84	0.74	24800	0.408	88473.73	12297.8484
Building Construction	Tractors/Loaders/Backhoes	3	7	97	0.37	65100	0.408	134093.00	18638.9265
Building Construction	Welders	1	8	46	0.45	24800	0.408	29462.78	4095.32597
Paving	Pavers	2	8	130	0.42	3520	0.367	9921.85	1379.13778
Paving	Paving Equipment	2	8	132	0.36	3520	0.367	8635.28	1200.30453
Paving	Rollers	2	8	80	0.38	3520	0.408	6141.41	853.655605
Architectural Coating	Air Compressors	1	6	78	0.48	1320	0.408	2836.36	394.254102
Total								546377.84	75946.52

Construction Phases

PhaseNumber	Phase Name	Phase Type	Phase Start Date <sup>1</sup>	Phase End Date <sup>1</sup>	Num Days Week <sup>1</sup>	Total Number of Days <sup>1</sup>
1	Site Preparation	Site Preparation	4/1/2025	6/15/2025	5	120
2	Grading	Grading	9/16/2025	11/23/2026	5	310
3	Building Construction	Building Constr	11/24/2026	10/11/2038	5	3100
4	Paving	Paving	10/12/2038	8/15/2039	5	220
5	Architectural Coating	Architectural Co	8/16/2039	6/18/2040	5	220

Notes

- 1. CalEEMod Default Values Used
- 2. BSFC - Brake Specific Fuel Consumption (pounds per horsepower-hour) – If less than 100 Horsepower = 0.408, if greater than 100 Horsepower = 0.367
- 3. Fuel Used = Load Factor x Horsepower x Total Operational Hours x BSFC / Unit Conversion
- 4. MBTU calculated for comparison purposes. Assumed 1 gallon of diesel = 0.139 MBTU

Mobile Energy Use (Construction)

Worker Trips

	Daily Worker Trips <sup>1</sup>	Worker Trip Length <sup>1</sup>	VMT/Day	MPG Factor (EMFAC2017)	Gallons of Gas/Day	# of Days	Total Gallons of Gas	MBTU
Site Preparation	18	10.8	194.4	29.23	6.7	120	798	92.64959
Grading	20	10.8	216	29.23	7.4	310	2291	265.9386
Building Construction	312	10.8	3369.6	29.23	115.3	3100	357364	41486.43
Paving	15	10.8	162	29.23	5.5	220	1219	141.548
Architectural Coating	62	10.8	669.6	29.23	22.9	220	5040	585.065
Total	N/A	N/A	N/A	N/A	N/A	3970	366712	42571.63

Vendor Trips

	Daily Vendor Trips	Vendor Trip Length	VMT/Day	MPG Factor	Gallons of Diesel/Day	# of Days	Total Gallons of Diesel	MBTU
Building Construction	105	7.3	766.5	8.43	90.9	3100	281868.3274	39179.7

Fleet Characteristics

	Vehicle Class	Fleet Mix	2024 MPG Factor (EMFAC2017)	Average MPG Factor
Assumed Vehicle Fleet for Workers	LDA	33%	33.24	29.13
	LDT1	33%	28.07	
	LDT2	33%	26.07	
Assumed Vehicle Fleet for Vendor Trips	MHD	50%	9.74	8.43
	HHD	50%	7.12	

- Notes
- 1. CalEEMod Default values used
  - 2. MBTU calculated for comparison purposes. Assumed 1 gallon of gasoline = 0.11609 MBTU



### Summary of Energy Use (Construction)

	Off-Road Equipment Fuel (Diesel)		On-Road Vehicle Fuel				Total MBTU
			Diesel		Gasoline		
	Gallons	MMBTU	Gallons	MMBTU	Gallons	MMBTU	
FNC Farming	546377	75946	281868	39179	366712	42571	157696
Total Construction Energy Use							157696
Average Annual Construction Energy Use							105131

Mobile Energy Use (Operations)

Total Annual VMT from Project (CalEEMod)	17,624,143
--	------------

Fleet Mix & Fuel Calculations

Vehicle Class	Proportion of Fleet Mix <sup>1</sup>	Annual VMT by Vehicle Class	Proportion of vehicle class using gas or diesel (EMFAC2021) <sup>2</sup>		Annual VMT by Vehicle Class and Fuel Type		Fuel Efficiency (MPG) by Vehicle Class and Fuel Type (EMFAC2017)		Annual Fuel Use from Project (gallons)		MBTU/Year <sup>3</sup>
			Gas	Diesel	Gas	Diesel	Gas	Diesel	Gas	Diesel	
LDA	0.525357000	9258966.9	99%	1%	9171548.53	87418.36	35.18	58.79	260703.5	1487.0	30471.8
LDT1	0.051382000	905563.7	100%	0%	905249.48	314.23	29.77	27.69	30408.1	11.3	3531.7
LDT2	0.167800000	2957331.2	99%	1%	2937137.36	20193.84	28.32	43.82	103712.5	460.8	12104.0
MDV	0.162287000	2860169.3	97%	3%	2786623.55	73545.74	21.79	30.63	127885.4	2401.1	15180.0
LHD1	0.028850000	508456.5	43%	57%	220194.68	288261.85	8.73	18.39	25222.8	15674.9	5106.9
LHD2	0.007480000	131828.6	27%	73%	36087.33	95741.26	7.56	16.50	4773.5	5802.5	1360.7
MHD	0.012195000	214926.4	8%	92%	16883.51	198042.92	5.16	9.99	3272.0	19824.1	3135.4
HHH	0.015949000	281087.5	0%	100%	43.49	281043.97	4.85	7.43	9.0	37825.6	5258.8
OBUS	0.000630000	11103.2	44%	56%	4846.59	6256.62	5.03	8.43	963.5	742.2	215.0
UBUS	0.000469000	8265.7	77%	23%	6332.10	1933.62	4.80	10.00	1319.2	193.4	180.0
MCY	0.022910000	403769.1	100%	0%	403769.12	0.00	37.99	NA	10628.3	0.0	1233.8
SBUS	0.001396000	24603.3	20%	80%	5016.12	19587.18	9.34	8.28	537.1	2365.6	391.2
MH	0.003296000	58089.2	65%	35%	37835.63	20253.55	5.06	10.02	7477.4	2021.3	1149.0
Total	100.000100%	17624160.6			16531567.48	1092593.14			576912.2	88809.8	79318.3

Fleet Characteristics

Source: EMFAC2017 (v1.0.3) Emissions Inventory  
Region Type: County  
Region: Tulare  
Calendar Year: 2024  
Season: Annual  
Vehicle Classification: EMFAC2007 Categories  
Units: miles/year for VMT, trips/year for Trips, tons/year for Emissions, tons/year for Fuel Consumption

GASOLINE

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT (Annual)	Trips (Annual)	Fuel Consumption (tons/year)	Annual Fuel Consumption (gallons)	MPG
Tulare	2024	HHDT	Aggregate	Aggregate	Gasoline	1	40832	5642	20.78	8.69	4699.19
Tulare	2024	LDA	Aggregate	Aggregate	Gasoline	200092	2758210730	325924543	33135.62	82978.87	33239.92
Tulare	2024	LDT1	Aggregate	Aggregate	Gasoline	20489	250774265	31894273	2948.74	8932.61	28074.03
Tulare	2024	LDT2	Aggregate	Aggregate	Gasoline	66393	838611285	105810710	17680.41	31789.15	26380.43
Tulare	2024	LHDT1	Aggregate	Aggregate	Gasoline	5502	58348244	26803634	3808.07	6870.06	8493.13
Tulare	2024	LHDT2	Aggregate	Aggregate	Gasoline	905	9488315	4406586	531.73	1285.70	7379.91
Tulare	2024	MCY	Aggregate	Aggregate	Gasoline	9526	22280789	6611059	174.10	588.70	37847.58
Tulare	2024	MDV	Aggregate	Aggregate	Gasoline	68672	787150190	106279450	19692.36	38420.97	20487.51
Tulare	2024	MH	Aggregate	Aggregate	Gasoline	920	2631245	30111	277.79	536.98	4900.12
Tulare	2024	MHDT	Aggregate	Aggregate	Gasoline	423	7125304	2764314	837.27	1429.47	4984.57
Tulare	2024	OBUS	Aggregate	Aggregate	Gasoline	141	1996552	922982	323.76	410.91	4858.85
Tulare	2024	SBUS	Aggregate	Aggregate	Gasoline	84	1324045	109782	64.45	144.05	9191.53
Tulare	2024	UBUS	Aggregate	Aggregate	Gasoline	76	2232433	99041	21.38	483.67	4615.66

DIESEL

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT (annual)	Trips (annual)	Fuel Consumption (tons/year)	Annual Fuel Consumption (gallons)	MPG
Kings	2024	HHDT	Aggregate	Aggregate	Diesel	6329	263877277	22366793	37063.1	37063112	7.12
Kings	2024	LDA	Aggregate	Aggregate	Diesel	1810	26289809	2985204	474.4	474415	55.42
Kings	2024	LDT1	Aggregate	Aggregate	Diesel	13	87050	14634	3.3	3271	26.61
Kings	2024	LDT2	Aggregate	Aggregate	Diesel	390	5765743	658531	140.0	139970	41.19
Kings	2024	LHDT1	Aggregate	Aggregate	Diesel	7282	76385011	29952675	4256.6	4256603	17.95
Kings	2024	LHDT2	Aggregate	Aggregate	Diesel	2329	25172917	9581028	1564.9	1564922	16.09
Kings	2024	MDV	Aggregate	Aggregate	Diesel	1548	20774799	2543773	719.8	719773	28.86
Kings	2024	MH	Aggregate	Aggregate	Diesel	532	1408515	17405	143.3	143324	9.83
Kings	2024	MHDT	Aggregate	Aggregate	Diesel	4433	83579546	12100911	8579.8	8579805	9.74
Kings	2024	OBUS	Aggregate	Aggregate	Diesel	116	2577417	329811	319.0	319022	8.08
Kings	2024	SBUS	Aggregate	Aggregate	Diesel	509	5170191	1919120	636.3	636286	8.13
Kings	2024	UBUS	Aggregate	Aggregate	Diesel	22	681715	28821	68.3	68342	9.98

19.91

Notes

- 1. CalEEMod Defaults Used
- 2. Proportion of diesel vs. gasoline vehicles calculated based on total annual VMT for each vehicle class
- 3. MBTU Calculated for comparison purposes. Assumed 1 gallon of gasoline = 0.116090 MBTU and 1 gallong of diesel = 0.139 MBTU

## **Summary of Energy Use (Operation)**

<b>Mobile Fuel Use</b>		
	<b>Gal/Year</b>	<b>MMBTU</b>
<b>FNC Subdiv. (Gasoline)</b>	576912	69394
<b>FNC Subdiv. (Diesel)</b>	88809	12201
<b>Electricity Use</b>		
	<b>kWh/Year</b>	<b>MMBTU</b>
<b>FNC Subdiv.</b>	4789650	16342
<b>Natural Gas Use</b>		
	<b>kBTU/Year</b>	<b>MMBTU</b>
<b>FNC Subdiv.</b>	13775200	13775
<b>Total Operational Energy Use</b>		<b>MMBTU</b>
		<b>111713</b>

# Appendix E

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## Traffic Study

**TRAFFIC STUDY**

**MIXED USE DEVELOPMENT**

**PROSPERITY AVENUE & MORRISON STREET**

**TULARE, CALIFORNIA**

**Prepared for:**  
**4CREEKS**

**March 2024**

**Prepared by:**



**1800 30TH STREET, SUITE 260**  
**BAKERSFIELD, CA 93301**

A handwritten signature in blue ink, appearing to read 'Ian J. Parks', is written over a horizontal line.

Ian J. Parks, RCE 51825



## **TABLE OF CONTENTS**

	<u>Pg</u>
INTRODUCTION .....	1
FIGURE 1: VICINITY MAP.....	2
FIGURE 2: LOCATION MAP.....	3
FIGURE 3: SITE PLAN .....	4
PROJECT TRIP GENERATION .....	7
TABLE 1: PROJECT TRIP GENERATION .....	7
TRIP DISTRIBUTION AND ASSIGNMENT.....	8
TABLE 2: PROJECT TRIP DISTRIBUTION .....	8
EXISTING AND FUTURE TRAFFIC.....	8
FIGURE 4: PROJECT PEAK HOUR TRAFFIC .....	10
FIGURE 5: 2024 PEAK HOUR TRAFFIC.....	11
FIGURE 6: 2024+PROJECT PEAK HOUR TRAFFIC.....	12
FIGURE 7: 2044 PEAK HOUR TRAFFIC.....	13
FIGURE 8: 2044+PROJECT PEAK HOUR TRAFFIC.....	14
INTERSECTION ANALYSIS .....	15
TABLE 3a: PM INTERSECTION LEVEL OF SERVICE .....	16
TABLE 3b: AM INTERSECTION LEVEL OF SERVICE .....	17
TRAFFIC SIGNAL WARRANT ANALYSIS.....	18
TABLE 4a: PM TRAFFIC SIGNAL WARRANTS.....	18
TABLE 4b: AM TRAFFIC SIGNAL WARRANTS.....	18
ROADWAY ANALYSIS .....	19
TABLE 5a: PM ROADWAY LEVEL OF SERVICE.....	19
TABLE 5b: AM ROADWAY LEVEL OF SERVICE .....	20
IMPROVEMENTS.....	21
TABLE 6: FUTURE INTERSECTION IMPROVEMENTS .....	21
VMT ANALYSIS.....	22
SUMMARY AND CONCLUSIONS .....	23
REFERENCES .....	24
APPENDIX.....	25

## **INTRODUCTION**

The purpose of this study is to evaluate the potential traffic impacts of a proposed mixed-use development located on the south side of Prosperity Avenue east of Morrison Street in Tulare, CA. A vicinity map and location map are presented in Figures 1 and 2, respectively.

The proposed project consists of 524 single-family residential homes as well as 50,000 square feet of retail buildings. The site plan for the project is shown in Figure 3.

### **A. Land Use, Site and Study Area Boundaries**

The existing zoning is A (Agriculture). The existing land use designation is A (Agriculture). Proposed zoning and land use designation is neighborhood commercial and residential.

The study area includes a total of 12 intersections (four stop-controlled, eight signalized). The scope of the study was developed in association with the City of Tulare.

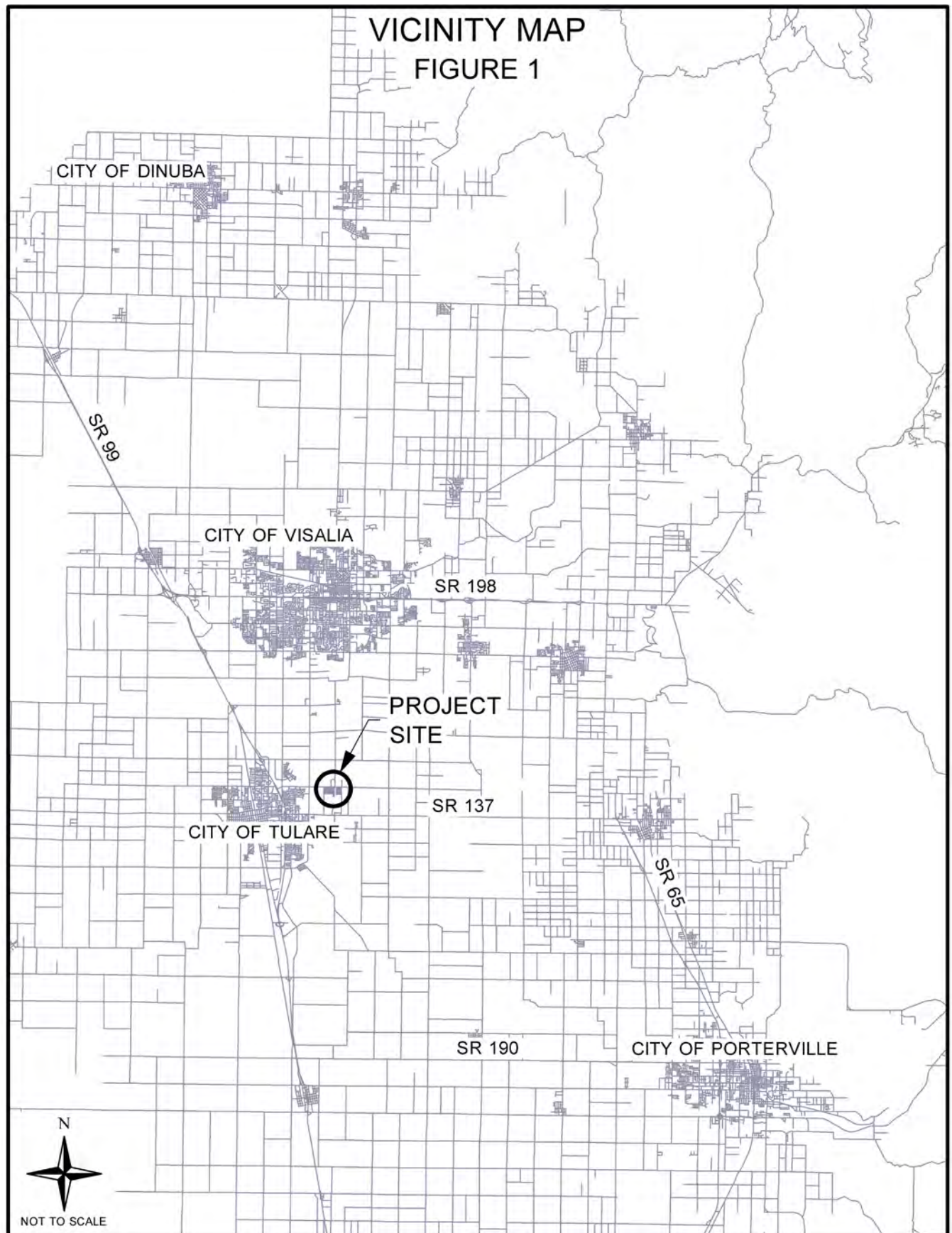
### **B. Existing Site Uses and Site Access**

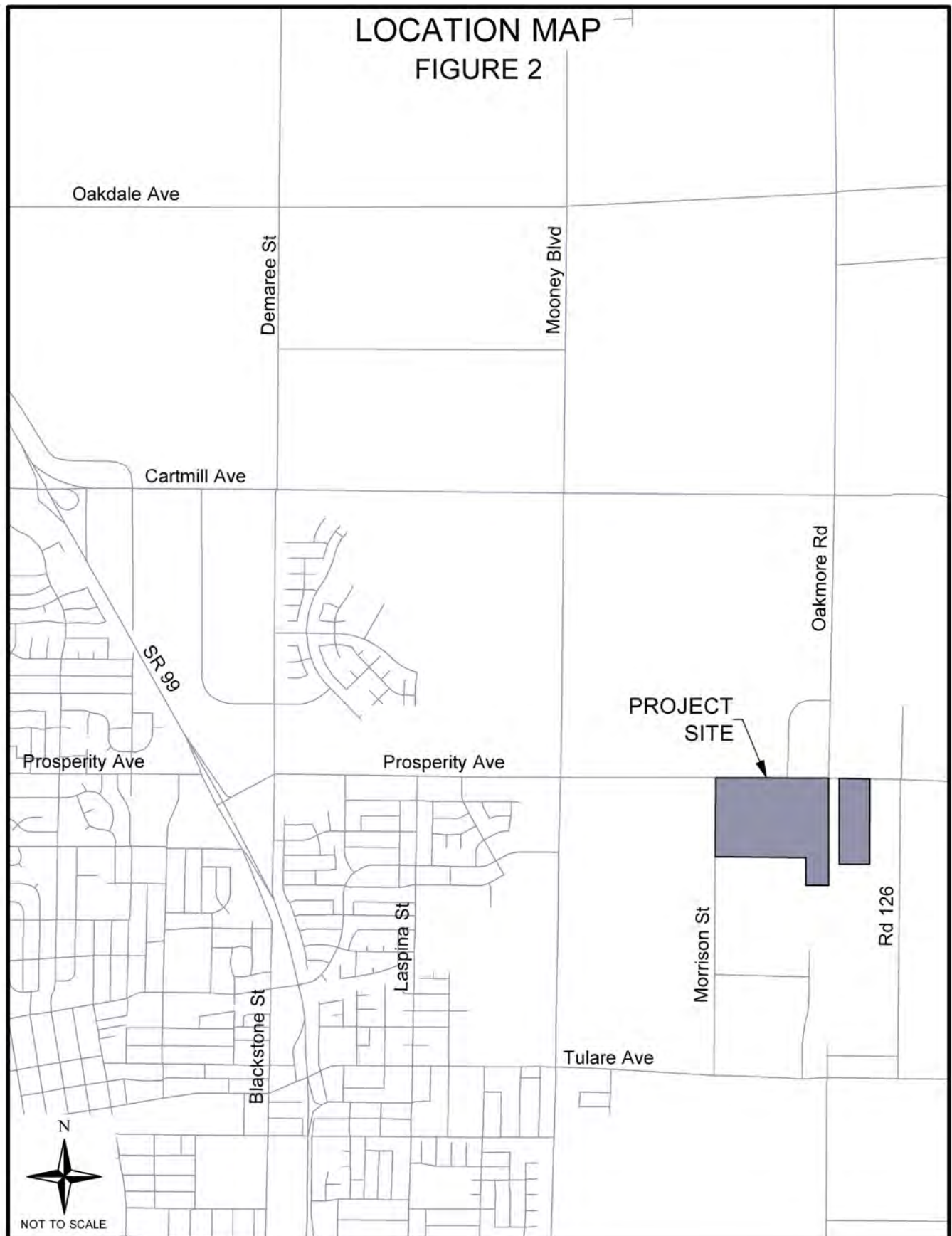
The site is currently used for agricultural production. As currently planned, access to the proposed development would be provided along Morrison Street, Prosperity Avenue, and Oakmore Road.

### **C. Existing Uses in Vicinity of the Site**

The site is bounded by Prosperity Avenue to the north, Morrison Street to the west, with Oakmore Road dissecting the project. Residential land uses exist to the north and generally south of the site, with agricultural land uses to the immediate east, west, and south of the site.



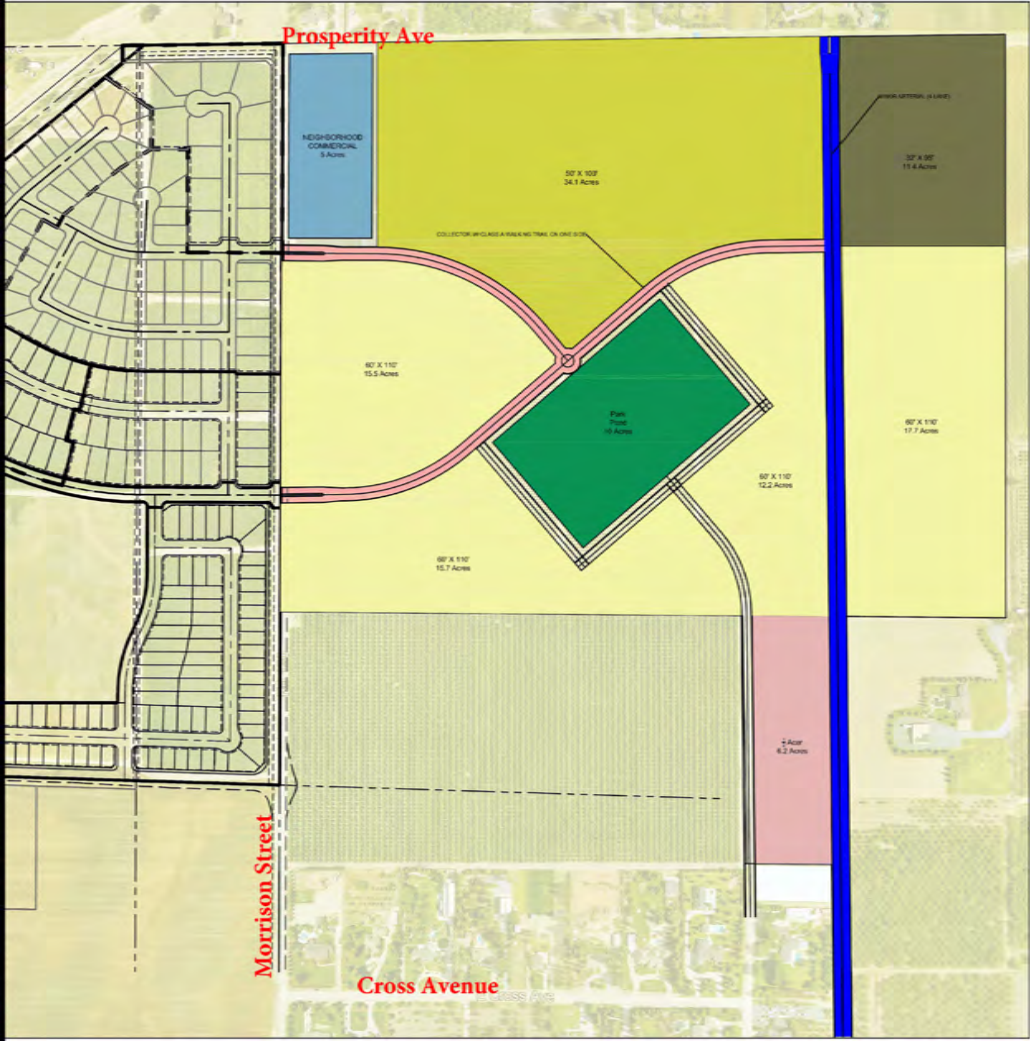
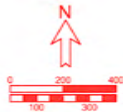




LAGOMARSINO LAND USE EXHIBIT

SITE PLAN  
FIGURE 3

	Acers	Density	Lot Count	Years of Construction	
32' x 55' Lots	11.4	9.8	111	2.3	5.6
50' x 100' Lots	34.1	4.8	163	3.3	
60' x 130' Lots	63.1	3.8	239	4.9	4.9
1/2 Acre Lots	6.2	2	12	0.2	
Park/Pond	10				
Neighborhood Commercial	5				
Misc.	10.52				
Total:	140.32		525	6.8	





## D. Roadway Descriptions

Blackstone Street is a primarily north-south arterial that extends south from Prosperity Avenue in the city of Tulare. In the vicinity of the project, it exists as a four-lane roadway and provides access from State Route 99 as well as commercial land uses.

Cartmill Avenue is an east-west major arterial that extends throughout the northern part of the city of Tulare. In the vicinity of the project, it exists as a two- to four-lane roadway and provides access to agricultural and residential land uses.

Hillman Street is a north-south major arterial north of Prosperity Avenue and collector south of Prosperity Avenue in the city of Tulare. In the vicinity of the project, it exists as a three- to six-lane roadway and provides access to agricultural, commercial, and residential land uses.

Laspina Street is a north-south arterial that extends south from Rosa Avenue in the city of Tulare. In the vicinity of the project, it exists as a two-lane roadway and provides access to commercial and residential land uses.

Mooney Boulevard is a north-south major arterial that extends throughout the center of the city of Tulare. In the vicinity of the project, it exists as a four-lane roadway and provides access to agricultural, commercial, and residential land uses.

Morrison Street is a north-south collector that extends south from Prosperity Avenue in the city of Tulare. In the vicinity of the project, it exists as a two-lane roadway and provides access to agricultural and residential land uses.

Oakmore Road is a north-south arterial that extends north from Prosperity Avenue in the city of Tulare. In the vicinity of the project, it exists as a two-lane roadway and provides access to agricultural and residential land uses.

Prosperity Avenue is an east-west arterial that extends throughout the center of the city of Tulare. In the vicinity of the project, it exists as a four-lane roadway and provides access to agricultural, commercial, industrial, and residential land uses.

Seminole Avenue is an east-west local roadway that extends from Mooney Boulevard to Spyglass Street in the city of Tulare. In the vicinity of the project, it exists as a two-lane roadway and provides access to residential land uses.

State Route 99 is a primarily north-south highway that extends throughout the state of California. In the vicinity of the project, it exists as a four-lane highway and provides access to Blackstone Street, Hillman Street, Tulare Avenue, and Bardsley Avenue.

Tulare Avenue is an east-west major arterial that extends throughout the southern portion of the city of Tulare. In the vicinity of the project, it exists as a four-lane roadway and provides access to agricultural, commercial, and residential land uses.

## **PROJECT TRIP GENERATION**

The trip generation volumes for the mixed use development were calculated using the Institute of Transportation Engineers (ITE) Trip Generation, 11th Edition. Trip generation and design hour volumes for all land uses are shown in Table 1.

The ADT, AM and PM peak hour rate equations, and peak hour directional splits for ITE Land Use Codes 210 (Single-Family Detached Housing) and 821 (Shopping Plaza 40-150k) were used to estimate the project traffic.

**Table 1**  
**Project Trip Generation**

General Information			Daily Trips		AM Peak Hour Trips			PM Peak Hour Trips		
ITE Code	Development Type	Variable	ADT RATE	ADT	Rate	In % Split/ Trips	Out % Split/ Trips	Rate	In % Split/ Trips	Out % Split/ Trips
210	Single-Family detached Housing	524 Dwelling Units	eq	4631	eq	25% 84	75% 252	eq	63% 297	37% 174
821	Shopping Plaza (40-150k)	50 1000 sq ft GLA	eq	5261	eq	62% 109	38% 68	eq	48% 241	52% 261
sub-total				9,892		109	68		241	261
<i>Adjustments</i> Pass-by		15%		789		16	10		36	39
Total				8,608		88	55		193	209

## **TRIP DISTRIBUTION AND ASSIGNMENT**

The project trip distribution in Table 2 represents the most likely travel routes for traffic accessing the project. Project traffic distribution was estimated based on a review of the potential draw from population centers within the region and the types of land uses involved. These assumptions were used to distribute project traffic as shown in Figure 4.

**Table 2**  
**Project Trip Distribution**

<b>Direction</b>	<b>Percent</b>
North	10
East	5
South	45
West	40

## **EXISTING AND FUTURE TRAFFIC**

Weekday peak hour turning movements were counted at the following intersections in January and February 2024 (see Appendix for count data).

- Mooney Boulevard & Cartmill Avenue
- Prosperity Avenue & State Route 99 Southbound Offramp
- Prosperity Avenue & Blackstone Street
- Prosperity Avenue & Hillman Street
- Prosperity Avenue & Laspina St
- Prosperity Avenue & Mooney Boulevard
- Prosperity Avenue & Morrison Street
- Prosperity Avenue & Oakmore Street
- Tulare Avenue & Laspina Street
- Tulare Avenue & Mooney Boulevard
- Tulare Avenue & Morrison Street
- Seminole Avenue & Mooney Boulevard

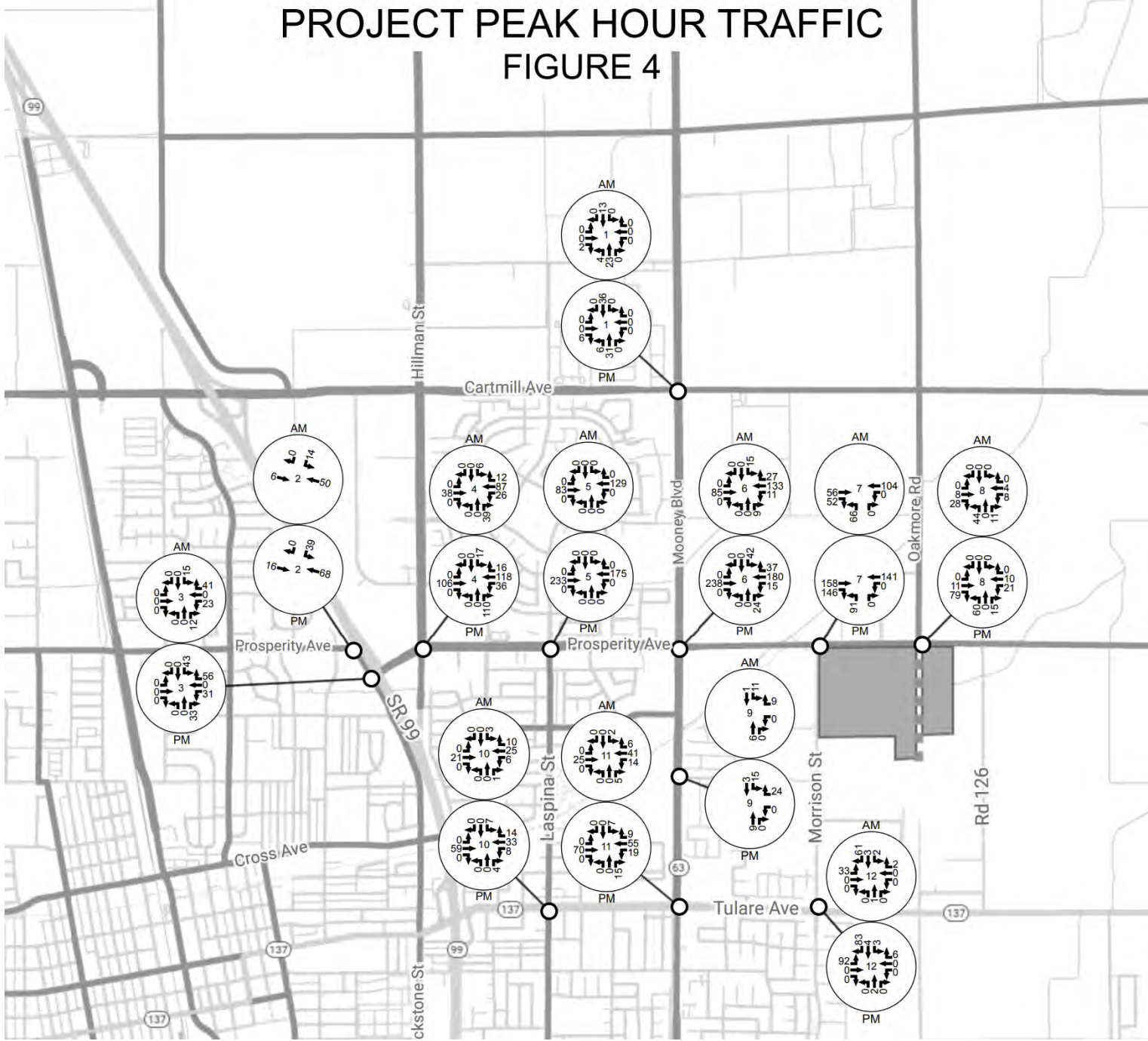
Traffic counts were conducted between the hours 6:00 to 8:00 AM and 4:00 to 6:00 PM. AM Peak Hour was determined to be 7:00 to 8:00 AM and 4:30 to 5:30 PM and are shown in Figure 5. The scope of

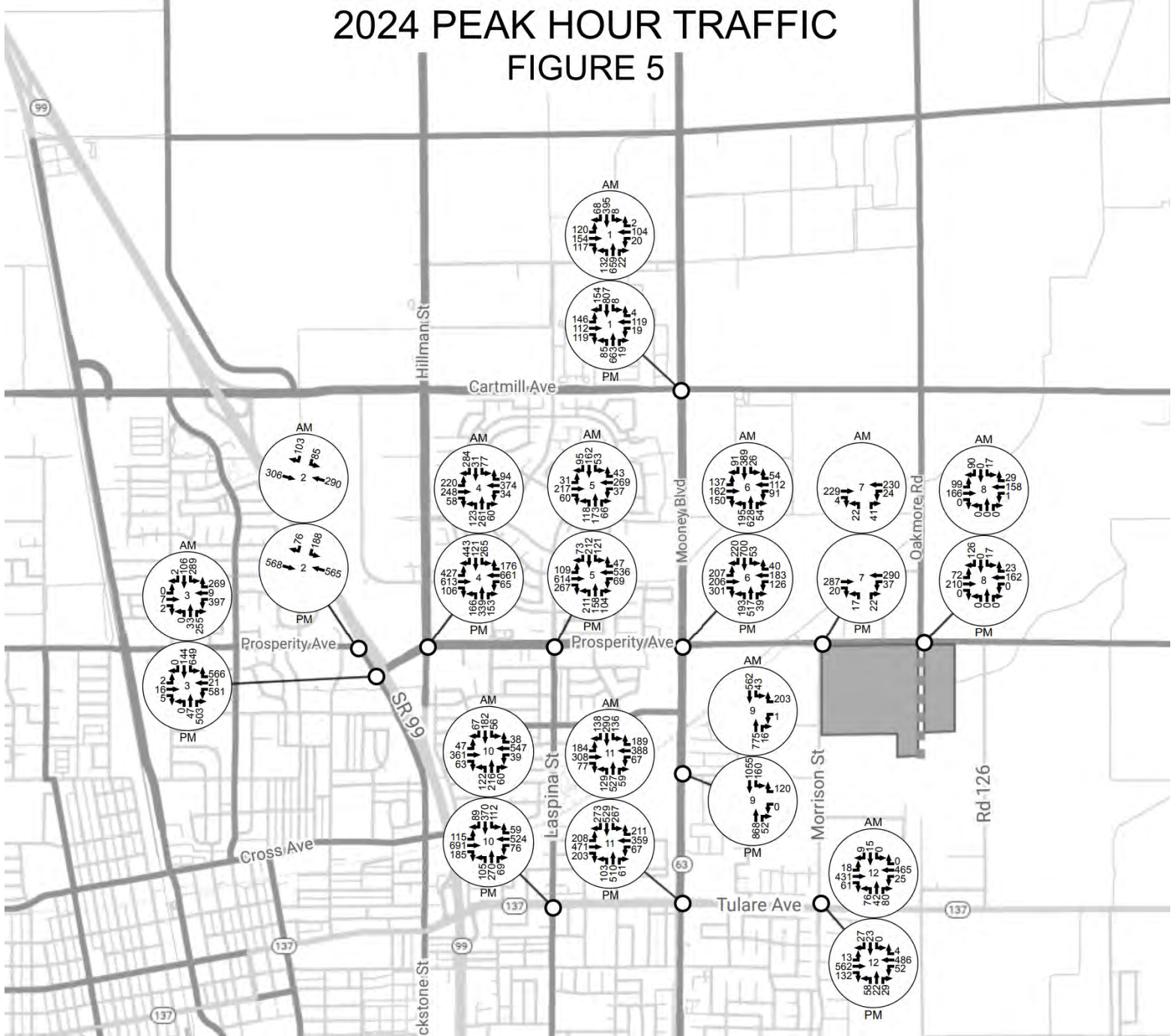


intersections was approved by the City of Tulare Public Works Department. Existing + Project peak hour volumes are shown in Figure 6.

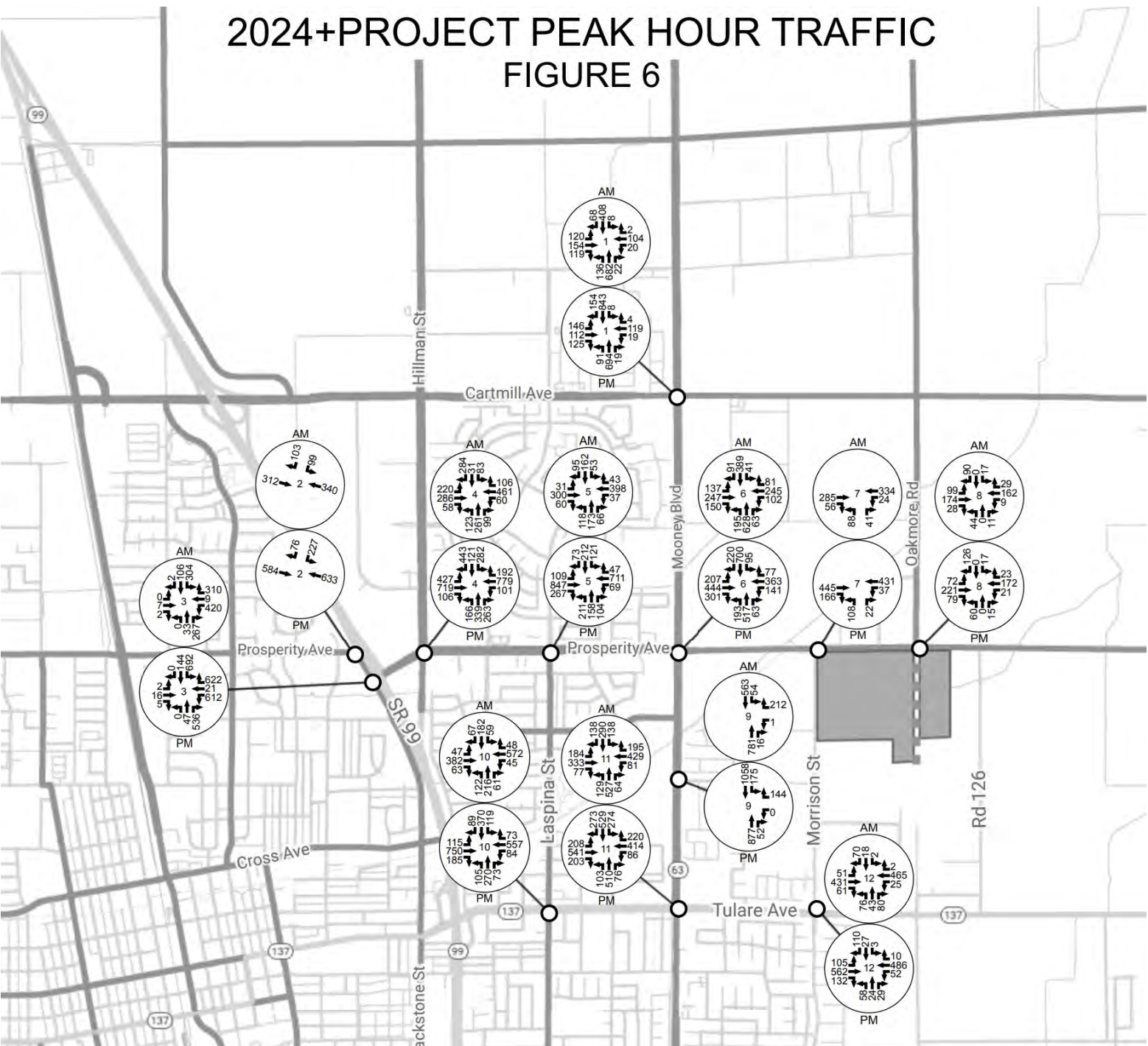
Annual growth rates ranging between 0.2% and 2.7% were applied to existing traffic volumes to estimate future traffic volumes for the year 2044. These growth rates were estimated based on TCAG traffic model data. Future peak hour volumes are shown in Figures 7 and 8.

# PROJECT PEAK HOUR TRAFFIC FIGURE 4









# 2044 PEAK HOUR TRAFFIC

## FIGURE 7

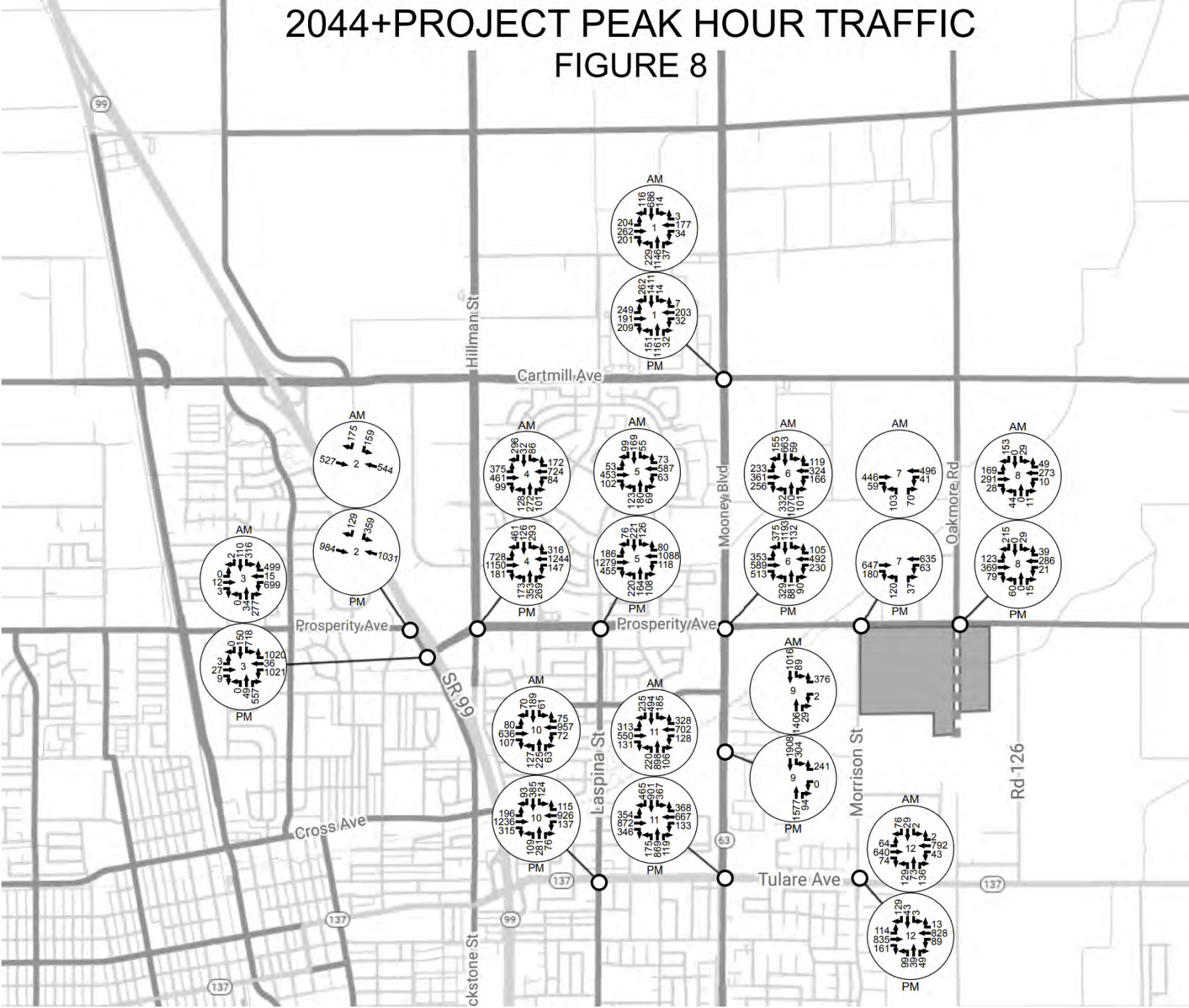
The map displays traffic volumes at various intersections along SR 99 and other roads. The intersections are marked with circular diagrams showing traffic volumes for AM and PM peak hours. The roads shown include Hillman St, Cartmill Ave, Prosperity Ave, Cross Ave, Laspina St, Mooney Blvd, Morrison St, Oakmore Rd, and Rd 126. The map also shows the location of SR 99 and other roads like 137 and 53.

Key intersections and traffic volumes (AM/PM):

- Hillman St / SR 99: 204/199 (AM), 262/199 (PM)
- Cartmill Ave / SR 99: 116/113 (AM), 177/113 (PM)
- Prosperity Ave / SR 99: 175/145 (AM), 521/2 (PM)
- Prosperity Ave / Laspina St: 375/128 (AM), 429/128 (PM)
- Prosperity Ave / Mooney Blvd: 155/155 (AM), 233/155 (PM)
- Prosperity Ave / Morrison St: 390/7 (AM), 37/7 (PM)
- Prosperity Ave / Oakmore Rd: 153/29 (AM), 169/29 (PM)
- Prosperity Ave / Rd 126: 215/29 (AM), 123/29 (PM)
- Cross Ave / SR 99: 110/150 (AM), 3/3 (PM)
- Cross Ave / Laspina St: 80/107 (AM), 615/107 (PM)
- Cross Ave / Mooney Blvd: 101/101 (AM), 117/101 (PM)
- Cross Ave / Morrison St: 101/101 (AM), 117/101 (PM)
- Cross Ave / Oakmore Rd: 101/101 (AM), 117/101 (PM)
- Cross Ave / Rd 126: 101/101 (AM), 117/101 (PM)
- Laspina St / SR 99: 116/113 (AM), 177/113 (PM)
- Laspina St / Mooney Blvd: 155/155 (AM), 233/155 (PM)
- Laspina St / Morrison St: 390/7 (AM), 37/7 (PM)
- Laspina St / Oakmore Rd: 153/29 (AM), 169/29 (PM)
- Laspina St / Rd 126: 215/29 (AM), 123/29 (PM)
- Mooney Blvd / SR 99: 116/113 (AM), 177/113 (PM)
- Mooney Blvd / Mooney Blvd: 155/155 (AM), 233/155 (PM)
- Mooney Blvd / Morrison St: 390/7 (AM), 37/7 (PM)
- Mooney Blvd / Oakmore Rd: 153/29 (AM), 169/29 (PM)
- Mooney Blvd / Rd 126: 215/29 (AM), 123/29 (PM)
- Morrison St / SR 99: 116/113 (AM), 177/113 (PM)
- Morrison St / Mooney Blvd: 155/155 (AM), 233/155 (PM)
- Morrison St / Morrison St: 390/7 (AM), 37/7 (PM)
- Morrison St / Oakmore Rd: 153/29 (AM), 169/29 (PM)
- Morrison St / Rd 126: 215/29 (AM), 123/29 (PM)
- Oakmore Rd / SR 99: 116/113 (AM), 177/113 (PM)
- Oakmore Rd / Mooney Blvd: 155/155 (AM), 233/155 (PM)
- Oakmore Rd / Morrison St: 390/7 (AM), 37/7 (PM)
- Oakmore Rd / Oakmore Rd: 153/29 (AM), 169/29 (PM)
- Oakmore Rd / Rd 126: 215/29 (AM), 123/29 (PM)
- Rd 126 / SR 99: 116/113 (AM), 177/113 (PM)
- Rd 126 / Mooney Blvd: 155/155 (AM), 233/155 (PM)
- Rd 126 / Morrison St: 390/7 (AM), 37/7 (PM)
- Rd 126 / Oakmore Rd: 153/29 (AM), 169/29 (PM)
- Rd 126 / Rd 126: 215/29 (AM), 123/29 (PM)



2044+PROJECT PEAK HOUR TRAFFIC  
FIGURE 8



## **INTERSECTION ANALYSIS**

A capacity analysis of the study intersections was conducted using Synchro software from Trafficware.

- Existing (2024)
- Existing (2024) + Project
- Future Cumulative (2044)
- Future Cumulative (2044) + Project

Criteria for intersection level of service (LOS) are shown in the tables below.

### **LEVEL OF SERVICE CRITERIA UNSIGNALIZED INTERSECTION**

<b>Average Control Delay (sec/veh)</b>	<b>Level of Service</b>	<b>Expected Delay to Minor Street Traffic</b>
$\leq 10$	A	Little or no delay
$> 10$ and $\leq 15$	B	Short traffic delays
$> 15$ and $\leq 25$	C	Average traffic delays
$> 25$ and $\leq 35$	D	Long traffic delays
$> 35$ and $\leq 50$	E	Very long traffic delays
$> 50$	F	Extreme delays

### **LEVEL OF SERVICE CRITERIA SIGNALIZED INTERSECTIONS**

<b>Volume/Capacity</b>	<b>Control Delay (sec/veh)</b>	<b>Level of Service</b>
$< 0.60$	$\leq 10$	A
0.61 - 0.70	$> 10$ and $\leq 20$	B
0.71 - 0.80	$> 20$ and $\leq 35$	C
0.81 - 0.90	$> 35$ and $\leq 55$	D
0.91 - 1.00	$> 55$ and $\leq 80$	E
$> 1.0$	$> 80$	F



Level of service for the study intersections is presented in Tables 3a and 3b. The level of service goal for roadway facilities in the City of Tulare is LOS “D.”

**Table 3a**  
**PM Intersection Level of Service**

#	Intersection	Control Type	2024	2024+ Project	2044	2044+ Project	2044+ Project w/Mitigation <sup>1</sup>
1	Mooney Blvd & Cartmill Ave	Signal	C	C	E (72.9)	F (82.0)	D
2	Prosperity Ave/Blackstone St & SR 99 Offramp	Signal	A	A	A	A	-
3	Blackstone St & Prosperity Ave	Signal	F (127.0)	F (158.9)	F (249.0)	F (255.1)	- <sup>2</sup>
4	Hillman St & Prosperity Ave	Signal	D	D	F (88.2)	F (104.0)	- <sup>2</sup>
5	Laspina St & Prosperity Ave	Signal	C	C	D	D	-
6	Mooney Blvd & Prosperity Ave	Signal	C	D	F (126.2)	F (146.0)	D
7	Morrison St & Prosperity Ave	NB SB	B -	D (32.1) A	C -	F (188.5) B	-
		Signal	-	-	-	-	B
8	Prosperity Ave & Oakmore Rd	SB	B	B	C	C	-
9	Mooney Blvd & Seminole Ave	WB	B	B	E (48.6)	F (62.2)	-
		Signal	-	-	-	-	C
10	Laspina St & Tulare Ave	Signal	C	C	D	D	-
11	Mooney Blvd & Tulare Ave	Signal	C	C	F (137.9)	F (143.0)	- <sup>2</sup>
12	Morrison St & Tulare Ave	NB SB	F (56.4) D (27.6)	F (226.1) E (41.1)	-	-	-
		Roundabout	-	-	D	E (46.4)	C

<sup>1</sup>Mitigation shown in Table 6

<sup>2</sup>No feasible mitigation

**Table 3b**  
**AM Intersection Level of Service**

#	Intersection	Control Type	2024	2024+ Project	2044	2044+ Project	2044+ Project w/Mitigation <sup>1</sup>
1	Mooney Blvd & Cartmill Ave	Signal	B	B	C	C	C
2	Prosperity Ave/Blackstone St & SR 99 Offramp	Signal	A	A	A	A	-
3	Blackstone St & Prosperity Ave	Signal	B	B	C	D	-
4	Hillman St & Prosperity Ave	Signal	B	B	C	C	-
5	Laspina St & Prosperity Ave	Signal	B	B	B	B	-
6	Mooney Blvd & Prosperity Ave	Signal	C	C	D	E (58.4)	C
7	Morrison St & Prosperity Ave	NB SB	B -	C A	C -	E (37.2) A	-
		Signal	-	-	-	-	B
8	Prosperity Ave & Oakmore Rd	SB	B	B	C	C	-
9	Mooney Blvd & Seminole Ave	WB	B	C	F (128.4)	F (141.0)	-
		Signal	-	-	-	-	C
10	Laspina St & Tulare Ave	Signal	B	B	C	C	-
11	Mooney Blvd & Tulare Ave	Signal	C	C	E (68.0)	E (72.6)	- <sup>2</sup>
12	Morrison St & Tulare Ave	NB SB	D C	F (65.5) C	-	-	-
		Roundabout	-	-	C	C	C <sup>3</sup>

<sup>1</sup>Mitigation shown in Table 6<sup>2</sup>No feasible mitigation<sup>3</sup>Mitigation necessary due to PM Peak Hour

## **TRAFFIC SIGNAL WARRANT ANALYSIS**

Peak hour signal warrants were evaluated for the unsignalized intersection within the study based on the California Manual on Uniform Traffic Control Devices (MUTCD). Peak hour signal warrants assess delay to traffic on the minor street approaches when entering or crossing a major street. Signal warrant analysis results for PM & AM peak hour are shown in Tables 4a and 4b, respectively.

**Table 4a**  
**PM Traffic Signal Warrants**

#	Intersection	2024			2024+Project			2044			2044+Project		
		Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met
7	Morrison St at Prosperity Ave	634	39	NO	1079	130	YES	1080	66	NO	1525	157	YES
8	Oakmore Rd at Prosperity Ave	467	143	NO	588	143	NO	796	244	YES	917	244	YES
9	Mooney Blvd at Seminole Ave	2135	120	YES	2162	144	YES	3856	217	YES	3883	241	YES
12	Morrison St at Tulare Ave	1249	109	YES	1347	140	YES	2129	185	YES	2227	187	YES

**Table 4b**  
**AM Traffic Signal Warrants**

#	Intersection	2024			2024+Project			2044			2044+Project		
		Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met
7	Morrison St at Prosperity Ave	487	63	NO	699	129	NO	830	107	NO	1042	173	YES
8	Oakmore Rd at Prosperity Ave	453	107	NO	501	107	NO	772	182	YES	820	182	YES
9	Mooney Blvd at Seminole Ave	1398	204	YES	1416	213	YES	2526	369	YES	2544	378	YES
12	Morrison St at Tulare Ave	1000	198	YES	1035	199	YES	1704	337	YES	1739	338	YES

It is important to note that a signal warrant defines the minimum condition under which signalization of an intersection might be warranted. Meeting this threshold does not suggest traffic signals are required, but rather, that other traffic factors and conditions be considered in order to determine whether signals are truly justified.

It is also noted that signal warrants do not necessarily correlate with level of service. An intersection may satisfy a signal warrant condition and operate at or above an acceptable level of service or operate below an acceptable level of service and not meet signal warrant criteria.

## **ROADWAY ANALYSIS**

A capacity analysis of the study roadways was conducted using Table 4 in the State of Florida Department of Transportation *Quality/Level of Service Handbook* dated June 2020 (see Appendix). The level of service goal within the study limits is LOS “D”. The analysis was performed for the following AM and PM traffic scenarios:

- Existing (2024)
- Existing (2024) + Project
- Future Cumulative (2044)
- Future Cumulative (2044) + Project

**Table 5a**  
**PM Roadway Level of Service**

Roadway Segment	2024 Two-Way LOS		2024+Project Two-Way LOS		2044 Two-Way LOS		2044+Project Two-Way LOS	
	VOL	LOS	VOL	LOS	VOL	LOS	VOL	LOS
Blackstone St: SR 99 SB Offramp - Prosperity Ave	1408	C	1531	C	2251	C	2374	C
Prosperity Ave: Blackstone St - Hillman St	2416	C	2640	C	3713	D	3937	D
Prosperity Ave : Hillman St - Laspina St	1933	C	2341	C	3016	C	3424	C
Prosperity Ave: Laspina St - Mooney Blvd	1491	C	1909	C	2391	C	2809	C
Prosperity Ave: Mooney Blvd - Morrison St	647	C	1183	C	1102	C	1638	C
Prosperity Ave: Morrison St - Oakmore Rd	636	C	935	C	1083	C	1382	C
Morrison St: Prosperity Ave - Tulare Ave	96	C	333	C	151	C	388	C
Mooney Blvd: Cartmill Ave - Prosperity Ave	1737	C	1816	C	2960	C	3039	C
Mooney Blvd: Prosperity Ave - Seminole Ave	1876	C	1915	C	3467	D	3506	D
Mooney Blvd: Seminole Ave - Tulare Ave	1998	C	2014	C	3467	D	3483	D
Laspina St: Prosperity Ave - Tulare Ave	1998	C	2019	C	1286	C	1307	C
Tulare Ave: Laspina St - Mooney Blvd	1617	C	1742	C	2754	C	2879	C
Tulare Ave: Mooney Blvd - Morrison St	1436	C	1611	C	2446	C	2621	C

**Table 5b**  
**AM Roadway Level of Service**

Roadway Segment	2024 Two-Way LOS		2024+Project Two-Way LOS		2044 Two-Way LOS		2044+Project Two-Way LOS	
	VOL	LOS	VOL	LOS	VOL	LOS	VOL	LOS
Blackstone St: SR 99 SB Offramp - Prosperity Ave	699	C	769	C	1160	C	1230	C
Prosperity Ave: Blackstone St - Hillman St	1307	C	1432	C	1958	C	2083	C
Prosperity Ave : Hillman St - Laspina St	887	C	1099	C	1420	C	1632	C
Prosperity Ave: Laspina St - Mooney Blvd	847	C	1065	C	1443	C	1661	C
Prosperity Ave: Mooney Blvd - Morrison St	499	C	779	C	850	C	1130	C
Prosperity Ave: Morrison St - Oakmore Rd	524	C	684	C	893	C	1053	C
Morrison St: Prosperity Ave - Tulare Ave	91	C	209	C	163	C	281	C
Mooney Blvd: Cartmill Ave - Prosperity Ave	1336	C	1378	C	2291	C	2333	C
Mooney Blvd: Prosperity Ave - Seminole Ave	1345	C	1372	C	2860	C	2887	C
Mooney Blvd: Seminole Ave - Tulare Ave	1507	C	1515	C	2450	C	2458	C
Laspina St: Prosperity Ave - Tulare Ave	616	C	629	C	1286	C	1299	C
Tulare Ave: Laspina St - Mooney Blvd	1224	C	1290	C	2085	C	2151	C
Tulare Ave: Mooney Blvd - Morrison St	1147	C	1241	C	1955	C	2049	C

## **IMPROVEMENTS**

Intersection improvements needed by the year 2044 to maintain or improve the operational level of service of the street system in the vicinity of the project are presented in Table 6.

**Table 6  
Future Intersection Improvements**

#	Intersection	Total Improvements Required by 2044	Project Percent Share
1	Mooney Blvd & Cartmill Ave	Add NBT, SBT	4.74%
6	Mooney Blvd & Prosperity Ave	Add NBT, NBL, SBT, SBL EBT, EBL, WBT, WBL	21.47%
7	Morrison St & Prosperity Ave	Signal	53.12%
9	Mooney Blvd & Seminole Ave	Signal	2.73%
12	Morrison St & Tulare Ave	Add EBR	19.11%

Project percent share is calculated using the following formula:

$$\% \text{ Share} = \frac{\text{Project Traffic}}{(\text{Future+Project Traffic}) - \text{Existing Traffic}} \times 100\%$$

## **VMT ANALYSIS**

An analysis of project VMT (vehicle miles traveled) was conducted in accordance with *Implementing Vehicle Miles Traveled Thresholds in CEQA Analysis Required by SB 743*, a City of Tulare memorandum, dated June 26, 2020 (VMT Guidelines).

### **Mixed-Use Projects**

The project includes both residential and commercial land uses. According to the VMT Guidelines, a land development with mixed uses may be analyzed either based on individual project land uses or the project's dominant land use. The former approach was taken for the purposes of this study since, based on the daily project trip generation estimates presented in Table 1, neither project land use is considered to be dominant.

### **Project Screening**

The VMT Guidelines contain “screening thresholds” for identifying whether a land use project should be expected to result in a less than significant transportation impact under the California Environmental Quality Act (CEQA). Projects meeting one or more of these screening criteria are presumed to generate insignificant levels of VMT and would not be required to undergo a detailed VMT analysis.

One screening threshold applies to residential projects located in low VMT areas. The VMT Guidelines include a map generated by the TCAG regional travel model that identifies which areas satisfy the City's VMT “reduction target” (at least 15 percent below the regional average). Since the project is shown to be in a low VMT area (see Appendix for map), the residential portion of the project is presumed to create a less than significant transportation impact.

A second screening threshold relates to local-serving retail projects. The commercial portion of the project would be zoned as a “neighborhood commercial district” which, as defined in Section 10.44.020 of the *City of Tulare, California, Code of Ordinances, 2023 S-32 Supplement*, includes “a limited range of commercial uses that cater to the daily needs of residents.” Permitted land uses, including bank, medical office, dry cleaner, donut shop, garden supply, sporting goods, etc., would satisfy the local-serving screening criterion since such developments typically provide more proximate retail destinations, effectively reducing VMT by shortening trip lengths. Therefore, the commercial portion of the project is presumed to create a less than significant transportation impact.



## **SUMMARY AND CONCLUSIONS**

The purpose of this study is to evaluate the potential traffic impacts of a proposed mixed-use development located on the south side of Prosperity Avenue east of Morrison Street in Tulare, CA. The study included both level of service (LOS) and vehicle miles traveled (VMT) analyses.

### **Level of Service Analysis**

The intersections of Blackstone Street & Prosperity Avenue and Morrison Street & Tulare Avenue currently operates below an acceptable level of service. With the addition of project traffic, the intersection of Morrison Street & Prosperity Avenue is anticipated to operate below an acceptable level of service.

In 2044, the intersections of Mooney Boulevard & Cartmill Avenue, Hillman Street & Prosperity Avenue, Mooney Boulevard & Seminole Avenue, and Mooney Boulevard & Tulare Avenue are anticipated to operate below an acceptable level of service prior to the addition of project traffic. With the addition of project traffic, the intersection of Morrison Street & Prosperity Avenue is anticipated to operate below an acceptable level of service.

All remaining intersections operate at an acceptable level of service in 2024 through 2044 prior to, and with the addition of project traffic.

Proposed improvements to improve the operational level of service are shown in Table 6. Due to right of way constraints, there is no feasible mitigation measures for the intersections of Blackstone Street & Prosperity Avenue, Hillman Street & Prosperity Avenue, and Mooney Boulevard & Tulare Avenue.

### **Roadway Capacity**

All roadway segments within the scope of the study currently operate at or above LOS D and are expected to continue to do so through the year 2044, both with and without the project. Therefore, no improvements are required.

### **VMT**

The project meets VMT screening criteria, and therefore, is presumed to have a less than significant transportation impact under CEQA.























**REFERENCES**

1. Annual Traffic Census, TCAG
2. City of Tulare, California, Code of Ordinances, 2023 S-32 Supplement
3. Kern County General Plan, approved September 22, 2009
4. Highway Capacity Manual, Special Report 209, Transportation Research Board
5. Implementing Vehicle Miles Traveled Thresholds in CEQA Analysis Required by SB 743, City of Tulare memorandum, dated June 26, 2020
6. California Manual on Uniform Traffic Control Devices for Streets and Highways, 2014 Edition, Federal Highway Administration (FHA)
7. Trip Generation, 11th Edition, Institute of Transportation Engineers (ITE)
8. Tulare General Plan, adopted October 7, 2014

## APPENDIX













Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

PM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	146	112	119	19	119	4	85	663	19	8	807	154
Future Volume (vph)	146	112	119	19	119	4	85	663	19	8	807	154
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.995			0.996			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1852	0	1630	3522	0	1630	3437	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1852	0	1630	3522	0	1630	3437	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			173		1			3			19	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	159	122	129	21	129	4	92	721	21	9	877	167
Shared Lane Traffic (%)												
Lane Group Flow (vph)	159	122	129	21	133	0	92	742	0	9	1044	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

PM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	21.0	47.3	47.3	10.2	36.5		22.0	53.0		9.5	40.5	
Total Split (%)	17.5%	39.4%	39.4%	8.5%	30.4%		18.3%	44.2%		7.9%	33.8%	
Maximum Green (s)	15.5	41.8	41.8	4.7	31.0		16.5	47.5		4.0	35.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effct Green (s)	15.1	31.6	31.6	6.5	15.8		12.4	48.1		5.7	36.6	
Actuated g/C Ratio	0.16	0.34	0.34	0.07	0.17		0.13	0.52		0.06	0.39	
v/c Ratio	0.60	0.19	0.22	0.19	0.42		0.42	0.41		0.09	0.77	
Control Delay	50.7	25.8	2.3	52.5	40.3		47.7	16.3		51.9	31.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	50.7	25.8	2.3	52.5	40.3		47.7	16.3		51.9	31.9	
LOS	D	C	A	D	D		D	B		D	C	
Approach Delay		28.1			41.9			19.8			32.0	
Approach LOS		C			D			B			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 93

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 27.8









Intersection LOS: C

Intersection Capacity Utilization 64.2%

ICU Level of Service C























Analysis Period (min) 15

Splits and Phases: 1: Mooney Blvd & Cartmill Ave

 Ø1	 Ø2	 Ø3	 Ø4
9.5 s	53 s	10.2 s	47.3 s
 Ø5	 Ø6	 Ø8	 Ø7
22 s	40.5 s	36.5 s	21 s

HCM 6th Signalized Intersection Summary  
1: Mooney Blvd & Cartmill Ave

PM 2024  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	146	112	119	19	119	4	85	663	19	8	807	154
Future Volume (veh/h)	146	112	119	19	119	4	85	663	19	8	807	154
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	159	122	129	21	129	4	92	721	21	9	877	167
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	231	475	363	67	278	9	151	1557	45	51	1128	215
Arrive On Green	0.14	0.25	0.25	0.04	0.15	0.13	0.09	0.44	0.42	0.03	0.38	0.36
Sat Flow, veh/h	1641	1870	1431	1641	1803	56	1641	3523	103	1641	2962	564
Grp Volume(v), veh/h	159	122	129	21	0	133	92	364	378	9	526	518
Grp Sat Flow(s),veh/h/ln	1641	1870	1431	1641	0	1859	1641	1777	1848	1641	1777	1749
Q Serve(g_s), s	6.4	3.6	5.1	0.9	0.0	4.5	3.7	9.9	9.9	0.4	17.9	18.0
Cycle Q Clear(g_c), s	6.4	3.6	5.1	0.9	0.0	4.5	3.7	9.9	9.9	0.4	17.9	18.0
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.06	1.00		0.32
Lane Grp Cap(c), veh/h	231	475	363	67	0	286	151	785	817	51	676	666
V/C Ratio(X)	0.69	0.26	0.36	0.31	0.00	0.46	0.61	0.46	0.46	0.18	0.78	0.78
Avail Cap(c_a), veh/h	405	1175	899	148	0	876	429	1263	1314	131	941	926
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.2	20.5	21.1	32.1	0.0	26.6	30.1	13.5	13.5	32.5	18.8	19.0
Incr Delay (d2), s/veh	3.6	0.3	0.6	2.6	0.0	1.2	3.9	0.4	0.4	1.6	2.8	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	1.4	1.5	0.4	0.0	1.8	1.5	3.1	3.3	0.2	6.4	6.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.8	20.8	21.7	34.7	0.0	27.8	34.0	13.9	13.9	34.2	21.6	21.9
LnGrp LOS	C	C	C	C	A	C	C	B	B	C	C	C
Approach Vol, veh/h		410			154			834			1053	
Approach Delay, s/veh		25.3			28.7			16.1			21.8	
Approach LOS		C			C			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.1	34.5	6.8	21.5	10.4	30.2	13.7	14.6				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax),s	40	47.5	4.7	41.8	16.5	35.0	15.5	31.0				
Max Q Clear Time (g_c+l1)2s	11.9	2.9	7.1	5.7	20.0	8.4	6.5					
Green Ext Time (p_c), s	0.0	2.8	0.0	0.9	0.2	3.8	0.3	0.4				
Intersection Summary												
HCM 6th Ctrl Delay			20.9									
HCM 6th LOS			C									

Lanes, Volumes, Timings  
2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

PM 2024  
03/13/2024

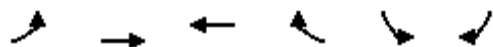


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (vph)	0	568	565	0	188	76
Future Volume (vph)	0	568	565	0	188	76
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	1630	1458
Flt Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	1630	1458
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						83
Link Speed (mph)		55	55		55	
Link Distance (ft)		349	727		300	
Travel Time (s)		4.3	9.0		3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	617	614	0	204	83
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	617	614	0	204	83
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors		1	1		1	1
Detector Template						
Leading Detector (ft)		50	50		50	50
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		50	50		50	50
Detector 1 Type		CI+Ex	CI+Ex		CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		4.0	4.0		4.0	4.0
Minimum Split (s)		24.0	24.0		24.0	24.0
Total Split (s)		63.0	63.0		57.0	57.0
Total Split (%)		52.5%	52.5%		47.5%	47.5%
Maximum Green (s)		57.0	57.0		51.0	51.0
Yellow Time (s)		5.0	5.0		5.0	5.0



Lanes, Volumes, Timings  
2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

PM 2024  
03/13/2024

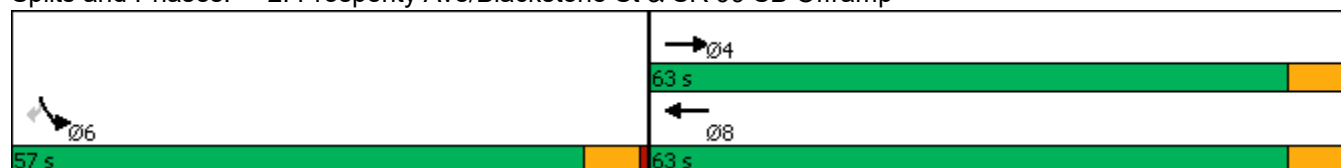


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		None	None		Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		14.2	14.2		12.5	12.5
Actuated g/C Ratio		0.41	0.41		0.36	0.36
v/c Ratio		0.43	0.43		0.35	0.14
Control Delay		8.8	8.8		10.7	3.5
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		8.8	8.8		10.7	3.5
LOS		A	A		B	A
Approach Delay		8.8	8.8		8.6	
Approach LOS		A	A		A	

Intersection Summary

Area Type: Other  
Cycle Length: 120  
Actuated Cycle Length: 34.9  
Natural Cycle: 50  
Control Type: Actuated-Uncoordinated  
Maximum v/c Ratio: 0.43  
Intersection Signal Delay: 8.7  
Intersection LOS: A  
Intersection Capacity Utilization 33.7%  
ICU Level of Service A  
Analysis Period (min) 15

Splits and Phases: 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp



# HCM 6th Signalized Intersection Summary 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp
























PM 2024  
03/13/2024



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (veh/h)	0	568	565	0	188	76
Future Volume (veh/h)	0	568	565	0	188	76
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1723	1723
Adj Flow Rate, veh/h	0	617	614	0	204	83
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	1387	1387	0	488	434
Arrive On Green	0.00	0.39	0.39	0.00	0.30	0.30
Sat Flow, veh/h	0	3741	3741	0	1641	1460
Grp Volume(v), veh/h	0	617	614	0	204	83
Grp Sat Flow(s),veh/h/ln	0	1777	1777	0	1641	1460
Q Serve(g_s), s	0.0	3.3	3.3	0.0	2.6	1.1
Cycle Q Clear(g_c), s	0.0	3.3	3.3	0.0	2.6	1.1
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1387	1387	0	488	434
V/C Ratio(X)	0.00	0.44	0.44	0.00	0.42	0.19
Avail Cap(c_a), veh/h	0	8188	8188	0	3396	3022
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	5.8	5.8	0.0	7.2	6.7
Incr Delay (d2), s/veh	0.0	0.2	0.2	0.0	0.6	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.2	0.0	0.3	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	6.0	6.0	0.0	7.8	6.9
LnGrp LOS	A	A	A	A	A	A
Approach Vol, veh/h		617	614		287	
Approach Delay, s/veh		6.0	6.0		7.5	
Approach LOS		A	A		A	
Timer - Assigned Phs				4	6	8
Phs Duration (G+Y+Rc), s				14.0	11.6	14.0
Change Period (Y+Rc), s				6.0	6.0	6.0
Max Green Setting (Gmax), s				57.0	51.0	57.0
Max Q Clear Time (g_c+I1), s				5.3	4.6	5.3
Green Ext Time (p_c), s				2.7	1.1	2.7
Intersection Summary						
HCM 6th Ctrl Delay			6.3			
HCM 6th LOS			A			


Lanes, Volumes, Timings  
3: Blackstone St & Prosperity Ave

PM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	16	5	581	21	566	0	47	503	649	144	0
Future Volume (vph)	2	16	5	581	21	566	0	47	503	649	144	0
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	30		0	335		310	55		90	240		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor		1.00				0.98						
Frt		0.966				0.850			0.850			
Flt Protected	0.950			0.950	0.956					0.950		
Satd. Flow (prot)	1630	1791	0	1548	1692	1458	1716	1863	1458	3162	1863	0
Flt Permitted	0.950			0.950	0.757					0.950		
Satd. Flow (perm)	1630	1791	0	1548	1340	1428	1716	1863	1458	3162	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				615			547			
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		98			1229			643			727	
Travel Time (s)		1.2			15.2			8.0			9.0	
Confl. Peds. (#/hr)			5			5						
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	17	5	632	23	615	0	51	547	705	157	0
Shared Lane Traffic (%)				48%								
Lane Group Flow (vph)	2	22	0	329	326	615	0	51	547	705	157	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												

Lanes, Volumes, Timings  
3: Blackstone St & Prosperity Ave

PM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	24.1		10.0	24.1	24.1	10.0	24.0	24.0	10.0	24.0	
Total Split (s)	10.0	24.1		20.9	35.0	35.0	10.0	24.0	24.0	21.0	35.0	
Total Split (%)	11.1%	26.8%		23.2%	38.9%	38.9%	11.1%	26.7%	26.7%	23.3%	38.9%	
Maximum Green (s)	4.0	18.1		14.9	29.0	29.0	4.0	18.0	18.0	15.0	29.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lead	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		11.1			11.1	11.1		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		5			5	5		0	0		0	
Act Effct Green (s)	6.1	10.3		26.2	26.2	31.3		11.6	11.6	17.2	32.8	
Actuated g/C Ratio	0.08	0.14		0.35	0.35	0.42		0.16	0.16	0.23	0.44	
v/c Ratio	0.02	0.09		0.60	0.54	0.64		0.17	0.79	0.96	0.19	
Control Delay	36.0	24.4		31.9	29.4	5.4		28.4	12.4	55.9	13.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	36.0	24.4		31.9	29.4	5.4		28.4	12.4	55.9	13.5	
LOS	D	C		C	C	A		C	B	E	B	
Approach Delay		25.4			18.4			13.7			48.2	
Approach LOS		C			B			B			D	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 73.9

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 26.8

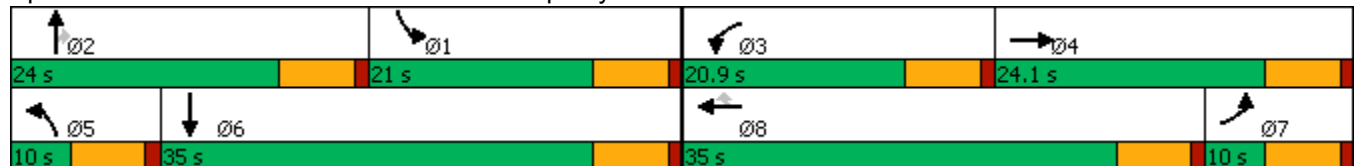
Intersection LOS: C

Intersection Capacity Utilization 69.1%

ICU Level of Service C

Analysis Period (min) 15
























Splits and Phases: 3: Blackstone St & Prosperity Ave



# HCM 6th Signalized Intersection Summary
























## 3: Blackstone St & Prosperity Ave

PM 2024  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	16	5	581	21	566	0	47	503	649	144	0
Future Volume (veh/h)	2	16	5	581	21	566	0	47	503	649	144	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	0
Adj Flow Rate, veh/h	2	17	5	648	0	615	0	51	547	705	157	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	0
Cap, veh/h	45	283	83	698	0	560	2	312	244	681	807	0
Arrive On Green	0.03	0.20	0.18	0.21	0.00	0.39	0.00	0.17	0.17	0.21	0.43	0.00
Sat Flow, veh/h	1641	1380	406	3281	0	1435	1641	1870	1460	3183	1870	0
Grp Volume(v), veh/h	2	0	22	648	0	615	0	51	547	705	157	0
Grp Sat Flow(s),veh/h/ln	1641	0	1786	1641	0	1435	1641	1870	1460	1591	1870	0
Q Serve(g_s), s	0.1	0.0	0.8	15.4	0.0	31.0	0.0	1.9	7.5	17.0	4.1	0.0
Cycle Q Clear(g_c), s	0.1	0.0	0.8	15.4	0.0	31.0	0.0	1.9	7.5	17.0	4.1	0.0
Prop In Lane	1.00		0.23	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	45	0	366	698	0	560	2	312	244	681	807	0
V/C Ratio(X)	0.04	0.00	0.06	0.93	0.00	1.10	0.00	0.16	2.24	1.04	0.19	0.00
Avail Cap(c_a), veh/h	124	0	452	698	0	560	124	471	368	681	807	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	37.6	0.0	25.6	30.7	0.0	24.2	0.0	28.3	10.5	31.2	14.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.1	18.7	0.0	67.6	0.0	0.2	572.5	43.8	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.3	7.2	0.0	19.2	0.0	0.8	42.6	9.9	1.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.0	0.0	25.7	49.4	0.0	91.8	0.0	28.6	583.0	75.1	14.1	0.0
LnGrp LOS	D	A	C	D	A	F	A	C	F	F	B	A
Approach Vol, veh/h	24			1263			598			862		
Approach Delay, s/veh	26.7			70.1			535.7			64.0		
Approach LOS	C			E			F			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.0	17.3	20.9	20.3	0.0	38.3	6.2	35.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	55.0	18.0	14.9	18.1	4.0	29.0	4.0	29.0				
Max Q Clear Time (g_c+I1),s	19.0	9.5	17.4	2.8	0.0	6.1	2.1	33.0				
Green Ext Time (p_c), s	0.0	1.8	0.0	0.0	0.0	0.5	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			169.1									
HCM 6th LOS			F									
Notes												













Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

PM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	427	613	106	65	661	176	166	339	153	265	121	443
Future Volume (vph)	427	613	106	65	661	176	166	339	153	265	121	443
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	270		0	155		85	155		0	200		205
Storage Lanes	2		1	1		1	1		0	2		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	0.88
Ped Bike Factor			0.97			0.98		0.99				0.97
Frt			0.850			0.850		0.953				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	1630	5085	1458	1630	3355	0	3162	1863	2567
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1410	1630	5085	1433	1630	3355	0	3162	1863	2493
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			150		70				351
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1229			2636			362			5336	
Travel Time (s)		15.2			32.7			4.5			66.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	464	666	115	71	718	191	180	368	166	288	132	482
Shared Lane Traffic (%)												
Lane Group Flow (vph)	464	666	115	71	718	191	180	534	0	288	132	482
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

PM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	32.7	32.7	10.0	45.6	45.6	10.0	47.0		10.0	49.9	49.9
Total Split (s)	12.0	44.1	44.1	15.0	47.1	47.1	11.0	49.9		11.0	49.9	49.9
Total Split (%)	10.0%	36.8%	36.8%	12.5%	39.3%	39.3%	9.2%	41.6%		9.2%	41.6%	41.6%
Maximum Green (s)	6.0	38.1	38.1	9.0	41.1	41.1	5.0	43.9		5.0	43.9	43.9
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		19.7	19.7		32.6	32.6		34.0			36.9	36.9
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	11.6	26.3	26.3	10.4	21.8	21.8	7.4	21.6		7.4	21.6	21.6
Actuated g/C Ratio	0.15	0.33	0.33	0.13	0.27	0.27	0.09	0.27		0.09	0.27	0.27
v/c Ratio	1.01	0.57	0.21	0.33	0.51	0.38	1.18	0.55		0.98	0.26	0.52
Control Delay	80.1	26.4	4.3	42.5	25.9	9.6	168.4	23.6		87.7	24.6	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	80.1	26.4	4.3	42.5	25.9	9.6	168.4	23.6		87.7	24.6	9.0
LOS	F	C	A	D	C	A	F	C		F	C	A
Approach Delay		44.4			24.0			60.1			36.4	
Approach LOS		D			C			E			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 79.4

Natural Cycle: 130

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.18

Intersection Signal Delay: 40.2









Intersection LOS: D

Intersection Capacity Utilization 68.1%

ICU Level of Service C

Analysis Period (min) 15































Splits and Phases: 4: Hillman St & Prosperity Ave

 Ø1	 Ø2	 Ø3	 Ø4
11 s	49.9 s	15 s	44.1 s
 Ø5	 Ø6	 Ø8	 Ø7
11 s	49.9 s	47.1 s	12 s



























# HCM 6th Signalized Intersection Summary 4: Hillman St & Prosperity Ave

PM 2024  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			  			 		 		 
Traffic Volume (veh/h)	427	613	106	65	661	176	166	339	153	265	121	443
Future Volume (veh/h)	427	613	106	65	661	176	166	339	153	265	121	443
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	464	666	115	71	718	191	180	368	166	288	132	482
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	378	1104	440	135	1402	393	170	631	280	331	496	660
Arrive On Green	0.12	0.31	0.31	0.08	0.27	0.27	0.10	0.27	0.24	0.10	0.27	0.27
Sat Flow, veh/h	3183	3554	1416	1641	5106	1432	1641	2378	1054	3183	1870	2487
Grp Volume(v), veh/h	464	666	115	71	718	191	180	273	261	288	132	482
Grp Sat Flow(s),veh/h/ln	1591	1777	1416	1641	1702	1432	1641	1777	1655	1591	1870	1244
Q Serve(g_s), s	8.0	10.7	4.1	2.8	8.0	4.6	7.0	9.0	9.4	6.0	3.8	7.1
Cycle Q Clear(g_c), s	8.0	10.7	4.1	2.8	8.0	4.6	7.0	9.0	9.4	6.0	3.8	7.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.64	1.00		1.00
Lane Grp Cap(c), veh/h	378	1104	440	135	1402	393	170	471	439	331	496	660
V/C Ratio(X)	1.23	0.60	0.26	0.52	0.51	0.49	1.06	0.58	0.59	0.87	0.27	0.73
Avail Cap(c_a), veh/h	378	2115	843	268	3266	916	170	1211	1128	331	1274	1695
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.7	19.7	17.4	29.6	20.6	7.6	30.2	21.5	22.2	29.7	19.6	8.0
Incr Delay (d2), s/veh	123.7	0.5	0.3	3.1	0.3	0.9	84.5	1.1	1.3	21.4	0.3	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.2	3.7	1.1	1.1	2.7	2.0	6.4	3.3	3.3	3.0	1.4	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	153.4	20.2	17.7	32.8	20.9	8.6	114.7	22.6	23.5	51.1	19.8	9.6
LnGrp LOS	F	C	B	C	C	A	F	C	C	D	B	A
Approach Vol, veh/h	1245			980			714			902		
Approach Delay, s/veh	69.6			19.4			46.1			24.4		
Approach LOS	E			B			D			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.0	21.9	9.6	24.9	11.0	21.9	12.0	22.5				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	50	43.9	9.0	38.1	5.0	43.9	6.0	41.1				
Max Q Clear Time (g_c+I1),s	80	11.4	4.8	12.7	9.0	9.1	10.0	10.0				
Green Ext Time (p_c), s	0.0	2.0	0.0	3.4	0.0	3.0	0.0	4.2				
Intersection Summary												
HCM 6th Ctrl Delay	41.8											
HCM 6th LOS	D											













Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

PM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	614	267	69	536	47	211	158	104	121	212	73
Future Volume (vph)	109	614	267	69	536	47	211	158	104	121	212	73
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	235		115	230		100	100		100	160		100
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96			0.97			0.97			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	5085	1458	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1405	1630	5085	1410	1630	1863	1416	1630	1863	1433
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			196			191			136			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2636			2650			5387			713	
Travel Time (s)		32.7			32.9			66.8			8.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	118	667	290	75	583	51	229	172	113	132	230	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	118	667	290	75	583	51	229	172	113	132	230	79
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

PM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	27.0	27.0	10.0	34.1	34.1	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (s)	11.0	39.0	39.0	11.0	39.0	39.0	23.0	56.0	56.0	14.0	47.0	47.0
Total Split (%)	9.2%	32.5%	32.5%	9.2%	32.5%	32.5%	19.2%	46.7%	46.7%	11.7%	39.2%	39.2%
Maximum Green (s)	5.0	33.0	33.0	5.0	33.0	33.0	17.0	50.0	50.0	8.0	41.0	41.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		21.1	21.1		32.6	32.6		32.6	32.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	7.2	24.8	24.8	7.2	24.8	24.8	18.6	29.1	29.1	10.4	20.8	20.8
Actuated g/C Ratio	0.08	0.28	0.28	0.08	0.28	0.28	0.21	0.33	0.33	0.12	0.24	0.24
v/c Ratio	0.88	0.67	0.54	0.56	0.41	0.10	0.66	0.28	0.20	0.69	0.52	0.16
Control Delay	97.3	32.7	14.1	61.3	27.4	0.4	46.0	23.0	3.2	61.4	34.0	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	97.3	32.7	14.1	61.3	27.4	0.4	46.0	23.0	3.2	61.4	34.0	0.7
LOS	F	C	B	E	C	A	D	C	A	E	C	A
Approach Delay		34.7			29.1			28.9			36.3	
Approach LOS		C			C			C			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 88

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 32.4









Intersection LOS: C

Intersection Capacity Utilization 61.7%

ICU Level of Service B

Analysis Period (min) 15





























Splits and Phases: 5: Laspina St & Prosperity Ave

 Ø1	 Ø2	 Ø3	 Ø4
14 s	56 s	11 s	39 s
 Ø5	 Ø6	 Ø7	 Ø8
23 s	47 s	11 s	39 s

# HCM 6th Signalized Intersection Summary













## 5: Laspina St & Prosperity Ave

PM 2024  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  						 	
Traffic Volume (veh/h)	109	614	267	69	536	47	211	158	104	121	212	73
Future Volume (veh/h)	109	614	267	69	536	47	211	158	104	121	212	73
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No				No			
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	118	667	290	75	583	51	229	172	113	132	230	79
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	156	1040	414	136	1431	396	310	528	399	204	406	311
Arrive On Green	0.10	0.29	0.29	0.08	0.28	0.28	0.19	0.28	0.28	0.12	0.22	0.22
Sat Flow, veh/h	1641	3554	1415	1641	5106	1414	1641	1870	1414	1641	1870	1430
Grp Volume(v), veh/h	118	667	290	75	583	51	229	172	113	132	230	79
Grp Sat Flow(s),veh/h/ln	1641	1777	1415	1641	1702	1414	1641	1870	1414	1641	1870	1430
Q Serve(g_s), s	5.1	12.0	13.4	3.2	6.8	2.0	9.7	5.3	4.6	5.6	8.1	3.4
Cycle Q Clear(g_c), s	5.1	12.0	13.4	3.2	6.8	2.0	9.7	5.3	4.6	5.6	8.1	3.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	156	1040	414	136	1431	396	310	528	399	204	406	311
V/C Ratio(X)	0.75	0.64	0.70	0.55	0.41	0.13	0.74	0.33	0.28	0.65	0.57	0.25
Avail Cap(c_a), veh/h	156	1695	675	156	2435	674	425	1325	1002	224	1096	838
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.4	22.6	23.1	32.3	21.5	19.7	28.0	20.8	20.6	30.6	25.6	23.8
Incr Delay (d2), s/veh	18.6	0.7	2.2	3.4	0.2	0.1	4.4	0.4	0.4	5.6	1.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	4.4	4.0	1.3	2.4	0.6	3.7	2.1	1.3	2.3	3.3	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.9	23.3	25.3	35.8	21.7	19.9	32.4	21.2	20.9	36.2	26.9	24.2
LnGrp LOS	D	C	C	D	C	B	C	C	C	D	C	C
Approach Vol, veh/h	1075				709				514			
Approach Delay, s/veh	26.8				23.0				26.1			
Approach LOS	C				C				C			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.1	24.7	10.1	25.5	17.9	19.9	11.0	24.6				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	80	50.0	5.0	33.0	17.0	41.0	5.0	33.0				
Max Q Clear Time (g_c+I1),s	7.6	7.3	5.2	15.4	11.7	10.1	7.1	8.8				
Green Ext Time (p_c), s	0.0	1.0	0.0	3.9	0.3	1.1	0.0	2.7				
Intersection Summary												
HCM 6th Ctrl Delay	26.1											
HCM 6th LOS	C											













Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

PM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	206	301	126	183	40	193	517	39	53	700	220
Future Volume (vph)	207	206	301	126	183	40	193	517	39	53	700	220
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98		1.00				0.97			0.98
Frt			0.850		0.973				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1806	0	1630	3539	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1433	1630	1806	0	1630	3539	1410	1630	3539	1426
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			250		10				208			268
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2667			5285	
Travel Time (s)		32.9			36.1			33.1			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	225	224	327	137	199	43	210	562	42	58	761	239
Shared Lane Traffic (%)												
Lane Group Flow (vph)	225	224	327	137	242	0	210	562	42	58	761	239
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

PM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	23.0	42.7	42.7	15.0	34.7		20.0	39.3	39.3	13.0	32.3	32.3
Total Split (%)	20.9%	38.8%	38.8%	13.6%	31.5%		18.2%	35.7%	35.7%	11.8%	29.4%	29.4%
Maximum Green (s)	17.0	36.7	36.7	9.0	28.7		14.0	33.3	33.3	7.0	26.3	26.3
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	18.3	27.1	27.1	11.1	19.9		16.0	36.3	36.3	8.8	26.2	26.2
Actuated g/C Ratio	0.19	0.28	0.28	0.11	0.21		0.17	0.38	0.38	0.09	0.27	0.27
v/c Ratio	0.73	0.43	0.56	0.73	0.64		0.78	0.42	0.06	0.39	0.79	0.41
Control Delay	53.4	30.9	11.5	67.5	42.2		62.1	25.9	0.2	53.4	40.7	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.4	30.9	11.5	67.5	42.2		62.1	25.9	0.2	53.4	40.7	4.9
LOS	D	C	B	E	D		E	C	A	D	D	A
Approach Delay		29.2			51.3			33.9			33.3	
Approach LOS		C			D			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 96.7

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 34.7









Intersection LOS: C

Intersection Capacity Utilization 70.5%

ICU Level of Service C
























Analysis Period (min) 15

Splits and Phases: 6: Mooney Blvd & Prosperity Ave

 Ø1	 Ø2	 Ø3	 Ø4
13 s	39.3 s	15 s	42.7 s
 Ø5	 Ø6	 Ø8	 Ø7
20 s	32.3 s	34.7 s	23 s

# HCM 6th Signalized Intersection Summary 6: Mooney Blvd & Prosperity Ave

PM 2024  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	207	206	301	126	183	40	193	517	39	53	700	220
Future Volume (veh/h)	207	206	301	126	183	40	193	517	39	53	700	220
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	225	224	327	137	199	43	210	562	42	58	761	239
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	350	540	414	189	283	61	269	1294	516	106	939	379
Arrive On Green	0.21	0.29	0.29	0.12	0.19	0.17	0.16	0.36	0.36	0.06	0.26	0.26
Sat Flow, veh/h	1641	1870	1433	1641	1483	320	1641	3554	1418	1641	3554	1432
Grp Volume(v), veh/h	225	224	327	137	0	242	210	562	42	58	761	239
Grp Sat Flow(s),veh/h/ln	1641	1870	1433	1641	0	1804	1641	1777	1418	1641	1777	1432
Q Serve(g_s), s	11.9	9.2	20.1	7.7	0.0	12.0	11.7	11.4	1.9	3.3	19.2	7.6
Cycle Q Clear(g_c), s	11.9	9.2	20.1	7.7	0.0	12.0	11.7	11.4	1.9	3.3	19.2	7.6
Prop In Lane	1.00		1.00	1.00		0.18	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	350	540	414	189	0	344	269	1294	516	106	939	379
V/C Ratio(X)	0.64	0.41	0.79	0.73	0.00	0.70	0.78	0.43	0.08	0.55	0.81	0.63
Avail Cap(c_a), veh/h	350	758	580	189	0	580	275	1313	524	155	1053	424
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.3	27.4	31.3	40.8	0.0	36.3	38.3	22.9	19.9	43.3	32.9	9.0
Incr Delay (d2), s/veh	4.0	0.5	4.9	13.0	0.0	2.6	13.1	0.2	0.1	4.4	4.4	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	3.9	6.9	3.6	0.0	5.2	5.4	4.3	0.6	1.4	8.1	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.2	28.0	36.2	53.8	0.0	39.0	51.4	23.2	20.0	47.7	37.3	11.6
LnGrp LOS	D	C	D	D	A	D	D	C	B	D	D	B
Approach Vol, veh/h	776			379			814			1058		
Approach Delay, s/veh	34.4			44.3			30.3			32.0		
Approach LOS	C			D			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.2	38.8	15.0	31.6	19.7	29.3	24.4	22.2				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	70	33.3	9.0	36.7	14.0	26.3	17.0	28.7				
Max Q Clear Time (g_c+I1),s	58	13.4	9.7	22.1	13.7	21.2	13.9	14.0				
Green Ext Time (p_c), s	0.0	2.4	0.0	1.9	0.0	2.1	0.2	0.7				
Intersection Summary												
HCM 6th Ctrl Delay	33.7											
HCM 6th LOS	C											



Lanes, Volumes, Timings  
7: Morrison St & Prosperity Ave




PM 2024  
03/13/2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↰	↱
Traffic Volume (vph)	287	20	37	290	17	22
Future Volume (vph)	287	20	37	290	17	22
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.991				0.923	
Flt Protected				0.994	0.979	
Satd. Flow (prot)	1846	0	0	1852	1550	0
Flt Permitted				0.994	0.979	
Satd. Flow (perm)	1846	0	0	1852	1550	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	312	22	40	315	18	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	334	0	0	355	42	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization 47.0%						
ICU Level of Service A						
Analysis Period (min) 15						

Lanes, Volumes, Timings  
8: Prosperity Ave & Oakmore Rd














PM 2024  
03/13/2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	72	210	162	23	17	126
Future Volume (vph)	72	210	162	23	17	126
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.983		0.881	
Flt Protected		0.987			0.994	
Satd. Flow (prot)	0	1839	1831	0	1502	0
Flt Permitted		0.987			0.994	
Satd. Flow (perm)	0	1839	1831	0	1502	0
Link Speed (mph)		55	55		55	
Link Distance (ft)		2108	5202		1848	
Travel Time (s)		26.1	64.5		22.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	78	228	176	25	18	137
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	306	201	0	155	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	44.4%			ICU Level of Service A		
Analysis Period (min)	15					
























Lanes, Volumes, Timings  
9: Mooney Blvd & Seminole Ave

PM 2024  
03/13/2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (vph)	0	120	868	52	160	1055
Future Volume (vph)	0	120	868	52	160	1055
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	0	540		0	80	
Storage Lanes	0	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.865		0.850		
Flt Protected					0.950	
Satd. Flow (prot)	0	1484	3539	1458	1630	3539
Flt Permitted					0.950	
Satd. Flow (perm)	0	1484	3539	1458	1630	3539
Link Speed (mph)	55		55			55
Link Distance (ft)	1218		2623			2667
Travel Time (s)	15.1		32.5			33.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	130	943	57	174	1147
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	130	943	57	174	1147
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	40.3%			ICU Level of Service A		
Analysis Period (min)	15					













Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

PM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	691	185	76	524	59	105	270	69	112	370	89
Future Volume (vph)	115	691	185	76	524	59	105	270	69	112	370	89
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		135	110		0	90		90	80		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97		1.00				0.98			0.98
Frt			0.850		0.985				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3474	0	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1408	1630	3474	0	1630	1863	1432	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191		10				136			136
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		841			2671			726			5387	
Travel Time (s)		10.4			33.1			9.0			66.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	751	201	83	570	64	114	293	75	122	402	97
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	751	201	83	634	0	114	293	75	122	402	97
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

PM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.9	29.9	10.0	28.4		10.0	39.9	39.9	10.0	44.1	44.1
Total Split (s)	13.0	42.0	42.0	11.0	40.0		22.0	53.0	53.0	14.0	45.0	45.0
Total Split (%)	10.8%	35.0%	35.0%	9.2%	33.3%		18.3%	44.2%	44.2%	11.7%	37.5%	37.5%
Maximum Green (s)	7.0	36.0	36.0	5.0	34.0		16.0	47.0	47.0	8.0	39.0	39.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		16.9	16.9		15.4			26.9	26.9		31.1	31.1
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	10.4	28.3	28.3	7.3	25.2		13.9	23.6	23.6	18.6	28.2	28.2
Actuated g/C Ratio	0.11	0.30	0.30	0.08	0.27		0.15	0.25	0.25	0.20	0.30	0.30
v/c Ratio	0.69	0.71	0.36	0.66	0.68		0.47	0.63	0.16	0.38	0.72	0.19
Control Delay	66.5	34.5	7.0	73.6	35.6		47.9	39.4	0.8	40.2	38.8	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.5	34.5	7.0	73.6	35.6		47.9	39.4	0.8	40.2	38.8	2.5
LOS	E	C	A	E	D		D	D	A	D	D	A
Approach Delay		33.1			40.0			35.4			33.4	
Approach LOS		C			D			D			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 94.4

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 35.3









Intersection LOS: D

Intersection Capacity Utilization 64.8%

ICU Level of Service C
























Analysis Period (min) 15

Splits and Phases: 10: Laspina St & Tulare Ave

 Ø2	 Ø1	 Ø4	 Ø3
53 s	14 s	42 s	11 s
 Ø5	 Ø6	 Ø8	 Ø7
22 s	45 s	40 s	13 s

























HCM 6th Signalized Intersection Summary  
10: Laspina St & Tulare Ave

PM 2024  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	691	185	76	524	59	105	270	69	112	370	89
Future Volume (veh/h)	115	691	185	76	524	59	105	270	69	112	370	89
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	125	751	201	83	570	64	114	293	75	122	402	97
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	220	1056	421	144	805	90	184	444	339	278	551	422
Arrive On Green	0.13	0.30	0.30	0.09	0.25	0.22	0.11	0.24	0.24	0.17	0.29	0.29
Sat Flow, veh/h	1641	3554	1415	1641	3208	359	1641	1870	1431	1641	1870	1433
Grp Volume(v), veh/h	125	751	201	83	315	319	114	293	75	122	402	97
Grp Sat Flow(s),veh/h/ln	1641	1777	1415	1641	1777	1791	1641	1870	1431	1641	1870	1433
Q Serve(g_s), s	5.5	14.5	5.5	3.7	12.4	12.5	5.1	10.9	3.2	5.1	14.9	2.3
Cycle Q Clear(g_c), s	5.5	14.5	5.5	3.7	12.4	12.5	5.1	10.9	3.2	5.1	14.9	2.3
Prop In Lane	1.00		1.00	1.00		0.20	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	220	1056	421	144	446	449	184	444	339	278	551	422
V/C Ratio(X)	0.57	0.71	0.48	0.58	0.71	0.71	0.62	0.66	0.22	0.44	0.73	0.23
Avail Cap(c_a), veh/h	220	1756	699	149	832	838	384	1192	912	278	997	764
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.2	24.1	8.5	33.7	26.2	26.5	32.6	26.5	23.6	28.6	24.4	7.1
Incr Delay (d2), s/veh	3.4	0.9	0.8	5.0	2.1	2.1	3.3	1.7	0.3	1.1	1.9	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	5.4	2.5	1.6	4.8	5.0	2.0	4.5	1.0	1.9	5.9	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.6	25.0	9.3	38.7	28.3	28.5	35.9	28.2	23.9	29.7	26.3	7.4
LnGrp LOS	C	C	A	D	C	C	D	C	C	C	C	A
Approach Vol, veh/h	1077			717			482			621		
Approach Delay, s/veh	23.2			29.6			29.4			24.0		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	22.2	10.8	26.9	12.6	26.6	14.3	23.3				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	30.0	47.0	5.0	36.0	16.0	39.0	7.0	34.0				
Max Q Clear Time (g_c+l1),s	12.9	12.9	5.7	16.5	7.1	16.9	7.5	14.5				
Green Ext Time (p_c), s	0.0	1.3	0.0	4.0	0.2	1.8	0.0	2.2				
Intersection Summary												
HCM 6th Ctrl Delay	26.0											
HCM 6th LOS	C											

Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave













PM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	208	471	203	67	359	211	103	510	61	267	529	273
Future Volume (vph)	208	471	203	67	359	211	103	510	61	267	529	273
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	420		185	125		125	80		0	475		475
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98		1.00				0.98
Frt			0.850			0.850		0.984				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3539	1458	1630	3471	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1412	1630	3539	1430	1630	3471	0	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			221			229		11				297
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2671			2887			1662			2623	
Travel Time (s)		33.1			35.8			20.6			32.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	226	512	221	73	390	229	112	554	66	290	575	297
Shared Lane Traffic (%)												
Lane Group Flow (vph)	226	512	221	73	390	229	112	620	0	290	575	297
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												



Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

PM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	37.0	37.0	10.0	37.0	37.0	10.0	39.9		10.0	42.7	42.7
Total Split (s)	22.0	44.0	44.0	15.0	37.0	37.0	17.0	43.0		18.0	44.0	44.0
Total Split (%)	18.3%	36.7%	36.7%	12.5%	30.8%	30.8%	14.2%	35.8%		15.0%	36.7%	36.7%
Maximum Green (s)	16.0	38.0	38.0	9.0	31.0	31.0	11.0	37.0		12.0	38.0	38.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		24.0	24.0		24.0	24.0		26.9			29.7	29.7
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	18.1	28.1	28.1	13.5	20.5	20.5	12.3	26.1		23.7	37.5	37.5
Actuated g/C Ratio	0.17	0.27	0.27	0.13	0.20	0.20	0.12	0.25		0.23	0.36	0.36
v/c Ratio	0.80	0.54	0.41	0.35	0.56	0.49	0.59	0.71		0.79	0.86	0.42
Control Delay	65.6	37.5	7.0	48.5	41.4	8.5	59.6	40.2		56.7	46.5	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	65.6	37.5	7.0	48.5	41.4	8.5	59.6	40.2		56.7	46.5	5.1
LOS	E	D	A	D	D	A	E	D		E	D	A
Approach Delay		37.1			31.3			43.2			38.5	
Approach LOS		D			C			D			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 104.6

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 37.6









Intersection LOS: D

Intersection Capacity Utilization 72.7%

ICU Level of Service C

























Analysis Period (min) 15

Splits and Phases: 11: Mooney Blvd & Tulare Ave

 Ø2	 Ø1	 Ø4	 Ø3
43 s	18 s	44 s	15 s
 Ø5	 Ø6	 Ø7	 Ø8
17 s	44 s	22 s	37 s





















HCM 6th Signalized Intersection Summary  
11: Mooney Blvd & Tulare Ave

PM 2024  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	208	471	203	67	359	211	103	510	61	267	529	273
Future Volume (veh/h)	208	471	203	67	359	211	103	510	61	267	529	273
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	226	512	221	73	390	229	112	554	66	290	575	297
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	287	795	315	233	678	272	171	779	92	361	674	517
Arrive On Green	0.18	0.22	0.22	0.14	0.19	0.19	0.10	0.24	0.22	0.22	0.36	0.36
Sat Flow, veh/h	1641	3554	1410	1641	3554	1428	1641	3185	378	1641	1870	1435
Grp Volume(v), veh/h	226	512	221	73	390	229	112	308	312	290	575	297
Grp Sat Flow(s),veh/h/ln	1641	1777	1410	1641	1777	1428	1641	1777	1786	1641	1870	1435
Q Serve(g_s), s	12.4	12.3	9.6	3.8	9.4	8.3	6.2	15.0	15.1	15.8	26.8	15.7
Cycle Q Clear(g_c), s	12.4	12.3	9.6	3.8	9.4	8.3	6.2	15.0	15.1	15.8	26.8	15.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	287	795	315	233	678	272	171	435	437	361	674	517
V/C Ratio(X)	0.79	0.64	0.70	0.31	0.58	0.84	0.66	0.71	0.71	0.80	0.85	0.57
Avail Cap(c_a), veh/h	313	1507	598	233	1243	499	226	735	739	361	793	608
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.2	33.2	16.6	36.3	34.7	12.0	40.6	32.6	32.8	34.9	27.9	24.3
Incr Delay (d2), s/veh	11.6	0.9	2.8	0.8	0.8	6.9	4.2	2.1	2.2	12.3	7.9	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	5.0	4.3	1.5	3.8	4.8	2.5	6.1	6.3	7.0	12.1	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.9	34.1	19.4	37.1	35.5	18.9	44.8	34.7	35.0	47.2	35.7	25.3
LnGrp LOS	D	C	B	D	D	B	D	C	C	D	D	C
Approach Vol, veh/h	959		692			732			1162			
Approach Delay, s/veh	34.2		30.2			36.4			35.9			
Approach LOS	C		C			D			D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	24.8	27.1	17.4	25.1	13.8	38.0	20.5	22.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	25.0	37.0	9.0	38.0	11.0	38.0	16.0	31.0				
Max Q Clear Time (g_c+I1), s	17.1	17.1	5.8	14.3	8.2	28.8	14.4	11.4				
Green Ext Time (p_c), s	0.0	2.1	0.0	3.1	0.1	2.6	0.1	2.4				
Intersection Summary												
HCM 6th Ctrl Delay	34.4											
HCM 6th LOS	C											























Lanes, Volumes, Timings  
12: Morrison St & Tulare Ave

PM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	562	132	52	486	4	58	22	29	0	23	27
Future Volume (vph)	13	562	132	52	486	4	58	22	29	0	23	27
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.999			0.914			0.927	
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1630	1863	1458	1630	1861	0	1630	1703	0	0	1727	0
Flt Permitted	0.950			0.950			0.950					
Satd. Flow (perm)	1630	1863	1458	1630	1861	0	1630	1703	0	0	1727	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	611	143	57	528	4	63	24	32	0	25	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	14	611	143	57	532	0	63	56	0	0	54	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	53.1%				ICU Level of Service A							
Analysis Period (min)	15											













Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

PM 2024+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	146	112	125	19	119	4	91	694	19	8	843	154
Future Volume (vph)	146	112	125	19	119	4	91	694	19	8	843	154
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.995			0.996			0.977	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1852	0	1630	3522	0	1630	3442	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1432	1630	1852	0	1630	3522	0	1630	3442	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			147		2			3			23	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	159	122	136	21	129	4	99	754	21	9	916	167
Shared Lane Traffic (%)												
Lane Group Flow (vph)	159	122	136	21	133	0	99	775	0	9	1083	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

PM 2024+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	11.0	39.1	39.1	9.5	37.6		12.0	41.9		9.5	39.4	
Total Split (%)	11.0%	39.1%	39.1%	9.5%	37.6%		12.0%	41.9%		9.5%	39.4%	
Maximum Green (s)	5.5	33.6	33.6	4.0	32.1		6.5	36.4		4.0	33.9	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effct Green (s)	7.2	22.8	22.8	5.6	14.8		8.2	41.3		5.6	30.5	
Actuated g/C Ratio	0.09	0.30	0.30	0.07	0.19		0.11	0.54		0.07	0.40	
v/c Ratio	1.05	0.22	0.26	0.18	0.37		0.57	0.41		0.08	0.79	
Control Delay	127.8	24.0	5.2	42.8	29.8		51.9	13.5		41.1	26.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	127.8	24.0	5.2	42.8	29.8		51.9	13.5		41.1	26.0	
LOS	F	C	A	D	C		D	B		D	C	
Approach Delay		57.4			31.6			17.8			26.1	
Approach LOS		E			C			B			C	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 77.1

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 28.7









Intersection LOS: C

Intersection Capacity Utilization 65.4%

ICU Level of Service C























Analysis Period (min) 15

Splits and Phases: 1: Mooney Blvd & Cartmill Ave

 Ø1	 Ø2	 Ø3	 Ø4
9.5 s	41.9 s	9.5 s	39.1 s
 Ø5	 Ø6	 Ø7	 Ø8
12 s	39.4 s	11 s	37.6 s

HCM 6th Signalized Intersection Summary  
1: Mooney Blvd & Cartmill Ave

PM 2024+Project  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	146	112	125	19	119	4	91	694	19	8	843	154
Future Volume (veh/h)	146	112	125	19	119	4	91	694	19	8	843	154
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	159	122	136	21	129	4	99	754	21	9	916	167
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	175	414	317	69	283	9	159	1623	45	53	1180	215
Arrive On Green	0.11	0.22	0.22	0.04	0.16	0.13	0.10	0.46	0.44	0.03	0.40	0.37
Sat Flow, veh/h	1641	1870	1430	1641	1803	56	1641	3528	98	1641	2986	544
Grp Volume(v), veh/h	159	122	136	21	0	133	99	380	395	9	545	538
Grp Sat Flow(s),veh/h/ln	1641	1870	1430	1641	0	1859	1641	1777	1849	1641	1777	1754
Q Serve(g_s), s	6.3	3.6	5.4	0.8	0.0	4.3	3.8	9.6	9.6	0.4	17.5	17.6
Cycle Q Clear(g_c), s	6.3	3.6	5.4	0.8	0.0	4.3	3.8	9.6	9.6	0.4	17.5	17.6
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.05	1.00		0.31
Lane Grp Cap(c), veh/h	175	414	317	69	0	292	159	818	851	53	702	693
V/C Ratio(X)	0.91	0.29	0.43	0.30	0.00	0.46	0.62	0.46	0.46	0.17	0.78	0.78
Avail Cap(c_a), veh/h	175	1001	765	138	0	952	200	1027	1069	138	959	946
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.0	21.3	22.0	30.5	0.0	25.1	28.5	12.2	12.2	30.9	17.3	17.5
Incr Delay (d2), s/veh	42.8	0.4	0.9	2.4	0.0	1.1	3.9	0.4	0.4	1.5	2.8	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	1.4	1.6	0.3	0.0	1.7	1.5	2.9	3.0	0.1	6.1	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.7	21.7	22.9	32.9	0.0	26.2	32.4	12.6	12.6	32.4	20.1	20.4
LnGrp LOS	E	C	C	C	A	C	C	B	B	C	C	C
Approach Vol, veh/h	417			154			874			1092		
Approach Delay, s/veh	41.2			27.1			14.8			20.3		
Approach LOS	D			C			B			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.1	34.2	6.8	18.5	10.4	29.9	11.0	14.3				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax),s	40	36.4	4.0	33.6	6.5	33.9	5.5	32.1				
Max Q Clear Time (g_c+l1)2s	11.6	2.8	7.4	5.8	19.6	8.3	6.3					
Green Ext Time (p_c), s	0.0	2.8	0.0	0.9	0.0	3.9	0.0	0.4				
Intersection Summary												
HCM 6th Ctrl Delay	22.3											
HCM 6th LOS	C											

Lanes, Volumes, Timings  
2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

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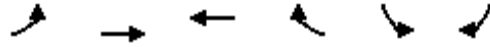


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (vph)	0	584	633	0	227	76
Future Volume (vph)	0	584	633	0	227	76
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Fr <sub>t</sub>						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	1630	1458
Flt Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	1630	1458
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						83
Link Speed (mph)		55	55		55	
Link Distance (ft)		349	727		300	
Travel Time (s)		4.3	9.0		3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	635	688	0	247	83
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	635	688	0	247	83
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors		1	1		1	1
Detector Template						
Leading Detector (ft)		50	50		50	50
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		50	50		50	50
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		4.0	4.0		4.0	4.0
Minimum Split (s)		24.0	24.0		24.0	24.0
Total Split (s)		45.0	45.0		45.0	45.0
Total Split (%)		50.0%	50.0%		50.0%	50.0%
Maximum Green (s)		39.0	39.0		39.0	39.0
Yellow Time (s)		5.0	5.0		5.0	5.0



Lanes, Volumes, Timings  
2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

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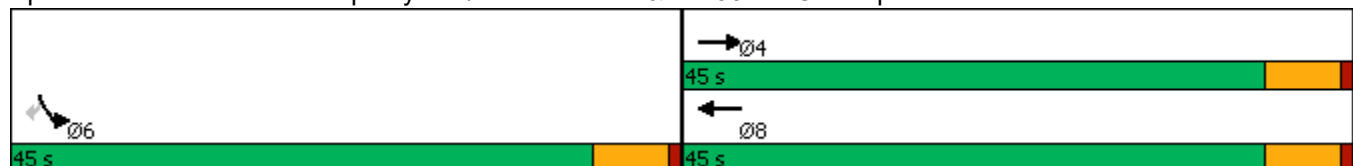


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		None	None		Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		15.3	15.3		13.7	13.7
Actuated g/C Ratio		0.41	0.41		0.37	0.37
v/c Ratio		0.44	0.47		0.41	0.14
Control Delay		9.3	9.6		11.8	3.5
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		9.3	9.6		11.8	3.5
LOS		A	A		B	A
Approach Delay		9.3	9.6		9.7	
Approach LOS		A	A		A	

Intersection Summary

Area Type: Other  
Cycle Length: 90  
Actuated Cycle Length: 37.2  
Natural Cycle: 50  
Control Type: Actuated-Uncoordinated  
Maximum v/c Ratio: 0.47  
Intersection Signal Delay: 9.5  
Intersection LOS: A  
Intersection Capacity Utilization 37.8%  
ICU Level of Service A  
Analysis Period (min) 15

Splits and Phases: 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp



# HCM 6th Signalized Intersection Summary 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp
























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Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (veh/h)	0	584	633	0	227	76
Future Volume (veh/h)	0	584	633	0	227	76
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1723	1723
Adj Flow Rate, veh/h	0	635	688	0	247	83
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	1419	1419	0	510	454
Arrive On Green	0.00	0.40	0.40	0.00	0.31	0.31
Sat Flow, veh/h	0	3741	3741	0	1641	1460
Grp Volume(v), veh/h	0	635	688	0	247	83
Grp Sat Flow(s),veh/h/ln	0	1777	1777	0	1641	1460
Q Serve(g_s), s	0.0	3.6	4.0	0.0	3.4	1.1
Cycle Q Clear(g_c), s	0.0	3.6	4.0	0.0	3.4	1.1
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1419	1419	0	510	454
V/C Ratio(X)	0.00	0.45	0.48	0.00	0.48	0.18
Avail Cap(c_a), veh/h	0	5279	5279	0	2437	2169
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	6.1	6.2	0.0	7.7	6.9
Incr Delay (d2), s/veh	0.0	0.2	0.3	0.0	0.7	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.3	0.3	0.0	0.5	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	6.3	6.4	0.0	8.4	7.1
LnGrp LOS	A	A	A	A	A	A
Approach Vol, veh/h		635	688		330	
Approach Delay, s/veh		6.3	6.4		8.1	
Approach LOS		A	A		A	
Timer - Assigned Phs				4	6	8
Phs Duration (G+Y+Rc), s				15.0	12.6	15.0
Change Period (Y+Rc), s				6.0	6.0	6.0
Max Green Setting (Gmax), s				39.0	39.0	39.0
Max Q Clear Time (g_c+I1), s				5.6	5.4	6.0
Green Ext Time (p_c), s				2.8	1.2	3.0
Intersection Summary						
HCM 6th Ctrl Delay			6.7			
HCM 6th LOS			A			


Lanes, Volumes, Timings  
3: Blackstone St & Prosperity Ave

PM 2024+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	16	5	612	21	622	0	47	536	692	144	0
Future Volume (vph)	2	16	5	612	21	622	0	47	536	692	144	0
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	30		0	335		310	55		90	240		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor		0.99				0.98						
Frt		0.966				0.850			0.850			
Flt Protected	0.950			0.950	0.955					0.950		
Satd. Flow (prot)	1630	1790	0	1548	1690	1458	1716	1863	1458	3162	1863	0
Flt Permitted	0.950			0.950						0.950		
Satd. Flow (perm)	1630	1790	0	1548	1770	1427	1716	1863	1458	3162	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				676			583			
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		98			1229			643			727	
Travel Time (s)		1.2			15.2			8.0			9.0	
Confl. Peds. (#/hr)			5			5						
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	17	5	665	23	676	0	51	583	752	157	0
Shared Lane Traffic (%)				48%								
Lane Group Flow (vph)	2	22	0	346	342	676	0	51	583	752	157	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												

Lanes, Volumes, Timings  
3: Blackstone St & Prosperity Ave

PM 2024+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	24.1		10.0	24.1	24.1	10.0	24.0	24.0	10.0	24.0	
Total Split (s)	10.0	24.1		25.9	40.0	40.0	10.0	24.0	24.0	26.0	40.0	
Total Split (%)	10.0%	24.1%		25.9%	40.0%	40.0%	10.0%	24.0%	24.0%	26.0%	40.0%	
Maximum Green (s)	4.0	18.1		19.9	34.0	34.0	4.0	18.0	18.0	20.0	34.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lag	Lead	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		11.1			11.1	11.1		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		5			5	5		0	0		0	
Act Effct Green (s)	6.1	10.1		31.4	31.4	36.3		12.0	12.0	22.2	38.2	
Actuated g/C Ratio	0.07	0.12		0.37	0.37	0.43		0.14	0.14	0.26	0.45	
v/c Ratio	0.02	0.10		0.60	0.54	0.68		0.19	0.82	0.90	0.19	
Control Delay	41.5	28.9		31.9	29.8	5.8		33.6	14.1	47.5	14.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	41.5	28.9		31.9	29.8	5.8		33.6	14.1	47.5	14.7	
LOS	D	C		C	C	A		C	B	D	B	
Approach Delay		30.0			18.4			15.7			41.8	
Approach LOS		C			B			B			D	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 84.3

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 25.2









Intersection LOS: C

Intersection Capacity Utilization 72.6%

ICU Level of Service C
























Analysis Period (min) 15

Splits and Phases: 3: Blackstone St & Prosperity Ave

 Ø2	 Ø1	 Ø4	 Ø3
24 s	26 s	24.1 s	25.9 s
 Ø6	 Ø5	 Ø7	 Ø8
40 s	10 s	10 s	40 s

























# HCM 6th Signalized Intersection Summary 3: Blackstone St & Prosperity Ave

PM 2024+Project  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										 		
Traffic Volume (veh/h)	2	16	5	612	21	622	0	47	536	692	144	0
Future Volume (veh/h)	2	16	5	612	21	622	0	47	536	692	144	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	0
Adj Flow Rate, veh/h	2	17	5	681	0	676	0	51	583	752	157	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	0
Cap, veh/h	41	120	35	808	0	443	577	430	335	804	245	0
Arrive On Green	0.03	0.09	0.06	0.25	0.00	0.31	0.00	0.23	0.23	0.25	0.13	0.00
Sat Flow, veh/h	1641	1373	404	3281	0	1433	1641	1870	1460	3183	1870	0
Grp Volume(v), veh/h	2	0	22	681	0	676	0	51	583	752	157	0
Grp Sat Flow(s),veh/h/ln	1641	0	1777	1641	0	1433	1641	1870	1460	1591	1870	0
Q Serve(g_s), s	0.1	0.0	1.0	17.2	0.0	11.7	0.0	1.9	20.0	20.1	6.9	0.0
Cycle Q Clear(g_c), s	0.1	0.0	1.0	17.2	0.0	11.7	0.0	1.9	20.0	20.1	6.9	0.0
Prop In Lane	1.00		0.23	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	41	0	156	808	0	443	577	430	335	804	245	0
V/C Ratio(X)	0.05	0.00	0.14	0.84	0.00	1.53	0.00	0.12	1.74	0.94	0.64	0.00
Avail Cap(c_a), veh/h	113	0	410	825	0	593	577	430	335	804	773	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.4	0.0	36.9	31.2	0.0	5.7	0.0	26.6	33.5	31.8	35.9	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.4	7.8	0.0	248.4	0.0	0.1	344.7	18.0	2.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.4	7.0	0.0	36.8	0.0	0.8	38.5	8.9	3.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.9	0.0	37.3	39.0	0.0	254.1	0.0	26.7	378.2	49.8	38.7	0.0
LnGrp LOS	D	A	D	D	A	F	A	C	F	D	D	A
Approach Vol, veh/h	24			1357			634			909		
Approach Delay, s/veh	37.7			146.1			349.9			47.9		
Approach LOS	D			F			F			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	26.0	24.0	25.5	11.6	34.6	15.4	6.2	30.9				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	20.0	18.0	19.9	18.1	4.0	34.0	4.0	34.0				
Max Q Clear Time (g_c+I2), s	12.1	22.0	19.2	3.0	0.0	8.9	2.1	13.7				
Green Ext Time (p_c), s	0.0	0.0	0.3	0.0	0.0	0.5	0.0	3.3				
Intersection Summary												
HCM 6th Ctrl Delay			158.9									
HCM 6th LOS			F									
Notes												













Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

PM 2024+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	427	719	106	101	779	192	166	339	263	282	121	443
Future Volume (vph)	427	719	106	101	779	192	166	339	263	282	121	443
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	270		0	155		85	155		0	200		205
Storage Lanes	2		1	1		1	1		0	2		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	0.88
Ped Bike Factor			0.97			0.98		0.99				0.97
Frt			0.850			0.850		0.934				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	1630	5085	1458	1630	3280	0	3162	1863	2567
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1410	1630	5085	1433	1630	3280	0	3162	1863	2493
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			139		193				278
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1229			2636			362			5336	
Travel Time (s)		15.2			32.7			4.5			66.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	464	782	115	110	847	209	180	368	286	307	132	482
Shared Lane Traffic (%)												
Lane Group Flow (vph)	464	782	115	110	847	209	180	654	0	307	132	482
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

PM 2024+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	32.7	32.7	10.0	45.6	45.6	10.0	47.0		10.0	49.9	49.9
Total Split (s)	11.0	44.1	44.1	14.0	47.1	47.1	12.0	50.9		11.0	49.9	49.9
Total Split (%)	9.2%	36.8%	36.8%	11.7%	39.3%	39.3%	10.0%	42.4%		9.2%	41.6%	41.6%
Maximum Green (s)	5.0	38.1	38.1	8.0	41.1	41.1	6.0	44.9		5.0	43.9	43.9
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		19.7	19.7		32.6	32.6		34.0			36.9	36.9
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	12.4	26.7	26.7	10.5	24.7	24.7	8.4	23.0		7.3	22.0	22.0
Actuated g/C Ratio	0.15	0.32	0.32	0.12	0.29	0.29	0.10	0.27		0.09	0.26	0.26
v/c Ratio	1.00	0.70	0.21	0.54	0.57	0.40	1.12	0.63		1.12	0.27	0.56
Control Delay	80.0	29.8	4.2	51.4	27.2	11.9	145.0	21.1		129.1	26.2	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	80.0	29.8	4.2	51.4	27.2	11.9	145.0	21.1		129.1	26.2	13.4
LOS	E	C	A	D	C	B	F	C		F	C	B
Approach Delay		44.7			26.7			47.9			53.8	
Approach LOS		D			C			D			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 84.2

Natural Cycle: 130

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.12

Intersection Signal Delay: 42.4









Intersection LOS: D

Intersection Capacity Utilization 73.6%

ICU Level of Service D

Analysis Period (min) 15

























Splits and Phases: 4: Hillman St & Prosperity Ave

 Ø1	 Ø2	 Ø3	 Ø4
11 s	50.9 s	14 s	44.1 s
 Ø5	 Ø6	 Ø8	 Ø7
12 s	49.9 s	47.1 s	11 s































# HCM 6th Signalized Intersection Summary 4: Hillman St & Prosperity Ave

PM 2024+Project  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	427	719	106	101	779	192	166	339	263	282	121	443
Future Volume (veh/h)	427	719	106	101	779	192	166	339	263	282	121	443
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No				No			
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	464	782	115	110	847	209	180	368	286	307	132	482
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	401	1083	431	177	1462	410	169	553	423	287	521	693
Arrive On Green	0.13	0.30	0.30	0.11	0.29	0.29	0.10	0.29	0.27	0.09	0.28	0.28
Sat Flow, veh/h	3183	3554	1415	1641	5106	1433	1641	1899	1453	3183	1870	2489
Grp Volume(v), veh/h	464	782	115	110	847	209	180	344	310	307	132	482
Grp Sat Flow(s),veh/h/ln	1591	1777	1415	1641	1702	1433	1641	1777	1575	1591	1870	1244
Q Serve(g_s), s	9.8	15.2	4.8	5.0	11.0	6.2	8.0	13.2	13.7	7.0	4.3	8.2
Cycle Q Clear(g_c), s	9.8	15.2	4.8	5.0	11.0	6.2	8.0	13.2	13.7	7.0	4.3	8.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.92	1.00		1.00
Lane Grp Cap(c), veh/h	401	1083	431	177	1462	410	169	518	459	287	521	693
V/C Ratio(X)	1.16	0.72	0.27	0.62	0.58	0.51	1.06	0.66	0.68	1.07	0.25	0.70
Avail Cap(c_a), veh/h	401	1836	731	211	2836	796	169	1074	952	287	1106	1472
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.9	24.0	20.4	33.1	23.7	10.0	34.8	24.2	25.1	35.3	21.7	9.4
Incr Delay (d2), s/veh	95.3	0.9	0.3	4.1	0.4	1.0	87.3	1.5	1.7	72.7	0.3	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	5.6	1.4	2.0	3.9	2.7	7.0	5.0	4.7	5.4	1.7	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	129.2	25.0	20.7	37.2	24.1	11.0	122.1	25.6	26.9	108.0	22.0	10.6
LnGrp LOS	F	C	C	D	C	B	F	C	C	F	C	B
Approach Vol, veh/h	1361		1166				834		921			
Approach Delay, s/veh	60.2		23.0				46.9		44.7			
Approach LOS	E		C				D		D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.0	26.6	12.3	27.6	12.0	25.6	13.8	26.2				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	50	44.9	8.0	38.1	6.0	43.9	5.0	41.1				
Max Q Clear Time (g_c+I1),s	9.0	15.7	7.0	17.2	10.0	10.2	11.8	13.0				
Green Ext Time (p_c), s	0.0	2.6	0.0	3.8	0.0	3.0	0.0	5.0				
Intersection Summary												
HCM 6th Ctrl Delay	44.1											
HCM 6th LOS	D											













Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

PM 2024+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  						 	
Traffic Volume (vph)	109	847	267	69	711	47	211	158	104	121	212	73
Future Volume (vph)	109	847	267	69	711	47	211	158	104	121	212	73
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	235		115	230		100	100		100	160		100
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96			0.97			0.97			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	5085	1458	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1405	1630	5085	1410	1630	1863	1415	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			142			136			191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2636			2650			5387			713	
Travel Time (s)		32.7			32.9			66.8			8.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	118	921	290	75	773	51	229	172	113	132	230	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	118	921	290	75	773	51	229	172	113	132	230	79
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

PM 2024+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	27.0	27.0	10.0	34.1	34.1	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (s)	15.0	39.4	39.4	11.0	35.4	35.4	24.0	48.6	48.6	21.0	45.6	45.6
Total Split (%)	12.5%	32.8%	32.8%	9.2%	29.5%	29.5%	20.0%	40.5%	40.5%	17.5%	38.0%	38.0%
Maximum Green (s)	9.0	33.4	33.4	5.0	29.4	29.4	18.0	42.6	42.6	15.0	39.6	39.6
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		21.1	21.1		32.6	32.6		32.6	32.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	11.2	32.1	32.1	7.2	28.1	28.1	19.1	26.3	26.3	14.3	21.5	21.5
Actuated g/C Ratio	0.12	0.33	0.33	0.07	0.29	0.29	0.20	0.27	0.27	0.15	0.22	0.22
v/c Ratio	0.62	0.78	0.52	0.62	0.52	0.10	0.71	0.34	0.22	0.55	0.55	0.17
Control Delay	60.2	35.7	17.8	70.8	31.0	0.4	52.0	30.5	0.9	50.0	38.4	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.2	35.7	17.8	70.8	31.0	0.4	52.0	30.5	0.9	50.0	38.4	0.8
LOS	E	D	B	E	C	A	D	C	A	D	D	A
Approach Delay		34.0			32.6			33.6			35.2	
Approach LOS		C			C			C			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 96.3

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 33.7









Intersection LOS: C

Intersection Capacity Utilization 68.1%

ICU Level of Service C

























Analysis Period (min) 15

Splits and Phases: 5: Laspina St & Prosperity Ave

 Ø1	 Ø2	 Ø4	 Ø3
21 s	48.6 s	39.4 s	11 s
 Ø5	 Ø6	 Ø7	 Ø8
24 s	45.6 s	15 s	35.4 s
























# HCM 6th Signalized Intersection Summary 5: Laspina St & Prosperity Ave

PM 2024+Project  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	847	267	69	711	47	211	158	104	121	212	73
Future Volume (veh/h)	109	847	267	69	711	47	211	158	104	121	212	73
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	118	921	290	75	773	51	229	172	113	132	230	79
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	183	1188	474	132	1548	429	302	505	382	201	390	298
Arrive On Green	0.11	0.33	0.33	0.08	0.30	0.30	0.18	0.27	0.27	0.12	0.21	0.21
Sat Flow, veh/h	1641	3554	1417	1641	5106	1415	1641	1870	1414	1641	1870	1429
Grp Volume(v), veh/h	118	921	290	75	773	51	229	172	113	132	230	79
Grp Sat Flow(s),veh/h/ln	1641	1777	1417	1641	1702	1415	1641	1870	1414	1641	1870	1429
Q Serve(g_s), s	5.7	19.3	7.2	3.7	10.3	2.2	11.0	6.1	3.6	6.4	9.2	3.8
Cycle Q Clear(g_c), s	5.7	19.3	7.2	3.7	10.3	2.2	11.0	6.1	3.6	6.4	9.2	3.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	183	1188	474	132	1548	429	302	505	382	201	390	298
V/C Ratio(X)	0.65	0.78	0.61	0.57	0.50	0.12	0.76	0.34	0.30	0.66	0.59	0.26
Avail Cap(c_a), veh/h	218	1518	605	139	1934	536	396	1006	761	336	939	717
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.3	24.8	5.9	36.7	23.7	20.9	32.1	24.3	11.5	34.7	29.6	27.5
Incr Delay (d2), s/veh	4.9	2.0	1.3	5.0	0.3	0.1	6.0	0.4	0.4	3.6	1.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	7.4	3.7	1.5	3.7	0.7	4.4	2.5	1.6	2.5	3.9	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.2	26.8	7.2	41.7	24.0	21.0	38.1	24.7	11.9	38.4	31.0	27.9
LnGrp LOS	D	C	A	D	C	C	D	C	B	D	C	C
Approach Vol, veh/h	1329			899			514			441		
Approach Delay, s/veh	23.7			25.3			27.9			32.7		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.1	26.4	10.6	31.7	19.2	21.3	13.2	29.1				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	50	42.6	5.0	33.4	18.0	39.6	9.0	29.4				
Max Q Clear Time (g_c+I1)8s	8.1	8.1	5.7	21.3	13.0	11.2	7.7	12.3				
Green Ext Time (p_c), s	0.2	1.0	0.0	4.4	0.3	1.1	0.0	3.4				
Intersection Summary												
HCM 6th Ctrl Delay	26.1											
HCM 6th LOS	C											













Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

PM 2024+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	444	301	141	363	77	193	517	63	95	700	220
Future Volume (vph)	207	444	301	141	363	77	193	517	63	95	700	220
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98		1.00				0.98			0.98
Frt			0.850		0.974				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1808	0	1630	3539	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1433	1630	1808	0	1630	3539	1430	1630	3539	1427
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			195		12				164			239
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2667			5285	
Travel Time (s)		32.9			36.1			33.1			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	225	483	327	153	395	84	210	562	68	103	761	239
Shared Lane Traffic (%)												
Lane Group Flow (vph)	225	483	327	153	479	0	210	562	68	103	761	239
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

PM 2024+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	18.0	42.7	42.7	13.0	37.7		17.0	33.3	33.3	11.0	27.3	27.3
Total Split (%)	18.0%	42.7%	42.7%	13.0%	37.7%		17.0%	33.3%	33.3%	11.0%	27.3%	27.3%
Maximum Green (s)	12.0	36.7	36.7	7.0	31.7		11.0	27.3	27.3	5.0	21.3	21.3
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	14.0	35.0	35.0	9.0	29.9		13.0	22.7	22.7	13.5	23.1	23.1
Actuated g/C Ratio	0.15	0.36	0.36	0.09	0.31		0.14	0.24	0.24	0.14	0.24	0.24
v/c Ratio	0.95	0.71	0.51	1.01	0.84		0.95	0.67	0.15	0.45	0.90	0.46
Control Delay	89.7	33.0	12.1	120.9	44.4		94.0	37.6	0.7	49.7	50.7	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	89.7	33.0	12.1	120.9	44.4		94.0	37.6	0.7	49.7	50.7	7.4
LOS	F	C	B	F	D		F	D	A	D	D	A
Approach Delay		38.7			62.9			48.7			41.2	
Approach LOS		D			E			D			D	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 96.2

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 46.0









Intersection LOS: D

Intersection Capacity Utilization 80.6%

ICU Level of Service D

























Analysis Period (min) 15

Splits and Phases: 6: Mooney Blvd & Prosperity Ave

 Ø2	 Ø1	 Ø3	 Ø4
33.3 s	11 s	13 s	42.7 s
 Ø6	 Ø5	 Ø7	 Ø8
27.3 s	17 s	18 s	37.7 s

# HCM 6th Signalized Intersection Summary 6: Mooney Blvd & Prosperity Ave

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03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	207	444	301	141	363	77	193	517	63	95	700	220
Future Volume (veh/h)	207	444	301	141	363	77	193	517	63	95	700	220
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No				No			
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	225	483	327	153	395	84	210	562	68	103	761	239
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	241	666	511	155	452	96	224	782	314	265	870	350
Arrive On Green	0.15	0.36	0.36	0.09	0.30	0.28	0.14	0.22	0.22	0.16	0.24	0.24
Sat Flow, veh/h	1641	1870	1435	1641	1489	317	1641	3554	1430	1641	3554	1431
Grp Volume(v), veh/h	225	483	327	153	0	479	210	562	68	103	761	239
Grp Sat Flow(s),veh/h/ln	1641	1870	1435	1641	0	1806	1641	1777	1430	1641	1777	1431
Q Serve(g_s), s	12.9	21.3	10.7	8.9	0.0	24.0	12.1	14.0	2.7	5.3	19.6	9.2
Cycle Q Clear(g_c), s	12.9	21.3	10.7	8.9	0.0	24.0	12.1	14.0	2.7	5.3	19.6	9.2
Prop In Lane	1.00		1.00	1.00		0.18	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	241	666	511	155	0	549	224	782	314	265	870	350
V/C Ratio(X)	0.93	0.72	0.64	0.99	0.00	0.87	0.94	0.72	0.22	0.39	0.88	0.68
Avail Cap(c_a), veh/h	241	760	583	155	0	639	224	1093	440	265	870	350
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.1	26.6	9.0	43.1	0.0	31.6	40.7	34.4	15.7	35.7	34.6	13.3
Incr Delay (d2), s/veh	39.9	3.0	1.9	68.1	0.0	11.4	43.0	1.4	0.3	0.9	9.9	5.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	9.0	5.1	6.3	0.0	11.2	7.2	5.7	1.2	2.1	8.9	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	80.1	29.6	10.9	111.1	0.0	43.0	83.7	35.8	16.0	36.7	44.5	18.6
LnGrp LOS	F	C	B	F	A	D	F	D	B	D	D	B
Approach Vol, veh/h	1035				632				840			
Approach Delay, s/veh	34.6				59.5				46.2			
Approach LOS	C				E				D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.4	24.9	13.0	37.9	17.0	27.3	18.0	32.9				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	50	27.3	7.0	36.7	11.0	21.3	12.0	31.7				
Max Q Clear Time (g_c+I1),s	7.8	16.0	10.9	23.3	14.1	21.6	14.9	26.0				
Green Ext Time (p_c), s	0.0	2.1	0.0	2.8	0.0	0.0	0.0	1.0				
Intersection Summary												
HCM 6th Ctrl Delay	42.8											
HCM 6th LOS	D											



Lanes, Volumes, Timings  
7: Morrison St & Prosperity Ave

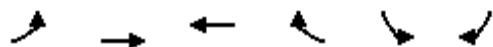
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	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Volume (vph)	445	166	37	431	108	22
Future Volume (vph)	445	166	37	431	108	22
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1863	1458	1630	1863	1630	1458
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1863	1458	1630	1863	1630	1458
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	484	180	40	468	117	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	484	180	40	468	117	24
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization		43.3%		ICU Level of Service A		
Analysis Period (min) 15						




Intersection						
Int Delay, s/veh	3.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	445	166	37	431	108	22
Future Vol, veh/h	445	166	37	431	108	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None		- None		- None	
Storage Length	-	0	0	-	0	0
Veh in Median Storage	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	484	180	40	468	117	24
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	664	0	1032	484
Stage 1	-	-	-	-	484	-
Stage 2	-	-	-	-	548	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	925	-	258	583
Stage 1	-	-	-	-	620	-
Stage 2	-	-	-	-	579	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	925	-	247	583
Mov Cap-2 Maneuver	-	-	-	-	247	-
Stage 1	-	-	-	-	620	-
Stage 2	-	-	-	-	554	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.7		28.6	
HCM LOS	D					
Minor Lane/Major Mvm	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	247	583	-	-	925	-
HCM Lane V/C Ratio	0.475	0.041	-	-	0.043	-
HCM Control Delay (s)	32.1	11.4	-	-	9.1	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	2.4	0.1	-	-	0.1	-

Lanes, Volumes, Timings  
8: Prosperity Ave & Oakmore Rd

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03/13/2024
















Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	72	221	172	23	17	126
Future Volume (vph)	72	221	172	23	17	126
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.984		0.881	
Flt Protected		0.988			0.994	
Satd. Flow (prot)	0	1840	1833	0	1502	0
Flt Permitted		0.988			0.994	
Satd. Flow (perm)	0	1840	1833	0	1502	0
Link Speed (mph)		55	55		55	
Link Distance (ft)		2108	5202		1848	
Travel Time (s)		26.1	64.5		22.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	78	240	187	25	18	137
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	318	212	0	155	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	45.5%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	3.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	72	221	172	23	17	126
Future Vol, veh/h	72	221	172	23	17	126
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	78	240	187	25	18	137
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	212	0	-	0	596	200
Stage 1	-	-	-	-	200	-
Stage 2	-	-	-	-	396	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1358	-	-	-	466	841
Stage 1	-	-	-	-	834	-
Stage 2	-	-	-	-	680	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1358	-	-	-	435	841
Mov Cap-2 Maneuver	-	-	-	-	435	-
Stage 1	-	-	-	-	779	-
Stage 2	-	-	-	-	680	-
Approach	EB	WB		SB		
HCM Control Delay, s	4.9	0		11		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1358	-	-	-	757	
HCM Lane V/C Ratio	0.058	-	-	-	0.205	
HCM Control Delay (s)	7.8	0	-	-	11	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.2	-	-	-	0.8	

Lanes, Volumes, Timings  
9: Mooney Blvd & Seminole Ave
























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03/13/2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (vph)	0	144	877	52	175	1058
Future Volume (vph)	0	144	877	52	175	1058
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	0	540		0	80	
Storage Lanes	0	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.865		0.850		
Flt Protected					0.950	
Satd. Flow (prot)	0	1484	3539	1458	1630	3539
Flt Permitted					0.950	
Satd. Flow (perm)	0	1484	3539	1458	1630	3539
Link Speed (mph)	55		55			55
Link Distance (ft)	1218		2623			2667
Travel Time (s)	15.1		32.5			33.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	157	953	57	190	1150
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	157	953	57	190	1150
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	41.4%			ICU Level of Service A		
Analysis Period (min)	15					













Intersection						
Int Delay, s/veh	1.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗	↗	↗	↗↗
Traffic Vol, veh/h	0	144	877	52	175	1058
Future Vol, veh/h	0	144	877	52	175	1058
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	- None		- None		- None	
Storage Length	-	-	-	0	80	-
Veh in Median Storage	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	157	953	57	190	1150
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	477	0	0	1010	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	534	-	-	682	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	534	-	-	682	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	4.5	0		1.7		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	534	682	-	
HCM Lane V/C Ratio	-	-	0.293	0.279	-	
HCM Control Delay (s)	-	-	14.5	12.3	-	
HCM Lane LOS	-	-	B	B	-	
HCM 95th %tile Q(veh)	-	-	1.2	1.1	-	

Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

PM 2024+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	750	185	84	557	73	105	270	73	119	370	89
Future Volume (vph)	115	750	185	84	557	73	105	270	73	119	370	89
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		135	110		0	90		90	80		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97		1.00				0.98			0.98
Frt			0.850		0.983				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3466	0	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1411	1630	3466	0	1630	1863	1433	1630	1863	1434
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			229		14				164			164
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		841			2671			726			5387	
Travel Time (s)		10.4			33.1			9.0			66.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	815	201	91	605	79	114	293	79	129	402	97
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	815	201	91	684	0	114	293	79	129	402	97
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.9	29.9	10.0	28.4		10.0	39.9	39.9	10.0	44.1	44.1
Total Split (s)	13.0	33.9	33.9	10.0	30.9		12.0	41.1	41.1	15.0	44.1	44.1
Total Split (%)	13.0%	33.9%	33.9%	10.0%	30.9%		12.0%	41.1%	41.1%	15.0%	44.1%	44.1%
Maximum Green (s)	7.0	27.9	27.9	4.0	24.9		6.0	35.1	35.1	9.0	38.1	38.1
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		16.9	16.9		15.4			26.9	26.9		31.1	31.1
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	9.5	25.5	25.5	6.4	22.4		8.2	21.5	21.5	12.4	25.8	25.8
Actuated g/C Ratio	0.12	0.31	0.31	0.08	0.27		0.10	0.26	0.26	0.15	0.31	0.31
v/c Ratio	0.66	0.74	0.34	0.72	0.72		0.70	0.60	0.16	0.52	0.69	0.17
Control Delay	57.2	31.0	4.1	73.6	32.2		64.5	32.3	0.7	44.4	31.4	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.2	31.0	4.1	73.6	32.2		64.5	32.3	0.7	44.4	31.4	1.0
LOS	E	C	A	E	C		E	C	A	D	C	A
Approach Delay		29.1			37.0			34.7			29.4	
Approach LOS		C			D			C			C	

#### Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 82.2

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 32.1









Intersection LOS: C

Intersection Capacity Utilization 66.8%

ICU Level of Service C
























Analysis Period (min) 15

Splits and Phases: 10: Laspina St & Tulare Ave

 Ø2	 Ø1	 Ø4	 Ø3
41.1 s	15 s	33.9 s	10 s
 Ø5	 Ø6	 Ø8	 Ø7
12 s	44.1 s	30.9 s	13 s

























HCM 6th Signalized Intersection Summary  
10: Laspina St & Tulare Ave

PM 2024+Project  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	750	185	84	557	73	105	270	73	119	370	89
Future Volume (veh/h)	115	750	185	84	557	73	105	270	73	119	370	89
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	125	815	201	91	605	79	114	293	79	129	402	97
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	206	1093	435	130	822	107	174	445	340	268	553	424
Arrive On Green	0.13	0.31	0.31	0.08	0.26	0.23	0.11	0.24	0.24	0.16	0.30	0.30
Sat Flow, veh/h	1641	3554	1416	1641	3147	410	1641	1870	1431	1641	1870	1433
Grp Volume(v), veh/h	125	815	201	91	341	343	114	293	79	129	402	97
Grp Sat Flow(s),veh/h/ln	1641	1777	1416	1641	1777	1780	1641	1870	1431	1641	1870	1433
Q Serve(g_s), s	5.5	15.6	5.4	4.1	13.3	13.4	5.0	10.7	3.4	5.4	14.6	2.3
Cycle Q Clear(g_c), s	5.5	15.6	5.4	4.1	13.3	13.4	5.0	10.7	3.4	5.4	14.6	2.3
Prop In Lane	1.00		1.00	1.00		0.23	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	206	1093	435	130	464	465	174	445	340	268	553	424
V/C Ratio(X)	0.61	0.75	0.46	0.70	0.73	0.74	0.66	0.66	0.23	0.48	0.73	0.23
Avail Cap(c_a), veh/h	206	1406	560	130	632	633	174	918	702	268	992	760
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.3	23.5	8.1	33.9	25.5	25.8	32.5	26.0	23.2	28.7	23.9	7.2
Incr Delay (d2), s/veh	5.0	1.6	0.8	15.2	2.9	3.0	8.7	1.7	0.3	1.3	1.8	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	5.8	2.4	2.0	5.2	5.3	2.2	4.4	1.0	2.0	5.8	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.3	25.1	8.8	49.1	28.4	28.8	41.1	27.7	23.6	30.0	25.7	7.4
LnGrp LOS	D	C	A	D	C	C	D	C	C	C	C	A
Approach Vol, veh/h		1141			775			486			628	
Approach Delay, s/veh		23.5			31.0			30.2			23.8	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.4	22.0	10.0	27.2	12.0	26.3	13.5	23.8				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	35.0	35.1	4.0	27.9	6.0	38.1	7.0	24.9				
Max Q Clear Time (g_c+I1),s	12.7	12.7	6.1	17.6	7.0	16.6	7.5	15.4				
Green Ext Time (p_c), s	0.1	1.3	0.0	3.4	0.0	1.8	0.0	1.9				
Intersection Summary												
HCM 6th Ctrl Delay			26.5									
HCM 6th LOS			C									













Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

PM 2024+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	208	541	203	86	414	220	103	510	76	274	529	273
Future Volume (vph)	208	541	203	86	414	220	103	510	76	274	529	273
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	420		185	125		125	80		0	475		475
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98		1.00				0.98
Frt			0.850			0.850		0.980				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3539	1458	1630	3454	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1411	1630	3539	1430	1630	3454	0	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			221			239		14				297
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2671			2887			1662			2623	
Travel Time (s)		33.1			35.8			20.6			32.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	226	588	221	93	450	239	112	554	83	298	575	297
Shared Lane Traffic (%)												
Lane Group Flow (vph)	226	588	221	93	450	239	112	637	0	298	575	297
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

PM 2024+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	37.0	37.0	10.0	37.0	37.0	10.0	39.9		10.0	42.7	42.7
Total Split (s)	18.0	37.0	37.0	18.0	37.0	37.0	13.0	42.0		23.0	52.0	52.0
Total Split (%)	15.0%	30.8%	30.8%	15.0%	30.8%	30.8%	10.8%	35.0%		19.2%	43.3%	43.3%
Maximum Green (s)	12.0	31.0	31.0	12.0	31.0	31.0	7.0	36.0		17.0	46.0	46.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		24.0	24.0		24.0	24.0		26.9			29.7	29.7
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	16.2	28.9	28.9	12.2	21.7	21.7	9.2	28.7		19.4	38.9	38.9
Actuated g/C Ratio	0.16	0.28	0.28	0.12	0.21	0.21	0.09	0.28		0.19	0.38	0.38
v/c Ratio	0.88	0.59	0.40	0.48	0.60	0.49	0.77	0.65		0.96	0.81	0.41
Control Delay	77.3	36.8	6.8	54.5	40.5	8.1	81.8	35.2		87.9	39.4	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	77.3	36.8	6.8	54.5	40.5	8.1	81.8	35.2		87.9	39.4	4.4
LOS	E	D	A	D	D	A	F	D		F	D	A
Approach Delay		39.3			32.3			42.2			42.9	
Approach LOS		D			C			D			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 102.4

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 39.5









Intersection LOS: D

Intersection Capacity Utilization 74.4%

ICU Level of Service D

Analysis Period (min) 15




























Splits and Phases: 11: Mooney Blvd & Tulare Ave

 Ø1	 Ø2	 Ø4	 Ø3
23 s	42 s	37 s	18 s
 Ø5	 Ø6	 Ø8	 Ø7
13 s	52 s	37 s	18 s

# HCM 6th Signalized Intersection Summary






















## 11: Mooney Blvd & Tulare Ave

PM 2024+Project  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (veh/h)	208	541	203	86	414	220	103	510	76	274	529	273
Future Volume (veh/h)	208	541	203	86	414	220	103	510	76	274	529	273
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	226	588	221	93	450	239	112	554	83	298	575	297
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	249	864	343	193	741	298	160	800	119	339	688	528
Arrive On Green	0.15	0.24	0.24	0.12	0.21	0.21	0.10	0.26	0.24	0.21	0.37	0.37
Sat Flow, veh/h	1641	3554	1412	1641	3554	1429	1641	3085	460	1641	1870	1435
Grp Volume(v), veh/h	226	588	221	93	450	239	112	318	319	298	575	297
Grp Sat Flow(s),veh/h/ln	1641	1777	1412	1641	1777	1429	1641	1777	1769	1641	1870	1435
Q Serve(g_s), s	12.5	13.8	9.0	4.9	10.6	8.4	6.1	14.9	15.0	16.2	25.8	8.4
Cycle Q Clear(g_c), s	12.5	13.8	9.0	4.9	10.6	8.4	6.1	14.9	15.0	16.2	25.8	8.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.26	1.00		1.00
Lane Grp Cap(c), veh/h	249	864	343	193	741	298	160	461	459	339	688	528
V/C Ratio(X)	0.91	0.68	0.64	0.48	0.61	0.80	0.70	0.69	0.70	0.88	0.84	0.56
Avail Cap(c_a), veh/h	249	1274	506	249	1274	512	160	733	730	339	975	748
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.4	31.6	15.3	38.0	33.0	11.4	40.2	30.8	31.1	35.4	26.6	7.1
Incr Delay (d2), s/veh	33.2	1.0	2.0	1.9	0.8	5.0	12.5	1.9	1.9	22.4	4.5	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.9	5.5	4.0	1.9	4.3	4.7	2.8	6.0	6.1	8.0	10.9	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.6	32.6	17.3	39.9	33.8	16.4	52.8	32.6	33.0	57.8	31.0	8.0
LnGrp LOS	E	C	B	D	C	B	D	C	C	E	C	A
Approach Vol, veh/h	1035				782			749			1170	
Approach Delay, s/veh	37.8				29.2			35.8			32.0	
Approach LOS	D				C			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	23.0	27.9	14.8	26.4	13.0	37.9	18.0	23.2				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	36.0	36.0	12.0	31.0	7.0	46.0	12.0	31.0				
Max Q Clear Time (g_c+I1),s	17.0	17.0	6.9	15.8	8.1	27.8	14.5	12.6				
Green Ext Time (p_c), s	0.0	2.2	0.1	3.1	0.0	3.4	0.0	2.7				
Intersection Summary												
HCM 6th Ctrl Delay	33.8											
HCM 6th LOS	C											

Lanes, Volumes, Timings  
12: Morrison St & Tulare Ave

PM 2024+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	562	132	52	486	10	58	24	29	3	27	110
Future Volume (vph)	105	562	132	52	486	10	58	24	29	3	27	110
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.997			0.917			0.893	
Flt Protected	0.950			0.950			0.950				0.999	
Satd. Flow (prot)	1630	1863	1458	1630	1857	0	1630	1708	0	0	1662	0
Flt Permitted	0.950			0.950			0.950				0.999	
Satd. Flow (perm)	1630	1863	1458	1630	1857	0	1630	1708	0	0	1662	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	114	611	143	57	528	11	63	26	32	3	29	120
Shared Lane Traffic (%)												
Lane Group Flow (vph)	114	611	143	57	539	0	63	58	0	0	152	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	58.1%				ICU Level of Service B							
Analysis Period (min)	15											

Intersection												
Int Delay, s/veh	20.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱		↕	
Traffic Vol, veh/h	105	562	132	52	486	10	58	24	29	3	27	110
Future Vol, veh/h	105	562	132	52	486	10	58	24	29	3	27	110
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	305	-	425	300	-	-	125	-	-	-	-	-
Veh in Median Storage, #	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	114	611	143	57	528	11	63	26	32	3	29	120

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	539	0	0	754	0	0	1561	1492	611	1588	1630	534
Stage 1	-	-	-	-	-	-	839	839	-	648	648	-
Stage 2	-	-	-	-	-	-	722	653	-	940	982	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1029	-	-	856	-	-	91	123	494	87	102	546
Stage 1	-	-	-	-	-	-	360	381	-	459	466	-
Stage 2	-	-	-	-	-	-	418	464	-	316	327	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1029	-	-	856	-	-	~ 46	102	494	57	85	546
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 46	102	-	57	85	-
Stage 1	-	-	-	-	-	-	320	339	-	408	435	-
Stage 2	-	-	-	-	-	-	284	433	-	243	291	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.2			0.9			226.1			41.1		
HCM LOS							F			E		























Minor Lane/Major Mvm	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	46	180	1029	-	-	856	-	-	245
HCM Lane V/C Ratio	1.371	0.32	0.111	-	-	0.066	-	-	0.621
HCM Control Delay (s)	\$ 401.6	34.1	8.9	-	-	9.5	-	-	41.1
HCM Lane LOS	F	D	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	6	1.3	0.4	-	-	0.2	-	-	3.7













Notes  
~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon



Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

PM 2044  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	249	191	203	32	203	7	145	1130	32	14	1375	262
Future Volume (vph)	249	191	203	32	203	7	145	1130	32	14	1375	262
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.995			0.996			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1852	0	1630	3522	0	1630	3437	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1852	0	1630	3522	0	1630	3437	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			137		2			3			22	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	271	208	221	35	221	8	158	1228	35	15	1495	285
Shared Lane Traffic (%)												
Lane Group Flow (vph)	271	208	221	35	229	0	158	1263	0	15	1780	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	17.0	44.9	44.9	11.1	39.0		13.0	54.4		9.6	51.0	
Total Split (%)	14.2%	37.4%	37.4%	9.3%	32.5%		10.8%	45.3%		8.0%	42.5%	
Maximum Green (s)	11.5	39.4	39.4	5.6	33.5		7.5	48.9		4.1	45.5	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effct Green (s)	13.0	31.1	31.1	7.1	20.5		9.0	56.6		5.6	47.2	
Actuated g/C Ratio	0.12	0.29	0.29	0.07	0.19		0.09	0.53		0.05	0.45	
v/c Ratio	1.35	0.38	0.43	0.32	0.64		1.14	0.67		0.17	1.15	
Control Delay	224.9	32.9	15.1	57.8	46.8		164.0	22.2		55.6	105.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	224.9	32.9	15.1	57.8	46.8		164.0	22.2		55.6	105.3	
LOS	F	C	B	E	D		F	C		E	F	
Approach Delay		101.6			48.3			38.0			104.9	
Approach LOS		F			D			D			F	

#### Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 105.8

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.35

Intersection Signal Delay: 78.0









Intersection LOS: E

Intersection Capacity Utilization 96.9%

ICU Level of Service F

Analysis Period (min) 15























Splits and Phases: 1: Mooney Blvd & Cartmill Ave

			
Ø1	Ø2	Ø3	Ø4
9.6 s	54.4 s	11.1 s	44.9 s
			
Ø5	Ø6	Ø7	Ø8
13 s	51 s	17 s	39 s

# HCM 6th Signalized Intersection Summary

## 1: Mooney Blvd & Cartmill Ave

PM 2044  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	249	191	203	32	203	7	145	1130	32	14	1375	262
Future Volume (veh/h)	249	191	203	32	203	7	145	1130	32	14	1375	262
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	271	208	221	35	221	8	158	1228	35	15	1495	285
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	206	493	377	66	318	12	143	1811	52	46	1353	251
Arrive On Green	0.13	0.26	0.26	0.04	0.18	0.16	0.09	0.51	0.50	0.03	0.45	0.44
Sat Flow, veh/h	1641	1870	1432	1641	1792	65	1641	3525	100	1641	2977	553
Grp Volume(v), veh/h	271	208	221	35	0	229	158	619	644	15	876	904
Grp Sat Flow(s),veh/h/ln	1641	1870	1432	1641	0	1857	1641	1777	1849	1641	1777	1753
Q Serve(g_s), s	13.0	9.5	13.9	2.2	0.0	12.0	9.0	26.8	26.9	0.9	47.0	47.0
Cycle Q Clear(g_c), s	13.0	9.5	13.9	2.2	0.0	12.0	9.0	26.8	26.9	0.9	47.0	47.0
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.05	1.00		0.32
Lane Grp Cap(c), veh/h	206	493	377	66	0	330	143	913	950	46	808	797
V/C Ratio(X)	1.31	0.42	0.59	0.53	0.00	0.69	1.11	0.68	0.68	0.33	1.08	1.13
Avail Cap(c_a), veh/h	206	740	567	113	0	629	143	913	950	89	808	797
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.2	31.6	33.2	48.7	0.0	39.9	47.2	18.8	18.8	49.3	28.2	28.4
Incr Delay (d2), s/veh	171.2	0.6	1.4	6.5	0.0	2.6	106.6	2.0	2.0	4.0	57.2	75.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	4.1	4.6	1.0	0.0	5.4	7.7	9.9	10.4	0.4	30.1	33.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	216.4	32.1	34.6	55.2	0.0	42.5	153.8	20.8	20.8	53.3	85.4	104.0
LnGrp LOS	F	C	C	E	A	D	F	C	C	D	F	F
Approach Vol, veh/h	700			264			1421			1795		
Approach Delay, s/veh	104.2			44.2			35.6			94.5		
Approach LOS	F			D			D			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.9	57.1	8.1	31.2	13.0	51.0	17.0	22.4				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax),s	48.9	5.6	39.4	7.5	45.5	11.5	33.5					
Max Q Clear Time (g_c+l1),s	28.9	4.2	15.9	11.0	49.0	15.0	14.0					
Green Ext Time (p_c), s	0.0	5.2	0.0	1.6	0.0	0.0	0.0	0.7				
Intersection Summary												
HCM 6th Ctrl Delay	72.9											
HCM 6th LOS	E											

Lanes, Volumes, Timings  
2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

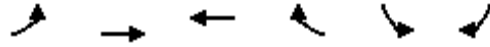
PM 2044  
03/13/2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↘	↗
Traffic Volume (vph)	0	968	963	0	320	129
Future Volume (vph)	0	968	963	0	320	129
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	1630	1458
Flt Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	1630	1458
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						50
Link Speed (mph)		55	55		55	
Link Distance (ft)		349	727		300	
Travel Time (s)		4.3	9.0		3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1052	1047	0	348	140
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1052	1047	0	348	140
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors		1	1		1	1
Detector Template						
Leading Detector (ft)		50	50		50	50
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		50	50		50	50
Detector 1 Type		CI+Ex	CI+Ex		CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		4.0	4.0		4.0	4.0
Minimum Split (s)		24.0	24.0		24.0	24.0
Total Split (s)		45.0	45.0		45.0	45.0
Total Split (%)		50.0%	50.0%		50.0%	50.0%
Maximum Green (s)		39.0	39.0		39.0	39.0
Yellow Time (s)		5.0	5.0		5.0	5.0

Lanes, Volumes, Timings  
2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

PM 2044  
03/13/2024

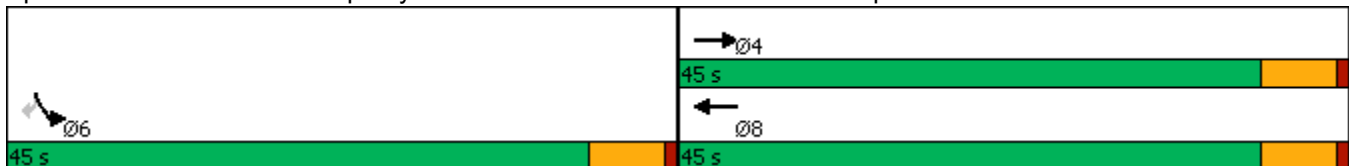


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		None	None		Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		24.8	24.8		20.4	20.4
Actuated g/C Ratio		0.46	0.46		0.38	0.38
v/c Ratio		0.64	0.64		0.56	0.24
Control Delay		13.8	13.8		18.2	9.9
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		13.8	13.8		18.2	9.9
LOS		B	B		B	A
Approach Delay		13.8	13.8		15.8	
Approach LOS		B	B		B	

Intersection Summary

Area Type: Other  
Cycle Length: 90  
Actuated Cycle Length: 53.7  
Natural Cycle: 50  
Control Type: Actuated-Uncoordinated  
Maximum v/c Ratio: 0.64  
Intersection Signal Delay: 14.2 Intersection LOS: B  
Intersection Capacity Utilization 52.7% ICU Level of Service A  
Analysis Period (min) 15

Splits and Phases: 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp



# HCM 6th Signalized Intersection Summary

## 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp













PM 2044  
03/13/2024



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (veh/h)	0	968	963	0	320	129
Future Volume (veh/h)	0	968	963	0	320	129
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1723	1723
Adj Flow Rate, veh/h	0	1052	1047	0	348	140
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	1641	1641	0	544	484
Arrive On Green	0.00	0.46	0.46	0.00	0.33	0.33
Sat Flow, veh/h	0	3741	3741	0	1641	1460
Grp Volume(v), veh/h	0	1052	1047	0	348	140
Grp Sat Flow(s),veh/h/ln	0	1777	1777	0	1641	1460
Q Serve(g_s), s	0.0	8.8	8.7	0.0	7.0	2.7
Cycle Q Clear(g_c), s	0.0	8.8	8.7	0.0	7.0	2.7
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1641	1641	0	544	484
V/C Ratio(X)	0.00	0.64	0.64	0.00	0.64	0.29
Avail Cap(c_a), veh/h	0	3764	3764	0	1738	1546
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	8.0	7.9	0.0	11.0	9.6
Incr Delay (d2), s/veh	0.0	0.4	0.4	0.0	1.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.4	1.4	0.0	1.6	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	8.4	8.4	0.0	12.2	9.9
LnGrp LOS	A	A	A	A	B	A
Approach Vol, veh/h		1052	1047		488	
Approach Delay, s/veh		8.4	8.4		11.6	
Approach LOS		A	A		B	
Timer - Assigned Phs				4	6	8
Phs Duration (G+Y+Rc), s				21.9	16.8	21.9
Change Period (Y+Rc), s				6.0	6.0	6.0
Max Green Setting (Gmax), s				39.0	39.0	39.0
Max Q Clear Time (g_c+I1), s				10.8	9.0	10.7
Green Ext Time (p_c), s				5.1	1.9	5.1
Intersection Summary						
HCM 6th Ctrl Delay			9.0			
HCM 6th LOS			A			

Lanes, Volumes, Timings  
3: Blackstone St & Prosperity Ave


PM 2044  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	27	9	990	36	964	0	49	524	675	150	0
Future Volume (vph)	3	27	9	990	36	964	0	49	524	675	150	0
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	30		0	335		310	55		90	240		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor		0.99				0.98						
Frt		0.962				0.850			0.850			
Flt Protected	0.950			0.950	0.956					0.950		
Satd. Flow (prot)	1630	1782	0	1548	1692	1458	1716	1863	1458	3162	1863	0
Flt Permitted	0.950			0.950	0.520					0.950		
Satd. Flow (perm)	1630	1782	0	1548	920	1427	1716	1863	1458	3162	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				901			570			
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		98			1229			643			727	
Travel Time (s)		1.2			15.2			8.0			9.0	
Confl. Peds. (#/hr)			5			5						
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	29	10	1076	39	1048	0	53	570	734	163	0
Shared Lane Traffic (%)				48%								
Lane Group Flow (vph)	3	39	0	560	555	1048	0	53	570	734	163	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												



Lanes, Volumes, Timings  
3: Blackstone St & Prosperity Ave

PM 2044  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	24.1		10.0	24.1	24.1	10.0	24.0	24.0	10.0	24.0	
Total Split (s)	10.0	24.1		30.9	45.0	45.0	10.0	24.0	24.0	21.0	35.0	
Total Split (%)	10.0%	24.1%		30.9%	45.0%	45.0%	10.0%	24.0%	24.0%	21.0%	35.0%	
Maximum Green (s)	4.0	18.1		24.9	39.0	39.0	4.0	18.0	18.0	15.0	29.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		11.1			11.1	11.1		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		5			5	5		0	0		0	
Act Effct Green (s)	6.1	10.8		33.2	33.2	41.4		12.0	12.0	17.2	33.2	
Actuated g/C Ratio	0.07	0.13		0.39	0.39	0.49		0.14	0.14	0.20	0.39	
v/c Ratio	0.03	0.16		0.92	0.83	0.90		0.20	0.82	1.14	0.22	
Control Delay	41.3	28.1		51.5	40.5	16.5		33.8	14.0	114.6	18.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	41.3	28.1		51.5	40.5	16.5		33.8	14.0	114.6	18.2	
LOS	D	C		D	D	B		C	B	F	B	
Approach Delay		29.0			31.7			15.7			97.0	
Approach LOS		C			C			B			F	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 84.3

Natural Cycle: 130

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.14

Intersection Signal Delay: 44.7









Intersection LOS: D

Intersection Capacity Utilization 83.8%

ICU Level of Service E

Analysis Period (min) 15






















Splits and Phases: 3: Blackstone St & Prosperity Ave

 Ø1	 Ø2	 Ø3	 Ø4
21 s	24 s	30.9 s	24.1 s
 Ø5	 Ø6	 Ø7	 Ø8
10 s	35 s	10 s	45 s

# HCM 6th Signalized Intersection Summary

























## 3: Blackstone St & Prosperity Ave

PM 2044  
03/13/2024

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	3	27	9	990	36	964	0	49	524	675	150	0	
Future Volume (veh/h)	3	27	9	990	36	964	0	49	524	675	150	0	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach	No			No			No			No			
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	0	
Adj Flow Rate, veh/h	3	29	10	1104	0	1048	0	53	570	734	163	0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	0	
Cap, veh/h	39	225	78	917	0	611	2	388	303	562	796	0	
Arrive On Green	0.02	0.17	0.15	0.28	0.00	0.43	0.00	0.21	0.21	0.18	0.43	0.00	
Sat Flow, veh/h	1641	1320	455	3281	0	1436	1641	1870	1460	3183	1870	0	
Grp Volume(v), veh/h	3	0	39	1104	0	1048	0	53	570	734	163	0	
Grp Sat Flow(s),veh/h/ln	1641	0	1775	1641	0	1436	1641	1870	1460	1591	1870	0	
Q Serve(g_s), s	0.2	0.0	1.8	26.9	0.0	41.0	0.0	2.2	20.0	17.0	5.3	0.0	
Cycle Q Clear(g_c), s	0.2	0.0	1.8	26.9	0.0	41.0	0.0	2.2	20.0	17.0	5.3	0.0	
Prop In Lane	1.00		0.26	1.00		1.00	1.00		1.00	1.00		0.00	
Lane Grp Cap(c), veh/h	39	0	302	917	0	611	2	388	303	562	796	0	
V/C Ratio(X)	0.08	0.00	0.13	1.20	0.00	1.71	0.00	0.14	1.88	1.31	0.20	0.00	
Avail Cap(c_a), veh/h	102	0	370	917	0	611	102	388	303	562	796	0	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	
Uniform Delay (d), s/veh	46.0	0.0	34.1	34.7	0.0	27.7	0.0	31.1	38.2	39.7	17.4	0.0	
Incr Delay (d2), s/veh	0.8	0.0	0.2	102.4	0.0	328.4	0.0	0.2	408.3	150.4	0.1	0.0	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.7	22.8	0.0	67.9	0.0	1.0	41.0	17.9	2.1	0.0	
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh	46.8	0.0	34.3	137.2	0.0	356.1	0.0	31.3	446.5	190.1	17.5	0.0	
LnGrp LOS	D	A	C	F	A	F	A	C	F	F	B	A	
Approach Vol, veh/h	42			2152				623				897	
Approach Delay, s/veh	35.2			243.8				411.2				158.7	
Approach LOS	D			F				F				F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8					
Phs Duration (G+Y+Rc), s	21.0	24.0	30.9	20.4	0.0	45.0	6.3	45.0					
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0					
Max Green Setting (Gmax),s	15.0	18.0	24.9	18.1	4.0	29.0	4.0	39.0					
Max Q Clear Time (g_c+I1),s	11.9	22.0	28.9	3.8	0.0	7.3	2.2	43.0					
Green Ext Time (p_c), s	0.0	0.0	0.0	0.1	0.0	0.5	0.0	0.0					
Intersection Summary													
HCM 6th Ctrl Delay			249.0										
HCM 6th LOS			F										
Notes													













Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

PM 2044  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	728	1044	181	111	1126	300	173	353	159	276	126	461
Future Volume (vph)	728	1044	181	111	1126	300	173	353	159	276	126	461
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	270		0	155		85	155		0	200		205
Storage Lanes	2		1	1		1	1		0	2		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	0.88
Ped Bike Factor			0.97			0.98		0.99				0.97
Frt			0.850			0.850		0.953				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	1630	5085	1458	1630	3355	0	3162	1863	2567
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1410	1630	5085	1433	1630	3355	0	3162	1863	2493
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164			150		71				231
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1229			2636			362			5336	
Travel Time (s)		15.2			32.7			4.5			66.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	791	1135	197	121	1224	326	188	384	173	300	137	501
Shared Lane Traffic (%)												
Lane Group Flow (vph)	791	1135	197	121	1224	326	188	557	0	300	137	501
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

PM 2044  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	32.7	32.7	10.0	45.6	45.6	10.0	47.0		10.0	49.9	49.9
Total Split (s)	11.0	44.1	44.1	14.0	47.1	47.1	12.0	50.9		11.0	49.9	49.9
Total Split (%)	9.2%	36.8%	36.8%	11.7%	39.3%	39.3%	10.0%	42.4%		9.2%	41.6%	41.6%
Maximum Green (s)	5.0	38.1	38.1	8.0	41.1	41.1	6.0	44.9		5.0	43.9	43.9
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		19.7	19.7		32.6	32.6		34.0			36.9	36.9
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	16.2	38.5	38.5	10.2	32.5	32.5	8.1	24.2		7.1	23.2	23.2
Actuated g/C Ratio	0.17	0.40	0.40	0.11	0.34	0.34	0.08	0.25		0.07	0.24	0.24
v/c Ratio	1.49	0.80	0.30	0.70	0.71	0.56	1.37	0.62		1.29	0.31	0.65
Control Delay	260.6	32.2	7.2	67.3	30.8	18.1	242.2	30.3		195.4	31.0	20.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	260.6	32.2	7.2	67.3	30.8	18.1	242.2	30.3		195.4	31.0	20.7
LOS	F	C	A	E	C	B	F	C		F	C	C
Approach Delay		115.0			31.0			83.8			78.1	
Approach LOS		F			C			F			E	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 96.3

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.49

Intersection Signal Delay: 78.8









Intersection LOS: E

Intersection Capacity Utilization 85.9%

ICU Level of Service E
























Analysis Period (min) 15

Splits and Phases: 4: Hillman St & Prosperity Ave

 Ø1	 Ø2	 Ø3	 Ø4
11 s	50.9 s	14 s	44.1 s
 Ø5	 Ø6	 Ø8	 Ø7
12 s	49.9 s	47.1 s	11 s

























HCM 6th Signalized Intersection Summary  
4: Hillman St & Prosperity Ave

PM 2044  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	728	1044	181	111	1126	300	173	353	159	276	126	461
Future Volume (veh/h)	728	1044	181	111	1126	300	173	353	159	276	126	461
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No				No			
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	791	1135	197	121	1224	326	188	384	173	300	137	501
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	466	1364	544	182	1779	500	146	592	262	248	445	591
Arrive On Green	0.15	0.38	0.38	0.11	0.35	0.35	0.09	0.25	0.23	0.08	0.24	0.24
Sat Flow, veh/h	3183	3554	1419	1641	5106	1434	1641	2377	1054	3183	1870	2484
Grp Volume(v), veh/h	791	1135	197	121	1224	326	188	285	272	300	137	501
Grp Sat Flow(s),veh/h/ln	1591	1777	1419	1641	1702	1434	1641	1777	1655	1591	1870	1242
Q Serve(g_s), s	13.1	25.9	8.9	6.3	18.4	11.6	8.0	12.9	13.3	7.0	5.4	10.9
Cycle Q Clear(g_c), s	13.1	25.9	8.9	6.3	18.4	11.6	8.0	12.9	13.3	7.0	5.4	10.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.64	1.00		1.00
Lane Grp Cap(c), veh/h	466	1364	544	182	1779	500	146	442	412	248	445	591
V/C Ratio(X)	1.70	0.83	0.36	0.67	0.69	0.65	1.28	0.65	0.66	1.21	0.31	0.85
Avail Cap(c_a), veh/h	466	1589	634	183	2454	689	146	929	865	248	957	1271
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.3	25.0	19.8	38.3	25.0	11.2	40.8	30.1	30.9	41.3	28.1	13.1
Incr Delay (d2), s/veh	323.6	3.5	0.4	8.7	0.5	1.4	169.9	1.6	1.8	124.9	0.4	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	25.6	10.1	2.6	2.8	6.6	3.1	9.9	5.2	5.1	6.9	2.3	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	361.9	28.5	20.2	47.0	25.5	12.7	210.7	31.7	32.7	166.2	28.5	16.6
LnGrp LOS	F	C	C	D	C	B	F	C	C	F	C	B
Approach Vol, veh/h	2123					1671			745			938
Approach Delay, s/veh	151.9					24.6			77.2			66.2
Approach LOS	F					C			E			E
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.0	26.3	13.9	38.4	12.0	25.3	17.1	35.2				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	50	44.9	8.0	38.1	6.0	43.9	5.0	41.1				
Max Q Clear Time (g_c+l1)9s	15.3	15.3	8.3	27.9	10.0	12.9	15.1	20.4				
Green Ext Time (p_c), s	0.0	2.1	0.0	4.5	0.0	3.1	0.0	7.4				
Intersection Summary												
HCM 6th Ctrl Delay	88.2											
HCM 6th LOS	F											













Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

PM 2044  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	186	1046	455	118	913	80	220	164	108	126	221	76
Future Volume (vph)	186	1046	455	118	913	80	220	164	108	126	221	76
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	235		115	230		100	100		100	160		100
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97			0.97			0.97			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	5085	1458	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1409	1630	5085	1413	1630	1863	1418	1630	1863	1434
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			236			164			164			164
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2636			2650			5387			713	
Travel Time (s)		32.7			32.9			66.8			8.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	202	1137	495	128	992	87	239	178	117	137	240	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	202	1137	495	128	992	87	239	178	117	137	240	83
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

PM 2044  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	27.0	27.0	10.0	34.1	34.1	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (s)	10.0	33.4	33.4	11.0	34.4	34.4	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (%)	10.0%	33.4%	33.4%	11.0%	34.4%	34.4%	10.0%	45.6%	45.6%	10.0%	45.6%	45.6%
Maximum Green (s)	4.0	27.4	27.4	5.0	28.4	28.4	4.0	39.6	39.6	4.0	39.6	39.6
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		21.1	21.1		32.6	32.6		32.6	32.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	6.1	29.9	29.9	7.1	30.9	30.9	6.1	19.8	19.8	6.1	19.8	19.8
Actuated g/C Ratio	0.08	0.38	0.38	0.09	0.39	0.39	0.08	0.25	0.25	0.08	0.25	0.25
v/c Ratio	1.62	0.85	0.73	0.88	0.50	0.13	1.91	0.38	0.24	1.10	0.51	0.17
Control Delay	339.7	32.2	20.1	88.4	20.9	0.4	463.8	25.8	2.3	148.1	28.5	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	339.7	32.2	20.1	88.4	20.9	0.4	463.8	25.8	2.3	148.1	28.5	0.8
LOS	F	C	C	F	C	A	F	C	A	F	C	A
Approach Delay		62.8			26.6			216.7			59.1	
Approach LOS		E			C			F			E	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 79.2

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.91

Intersection Signal Delay: 71.9









Intersection LOS: E

Intersection Capacity Utilization 77.5%

ICU Level of Service D

Analysis Period (min) 15

























Splits and Phases: 5: Laspina St & Prosperity Ave

			
Ø1	Ø2	Ø3	Ø4
10 s	45.6 s	11 s	33.4 s
			
Ø5	Ø6	Ø7	Ø8
10 s	45.6 s	10 s	34.4 s


























# HCM 6th Signalized Intersection Summary 5: Laspina St & Prosperity Ave

PM 2044  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	186	1046	455	118	913	80	220	164	108	126	221	76
Future Volume (veh/h)	186	1046	455	118	913	80	220	164	108	126	221	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	202	1137	495	128	992	87	239	178	117	137	240	83
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	132	1388	554	154	2062	573	132	413	311	132	413	316
Arrive On Green	0.08	0.39	0.39	0.09	0.40	0.40	0.08	0.22	0.22	0.08	0.22	0.22
Sat Flow, veh/h	1641	3554	1419	1641	5106	1419	1641	1870	1410	1641	1870	1430
Grp Volume(v), veh/h	202	1137	495	128	992	87	239	178	117	137	240	83
Grp Sat Flow(s),veh/h/ln	1641	1777	1419	1641	1702	1419	1641	1870	1410	1641	1870	1430
Q Serve(g_s), s	6.0	21.4	24.4	5.7	10.7	2.9	6.0	6.1	5.3	6.0	8.6	3.6
Cycle Q Clear(g_c), s	6.0	21.4	24.4	5.7	10.7	2.9	6.0	6.1	5.3	6.0	8.6	3.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	132	1388	554	154	2062	573	132	413	311	132	413	316
V/C Ratio(X)	1.53	0.82	0.89	0.83	0.48	0.15	1.81	0.43	0.38	1.04	0.58	0.26
Avail Cap(c_a), veh/h	132	1400	559	154	2080	578	132	1043	786	132	1043	797
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.3	20.4	21.3	33.2	16.5	14.1	34.3	25.0	24.7	34.3	26.0	24.0
Incr Delay (d2), s/veh	273.4	4.0	16.6	30.4	0.2	0.1	393.5	0.7	0.7	89.0	1.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.2	8.0	9.1	3.3	3.5	0.8	16.6	2.5	1.6	5.4	3.5	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	307.7	24.3	37.9	63.6	16.6	14.2	427.8	25.7	25.4	123.3	27.3	24.5
LnGrp LOS	F	C	D	E	B	B	F	C	C	F	C	C
Approach Vol, veh/h	1834		1207			534			460			
Approach Delay, s/veh	59.2		21.4			205.6			55.4			
Approach LOS	E		C			F			E			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	20.5	11.0	33.1	10.0	20.5	10.0	34.1				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	40.0	39.6	5.0	27.4	4.0	39.6	4.0	28.4				
Max Q Clear Time (g_c+I1),s	8.0	8.1	7.7	26.4	8.0	10.6	8.0	12.7				
Green Ext Time (p_c), s	0.0	1.1	0.0	0.8	0.0	1.1	0.0	4.4				
Intersection Summary												
HCM 6th Ctrl Delay	66.9											
HCM 6th LOS	E											


Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

PM 2044  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	353	351	513	215	312	68	329	881	66	90	1193	375
Future Volume (vph)	353	351	513	215	312	68	329	881	66	90	1193	375
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98		1.00				0.98			0.98
Frt			0.850		0.973				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1806	0	1630	3539	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1432	1630	1806	0	1630	3539	1429	1630	3539	1425
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			504		9				191			252
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2667			5285	
Travel Time (s)		32.9			36.1			33.1			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	384	382	558	234	339	74	358	958	72	98	1297	408
Shared Lane Traffic (%)												
Lane Group Flow (vph)	384	382	558	234	413	0	358	958	72	98	1297	408
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

PM 2044  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	23.0	42.7	42.7	17.0	36.7		30.0	50.3	50.3	10.0	30.3	30.3
Total Split (%)	19.2%	35.6%	35.6%	14.2%	30.6%		25.0%	41.9%	41.9%	8.3%	25.3%	25.3%
Maximum Green (s)	17.0	36.7	36.7	11.0	30.7		24.0	44.3	44.3	4.0	24.3	24.3
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	19.0	36.5	36.5	13.0	30.5		26.0	46.4	46.4	6.0	26.3	26.3
Actuated g/C Ratio	0.16	0.31	0.31	0.11	0.26		0.22	0.39	0.39	0.05	0.22	0.22
v/c Ratio	1.46	0.66	0.71	1.31	0.87		0.99	0.69	0.11	1.18	1.64	0.79
Control Delay	263.9	41.6	10.1	213.1	60.8		93.2	33.3	0.3	206.0	325.9	29.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	263.9	41.6	10.1	213.1	60.8		93.2	33.3	0.3	206.0	325.9	29.0
LOS	F	D	B	F	E		F	C	A	F	F	C
Approach Delay		92.8			115.9			47.0			252.2	
Approach LOS		F			F			D			F	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 117.9

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.64

Intersection Signal Delay: 139.1

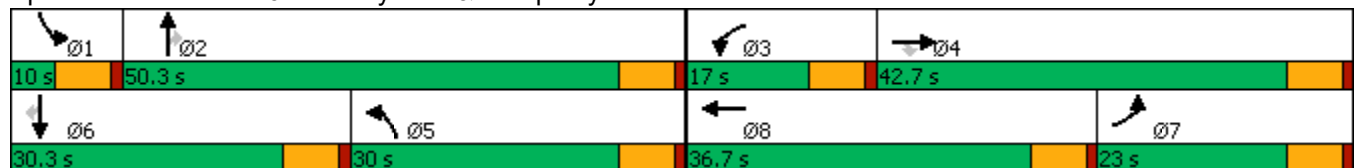
Intersection LOS: F

Intersection Capacity Utilization 108.2%

ICU Level of Service G

























Analysis Period (min) 15

Splits and Phases: 6: Mooney Blvd & Prosperity Ave



# HCM 6th Signalized Intersection Summary 6: Mooney Blvd & Prosperity Ave

PM 2044  
03/13/2024

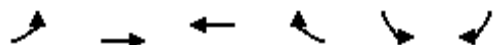
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	353	351	513	215	312	68	329	881	66	90	1193	375
Future Volume (veh/h)	353	351	513	215	312	68	329	881	66	90	1193	375
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	384	382	558	234	339	74	358	958	72	98	1297	408
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	265	578	443	181	382	83	362	1398	565	84	794	320
Arrive On Green	0.16	0.31	0.31	0.11	0.26	0.24	0.22	0.39	0.39	0.05	0.22	0.22
Sat Flow, veh/h	1641	1870	1433	1641	1481	323	1641	3554	1435	1641	3554	1430
Grp Volume(v), veh/h	384	382	558	234	0	413	358	958	72	98	1297	408
Grp Sat Flow(s),veh/h/ln	1641	1870	1433	1641	0	1804	1641	1777	1435	1641	1777	1430
Q Serve(g_s), s	19.0	20.9	19.4	13.0	0.0	25.9	25.6	26.3	3.8	6.0	26.3	26.3
Cycle Q Clear(g_c), s	19.0	20.9	19.4	13.0	0.0	25.9	25.6	26.3	3.8	6.0	26.3	26.3
Prop In Lane	1.00		1.00	1.00		0.18	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	265	578	443	181	0	466	362	1398	565	84	794	320
V/C Ratio(X)	1.45	0.66	1.26	1.29	0.00	0.89	0.99	0.69	0.13	1.17	1.63	1.28
Avail Cap(c_a), veh/h	265	615	471	181	0	501	362	1398	565	84	794	320
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.3	35.3	11.5	52.3	0.0	42.2	45.7	29.6	22.8	55.8	45.7	45.7
Incr Delay (d2), s/veh	222.3	2.4	133.8	165.8	0.0	16.5	43.8	1.4	0.1	151.9	290.6	146.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	23.7	9.3	21.6	13.5	0.0	13.0	14.2	10.6	1.2	5.9	43.0	21.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	271.6	37.7	145.4	218.1	0.0	58.7	89.5	31.0	22.9	207.7	336.3	192.3
LnGrp LOS	F	D	F	F	A	E	F	C	C	F	F	F
Approach Vol, veh/h	1324			647			1388			1803		
Approach Delay, s/veh	150.9			116.4			45.7			296.7		
Approach LOS	F			F			D			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	50.3	17.0	40.4	30.0	30.3	23.0	34.4				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	40.0	44.3	11.0	36.7	24.0	24.3	17.0	30.7				
Max Q Clear Time (g_c+I1),s	40.0	28.3	15.0	22.9	27.6	28.3	21.0	27.9				
Green Ext Time (p_c), s	0.0	4.2	0.0	3.5	0.0	0.0	0.0	0.5				
Intersection Summary												
HCM 6th Ctrl Delay	169.2											
HCM 6th LOS	F											




	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑	↘	↗
Traffic Volume (vph)	489	34	63	494	29	37
Future Volume (vph)	489	34	63	494	29	37
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.850		0.850			
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1863	1458	1630	1863	1630	1458
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1863	1458	1630	1863	1630	1458
Link Speed (mph)	55		55		55	
Link Distance (ft)	2913		2108		5358	
Travel Time (s)	36.1		26.1		66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	532	37	68	537	32	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	532	37	68	537	32	40
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12		12		12	
Link Offset(ft)	0		0		0	
Crosswalk Width(ft)	16		16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)	9		15		15	
Sign Control	Free		Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization 42.9%			ICU Level of Service A			
Analysis Period (min) 15						

Intersection						
Int Delay, s/veh	1.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	489	34	63	494	29	37
Future Vol, veh/h	489	34	63	494	29	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	0	-	0	0
Veh in Median Storage	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	532	37	68	537	32	40
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	569	0	1205	532
Stage 1	-	-	-	-	532	-
Stage 2	-	-	-	-	673	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1003	-	203	547
Stage 1	-	-	-	-	589	-
Stage 2	-	-	-	-	507	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1003	-	189	547
Mov Cap-2 Maneuver	-	-	-	-	189	-
Stage 1	-	-	-	-	589	-
Stage 2	-	-	-	-	473	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	1		19		
HCM LOS	C					
Minor Lane/Major Mvm	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	189	547	-	-	1003	-
HCM Lane V/C Ratio	0.167	0.074	-	-	0.068	-
HCM Control Delay (s)	27.8	12.1	-	-	8.9	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	0.6	0.2	-	-	0.2	-





Lanes, Volumes, Timings  
8: Prosperity Ave & Oakmore Rd

PM 2044  
03/13/2024














Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	123	358	276	39	29	215
Future Volume (vph)	123	358	276	39	29	215
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.983		0.881	
Flt Protected		0.987			0.994	
Satd. Flow (prot)	0	1839	1831	0	1502	0
Flt Permitted		0.987			0.994	
Satd. Flow (perm)	0	1839	1831	0	1502	0
Link Speed (mph)		55	55		55	
Link Distance (ft)		2108	5202		1848	
Travel Time (s)		26.1	64.5		22.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	134	389	300	42	32	234
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	523	342	0	266	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	68.7%			ICU Level of Service C		
Analysis Period (min)	15					



Intersection						
Int Delay, s/veh	4.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	123	358	276	39	29	215
Future Vol, veh/h	123	358	276	39	29	215
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None		- None		- None	
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0		0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	134	389	300	42	32	234
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	342	0	-	0	978	321
Stage 1	-	-	-	-	321	-
Stage 2	-	-	-	-	657	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	217	-	-	-	278	720
Stage 1	-	-	-	-	735	-
Stage 2	-	-	-	-	516	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	217	-	-	-	239	720
Mov Cap-2 Maneuver	-	-	-	-	239	-
Stage 1	-	-	-	-	632	-
Stage 2	-	-	-	-	516	-
Approach	EB	WB		SB		
HCM Control Delay, s	2.1	0		16.3		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1217	-	-	-	-	581
HCM Lane V/C Ratio	0.11	-	-	-	-	0.456
HCM Control Delay (s)	8.3	0	-	-	-	16.3
HCM Lane LOS	A	A	-	-	-	C
HCM 95th %tile Q(veh)	0.4	-	-	-	-	2.4

Lanes, Volumes, Timings  
9: Mooney Blvd & Seminole Ave
























PM 2044  
03/13/2024


						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	217	1568	94	289	1905
Future Volume (vph)	0	217	1568	94	289	1905
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	0	540		0	80	
Storage Lanes	0	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.865		0.850		
Flt Protected					0.950	
Satd. Flow (prot)	0	1484	3539	1458	1630	3539
Flt Permitted					0.950	
Satd. Flow (perm)	0	1484	3539	1458	1630	3539
Link Speed (mph)	55		55			55
Link Distance (ft)	1218		2623			2667
Travel Time (s)	15.1		32.5			33.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	236	1704	102	314	2071
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	236	1704	102	314	2071
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	67.4%			ICU Level of Service C		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	7.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗	↗	↗	↗↗
Traffic Vol, veh/h	0	217	1568	94	289	1905
Future Vol, veh/h	0	217	1568	94	289	1905
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	- None		- None		- None	
Storage Length	-	-	-	0	80	-
Veh in Median Storage	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	236	1704	102	314	2071
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	852	0	0	1806	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	303	-	-	337	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	303	-	-	337	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	48.6	0		9.1		
HCM LOS	E					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	303	337	-	
HCM Lane V/C Ratio	-	-	0.778	0.932	-	
HCM Control Delay (s)	-	-	48.6	69.1	-	
HCM Lane LOS	-	-	E	F	-	
HCM 95th %tile Q(veh)	-	-	6.1	9.5	-	

Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

PM 2044  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	196	1177	315	129	893	101	109	281	72	117	385	93
Future Volume (vph)	196	1177	315	129	893	101	109	281	72	117	385	93
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		135	110		0	90		90	80		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97		1.00				0.98			0.98
Frt			0.850		0.985				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3474	0	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1409	1630	3474	0	1630	1863	1432	1630	1863	1433
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			158		11				199			199
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		841			2671			726			5387	
Travel Time (s)		10.4			33.1			9.0			66.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	213	1279	342	140	971	110	118	305	78	127	418	101
Shared Lane Traffic (%)												
Lane Group Flow (vph)	213	1279	342	140	1081	0	118	305	78	127	418	101
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.9	29.9	10.0	28.4		10.0	39.9	39.9	10.0	44.1	44.1
Total Split (s)	19.0	44.9	44.9	14.0	39.9		12.0	40.1	40.1	16.0	44.1	44.1
Total Split (%)	16.5%	39.0%	39.0%	12.2%	34.7%		10.4%	34.9%	34.9%	13.9%	38.3%	38.3%
Maximum Green (s)	13.0	38.9	38.9	8.0	33.9		6.0	34.1	34.1	10.0	38.1	38.1
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		16.9	16.9		15.4			26.9	26.9		31.1	31.1
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	15.1	41.0	41.0	10.0	36.0		8.0	24.8	24.8	13.5	30.2	30.2
Actuated g/C Ratio	0.14	0.39	0.39	0.09	0.34		0.08	0.24	0.24	0.13	0.29	0.29
v/c Ratio	0.92	0.93	0.53	0.90	0.91		0.96	0.70	0.16	0.61	0.78	0.18
Control Delay	87.9	44.5	17.2	100.7	45.5		121.3	45.5	0.7	58.8	45.4	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	87.9	44.5	17.2	100.7	45.5		121.3	45.5	0.7	58.8	45.4	0.7
LOS	F	D	B	F	D		F	D	A	E	D	A
Approach Delay		44.5			51.8			56.4			41.0	
Approach LOS		D			D			E			D	

#### Intersection Summary

Area Type: Other

Cycle Length: 115

Actuated Cycle Length: 105.4

Natural Cycle: 115

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 47.5









Intersection LOS: D

Intersection Capacity Utilization 82.2%

ICU Level of Service E




























Analysis Period (min) 15

Splits and Phases: 10: Laspina St & Tulare Ave

 Ø2	 Ø1	 Ø3	 Ø4
40.1 s	16 s	14 s	44.9 s
 Ø6	 Ø5	 Ø8	 Ø7
44.1 s	12 s	39.9 s	19 s

























HCM 6th Signalized Intersection Summary  
10: Laspina St & Tulare Ave

PM 2044  
03/13/2024













												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Traffic Volume (veh/h)	196	1177	315	129	893	101	109	281	72	117	385	93
Future Volume (veh/h)	196	1177	315	129	893	101	109	281	72	117	385	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No				No			
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	213	1279	342	140	971	110	118	305	78	127	418	101
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	248	1392	556	159	1080	122	127	415	317	222	523	400
Arrive On Green	0.15	0.39	0.39	0.10	0.34	0.32	0.08	0.22	0.22	0.14	0.28	0.28
Sat Flow, veh/h	1641	3554	1419	1641	3206	363	1641	1870	1430	1641	1870	1432
Grp Volume(v), veh/h	213	1279	342	140	538	543	118	305	78	127	418	101
Grp Sat Flow(s),veh/h/ln	1641	1777	1419	1641	1777	1792	1641	1870	1430	1641	1870	1432
Q Serve(g_s), s	13.1	35.4	13.6	8.7	29.8	29.8	7.4	15.7	3.4	7.5	21.4	5.7
Cycle Q Clear(g_c), s	13.1	35.4	13.6	8.7	29.8	29.8	7.4	15.7	3.4	7.5	21.4	5.7
Prop In Lane	1.00		1.00	1.00		0.20	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	248	1392	556	159	599	604	127	415	317	222	523	400
V/C Ratio(X)	0.86	0.92	0.62	0.88	0.90	0.90	0.93	0.74	0.25	0.57	0.80	0.25
Avail Cap(c_a), veh/h	248	1406	561	159	617	622	127	653	499	222	726	556
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.8	29.9	11.7	46.1	32.6	32.8	47.4	37.4	17.5	41.9	34.6	28.9
Incr Delay (d2), s/veh	24.6	9.9	2.0	39.6	15.8	15.8	58.4	2.5	0.4	3.5	4.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	15.3	3.9	5.1	14.2	14.4	4.9	7.0	1.5	3.1	9.6	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.3	39.8	13.7	85.7	48.4	48.5	105.8	39.9	17.9	45.5	39.0	29.2
LnGrp LOS	E	D	B	F	D	D	F	D	B	D	D	C
Approach Vol, veh/h	1834		1221				501			646		
Approach Delay, s/veh	38.1		52.7				52.0			38.7		
Approach LOS	D		D				D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.0	26.9	14.0	44.5	12.0	32.9	19.6	38.8				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	30.0	34.1	8.0	38.9	6.0	38.1	13.0	33.9				
Max Q Clear Time (g_c+I1),s	9.5	17.7	10.7	37.4	9.4	23.4	15.1	31.8				
Green Ext Time (p_c), s	0.0	1.2	0.0	1.1	0.0	1.7	0.0	1.0				
Intersection Summary												
HCM 6th Ctrl Delay	44.1											
HCM 6th LOS	D											

Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

PM 2044  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	354	802	346	114	612	359	175	869	104	360	901	465
Future Volume (vph)	354	802	346	114	612	359	175	869	104	360	901	465
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	420		185	125		125	80		0	475		475
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98		1.00				0.98
Frt			0.850			0.850		0.984				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3539	1458	1630	3471	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1411	1630	3539	1430	1630	3471	0	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			285			207		11				377
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2671			2887			1662			2623	
Travel Time (s)		33.1			35.8			20.6			32.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	385	872	376	124	665	390	190	945	113	391	979	505
Shared Lane Traffic (%)												
Lane Group Flow (vph)	385	872	376	124	665	390	190	1058	0	391	979	505
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	37.0	37.0	10.0	37.0	37.0	10.0	39.9		10.0	42.7	42.7
Total Split (s)	22.0	37.0	37.0	22.0	37.0	37.0	17.0	43.0		18.0	44.0	44.0
Total Split (%)	18.3%	30.8%	30.8%	18.3%	30.8%	30.8%	14.2%	35.8%		15.0%	36.7%	36.7%
Maximum Green (s)	16.0	31.0	31.0	16.0	31.0	31.0	11.0	37.0		12.0	38.0	38.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		24.0	24.0		24.0	24.0		26.9			29.7	29.7
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	18.4	32.5	32.5	15.2	29.3	29.3	13.0	39.0		14.0	40.0	40.0
Actuated g/C Ratio	0.16	0.28	0.28	0.13	0.25	0.25	0.11	0.33		0.12	0.34	0.34
v/c Ratio	1.50	0.89	0.63	0.58	0.75	0.76	1.05	0.91		2.01	1.53	0.68
Control Delay	280.2	52.6	14.8	59.5	46.1	28.8	131.3	49.3		496.0	277.8	13.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	280.2	52.6	14.8	59.5	46.1	28.8	131.3	49.3		496.0	277.8	13.9
LOS	F	D	B	E	D	C	F	D		F	F	B
Approach Delay		97.6			41.8			61.8			252.2	
Approach LOS		F			D			E			F	

#### Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 116.8

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 2.01

Intersection Signal Delay: 127.8

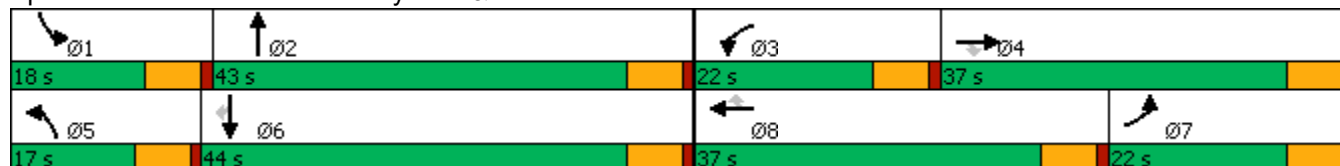
Intersection LOS: F

Intersection Capacity Utilization 110.9%

ICU Level of Service H

























Analysis Period (min) 15

Splits and Phases: 11: Mooney Blvd & Tulare Ave



















HCM 6th Signalized Intersection Summary  
11: Mooney Blvd & Tulare Ave

PM 2044  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	354	802	346	114	612	359	175	869	104	360	901	465
Future Volume (veh/h)	354	802	346	114	612	359	175	869	104	360	901	465
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	385	872	376	124	665	390	190	945	113	391	979	505
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	257	1042	415	176	868	350	185	1079	129	200	650	498
Arrive On Green	0.16	0.29	0.29	0.11	0.24	0.24	0.11	0.34	0.32	0.12	0.35	0.35
Sat Flow, veh/h	1641	3554	1415	1641	3554	1431	1641	3184	381	1641	1870	1434
Grp Volume(v), veh/h	385	872	376	124	665	390	190	527	531	391	979	505
Grp Sat Flow(s),veh/h/ln	1641	1777	1415	1641	1777	1431	1641	1777	1788	1641	1870	1434
Q Serve(g_s), s	18.0	26.5	29.4	8.4	20.0	19.7	13.0	32.1	32.2	14.0	40.0	24.0
Cycle Q Clear(g_c), s	18.0	26.5	29.4	8.4	20.0	19.7	13.0	32.1	32.2	14.0	40.0	24.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	257	1042	415	176	868	350	185	602	606	200	650	498
V/C Ratio(X)	1.50	0.84	0.91	0.70	0.77	1.12	1.03	0.88	0.88	1.96	1.51	1.01
Avail Cap(c_a), veh/h	257	1042	415	257	1019	410	185	602	606	200	650	498
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.6	38.1	39.1	49.6	40.4	21.4	51.1	35.8	36.0	50.6	37.6	13.5
Incr Delay (d2), s/veh	244.7	6.1	23.1	5.1	3.0	81.4	72.9	13.7	13.6	449.5	235.8	43.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	24.4	11.6	12.2	3.5	8.6	13.9	8.8	15.1	15.3	30.4	59.4	12.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	293.3	44.2	62.2	54.7	43.5	102.8	124.0	49.4	49.6	500.1	273.4	57.2
LnGrp LOS	F	D	E	D	D	F	F	D	D	F	F	F
Approach Vol, veh/h	1633					1179		1248		1875		
Approach Delay, s/veh	107.0					64.3		60.9		262.4		
Approach LOS	F					E		E		F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.0	43.0	16.3	37.8	17.0	44.0	22.0	32.1				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	25.0	37.0	16.0	31.0	11.0	38.0	16.0	31.0				
Max Q Clear Time (g_c+I1), s	11.6	34.2	10.4	31.4	15.0	42.0	20.0	22.0				
Green Ext Time (p_c), s	0.0	1.3	0.1	0.0	0.0	0.0	0.0	3.2				
Intersection Summary												
HCM 6th Ctrl Delay	137.9											
HCM 6th LOS	F											

Lanes, Volumes, Timings  
12: Morrison St & Tulare Ave

PM 2044  
03/13/2024























												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	835	161	89	828	7	99	37	49	0	39	46
Future Volume (vph)	22	835	161	89	828	7	99	37	49	0	39	46
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.979			0.999			0.964			0.927	
Flt Protected		0.999			0.995			0.974				
Satd. Flow (prot)	0	1822	0	0	1852	0	0	1749	0	0	1727	0
Flt Permitted		0.999			0.995			0.974				
Satd. Flow (perm)	0	1822	0	0	1852	0	0	1749	0	0	1727	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	908	175	97	900	8	108	40	53	0	42	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1107	0	0	1005	0	0	201	0	0	92	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	
Intersection Summary												
Area Type:	Other											
Control Type:	Roundabout											
Intersection Capacity Utilization	114.5%				ICU Level of Service H							
Analysis Period (min)	15											













Intersection				
Intersection Delay, s/veh	27.9			
Intersection LOS	D			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	1107	1005	201	92
Demand Flow Rate, veh/h	1128	1025	205	94
Vehicles Circulating, veh/h	142	175	950	1127
Vehicles Exiting, veh/h	1079	980	320	73
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	33.6	26.1	13.4	11.8
Approach LOS	D	D	B	B
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	1128	1025	205	94
Cap Entry Lane, veh/h	1194	1154	524	437
Entry HV Adj Factor	0.981	0.980	0.981	0.980
Flow Entry, veh/h	1107	1005	201	92
Cap Entry, veh/h	1171	1132	514	429
V/C Ratio	0.945	0.888	0.391	0.215
Control Delay, s/veh	33.6	26.1	13.4	11.8
LOS	D	D	B	B
95th %tile Queue, veh	17	13	2	1



Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

PM 2044+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	249	191	209	32	203	7	151	1161	32	14	1411	262
Future Volume (vph)	249	191	209	32	203	7	151	1161	32	14	1411	262
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.995			0.996			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1852	0	1630	3522	0	1630	3438	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1852	0	1630	3522	0	1630	3438	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			211		2			3			21	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	271	208	227	35	221	8	164	1262	35	15	1534	285
Shared Lane Traffic (%)												
Lane Group Flow (vph)	271	208	227	35	229	0	164	1297	0	15	1819	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	17.0	44.9	44.9	11.1	39.0		13.0	54.4		9.6	51.0	
Total Split (%)	14.2%	37.4%	37.4%	9.3%	32.5%		10.8%	45.3%		8.0%	42.5%	
Maximum Green (s)	11.5	39.4	39.4	5.6	33.5		7.5	48.9		4.1	45.5	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effct Green (s)	13.0	31.1	31.1	7.1	20.5		9.0	56.6		5.6	47.2	
Actuated g/C Ratio	0.12	0.29	0.29	0.07	0.19		0.09	0.53		0.05	0.45	
v/c Ratio	1.35	0.38	0.40	0.32	0.64		1.18	0.69		0.17	1.18	
Control Delay	224.9	32.9	7.4	57.8	46.8		177.6	22.7		55.6	115.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	224.9	32.9	7.4	57.8	46.8		177.6	22.7		55.6	115.8	
LOS	F	C	A	E	D		F	C		E	F	
Approach Delay		98.4			48.3			40.1			115.3	
Approach LOS		F			D			D			F	

#### Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 105.8

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.35

Intersection Signal Delay: 82.6









Intersection LOS: F

Intersection Capacity Utilization 98.2%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 1: Mooney Blvd & Cartmill Ave























 Ø2		 Ø1	 Ø3	 Ø4
54.4 s		9.6 s	11.1 s	44.9 s
 Ø5	 Ø6		 Ø7	 Ø8
13 s	51 s		17 s	39 s



# HCM 6th Signalized Intersection Summary

## 1: Mooney Blvd & Cartmill Ave

PM 2044+Project  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	249	191	209	32	203	7	151	1161	32	14	1411	262
Future Volume (veh/h)	249	191	209	32	203	7	151	1161	32	14	1411	262
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	271	208	227	35	221	8	164	1262	35	15	1534	285
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	206	493	377	66	318	12	143	1439	40	220	1360	246
Arrive On Green	0.13	0.26	0.26	0.04	0.18	0.16	0.09	0.41	0.39	0.13	0.45	0.44
Sat Flow, veh/h	1641	1870	1432	1641	1792	65	1641	3528	98	1641	2992	540
Grp Volume(v), veh/h	271	208	227	35	0	229	164	635	662	15	893	926
Grp Sat Flow(s),veh/h/ln	1641	1870	1432	1641	0	1857	1641	1777	1849	1641	1777	1755
Q Serve(g_s), s	13.0	9.5	14.3	2.2	0.0	12.0	9.0	34.1	34.1	0.8	47.0	47.0
Cycle Q Clear(g_c), s	13.0	9.5	14.3	2.2	0.0	12.0	9.0	34.1	34.1	0.8	47.0	47.0
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.05	1.00		0.31
Lane Grp Cap(c), veh/h	206	493	377	66	0	330	143	725	754	220	808	798
V/C Ratio(X)	1.31	0.42	0.60	0.53	0.00	0.69	1.15	0.88	0.88	0.07	1.11	1.16
Avail Cap(c_a), veh/h	206	740	567	113	0	629	143	866	902	220	808	798
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.2	31.6	33.3	48.7	0.0	39.9	47.2	28.2	28.3	39.1	28.2	28.4
Incr Delay (d2), s/veh	171.2	0.6	1.5	6.5	0.0	2.6	120.6	8.8	8.6	0.1	64.8	85.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	4.1	4.8	1.0	0.0	5.4	8.3	14.6	15.2	0.3	31.8	36.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	216.4	32.1	34.9	55.2	0.0	42.5	167.8	37.1	36.9	39.3	92.9	114.1
LnGrp LOS	F	C	C	E	A	D	F	D	D	D	F	F
Approach Vol, veh/h	706			264			1461			1834		
Approach Delay, s/veh	103.7			44.2			51.7			103.2		
Approach LOS	F			D			D			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.8	46.2	8.1	31.2	13.0	51.0	17.0	22.4				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax),s	48.9	5.6	39.4	7.5	45.5	11.5	33.5					
Max Q Clear Time (g_c+I1),s	36.1	4.2	16.3	11.0	49.0	15.0	14.0					
Green Ext Time (p_c), s	0.0	4.5	0.0	1.6	0.0	0.0	0.0	0.7				
Intersection Summary												
HCM 6th Ctrl Delay	82.0											
HCM 6th LOS	F											

Lanes, Volumes, Timings  
2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

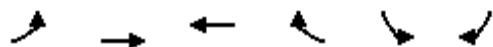
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Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (vph)	0	984	1031	0	359	129
Future Volume (vph)	0	984	1031	0	359	129
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	1630	1458
Flt Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	1630	1458
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						40
Link Speed (mph)		55	55		55	
Link Distance (ft)		349	727		300	
Travel Time (s)		4.3	9.0		3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1070	1121	0	390	140
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1070	1121	0	390	140
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors		1	1		1	1
Detector Template						
Leading Detector (ft)		50	50		50	50
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		50	50		50	50
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		4.0	4.0		4.0	4.0
Minimum Split (s)		24.0	24.0		24.0	24.0
Total Split (s)		45.0	45.0		45.0	45.0
Total Split (%)		50.0%	50.0%		50.0%	50.0%
Maximum Green (s)		39.0	39.0		39.0	39.0
Yellow Time (s)		5.0	5.0		5.0	5.0

Lanes, Volumes, Timings  
2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

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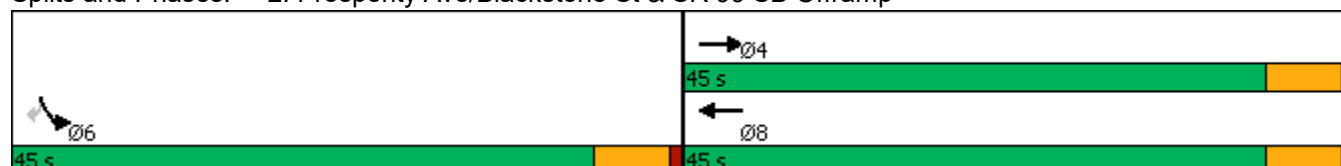


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		None	None		Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		27.8	27.8		23.1	23.1
Actuated g/C Ratio		0.47	0.47		0.39	0.39
v/c Ratio		0.65	0.68		0.62	0.24
Control Delay		14.9	15.4		20.6	11.4
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		14.9	15.4		20.6	11.4
LOS		B	B		C	B
Approach Delay		14.9	15.4		18.1	
Approach LOS		B	B		B	

Intersection Summary

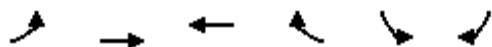
Area Type: Other  
Cycle Length: 90  
Actuated Cycle Length: 59.4  
Natural Cycle: 50  
Control Type: Actuated-Uncoordinated  
Maximum v/c Ratio: 0.68  
Intersection Signal Delay: 15.7 Intersection LOS: B  
Intersection Capacity Utilization 56.8% ICU Level of Service B  
Analysis Period (min) 15

Splits and Phases: 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp



# HCM 6th Signalized Intersection Summary 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp
























PM 2044+Project  
03/13/2024



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (veh/h)	0	984	1031	0	359	129
Future Volume (veh/h)	0	984	1031	0	359	129
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1723	1723
Adj Flow Rate, veh/h	0	1070	1121	0	390	140
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	1662	1662	0	567	504
Arrive On Green	0.00	0.47	0.47	0.00	0.35	0.35
Sat Flow, veh/h	0	3741	3741	0	1641	1460
Grp Volume(v), veh/h	0	1070	1121	0	390	140
Grp Sat Flow(s),veh/h/ln	0	1777	1777	0	1641	1460
Q Serve(g_s), s	0.0	9.8	10.5	0.0	8.7	3.0
Cycle Q Clear(g_c), s	0.0	9.8	10.5	0.0	8.7	3.0
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1662	1662	0	567	504
V/C Ratio(X)	0.00	0.64	0.67	0.00	0.69	0.28
Avail Cap(c_a), veh/h	0	3405	3405	0	1572	1399
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	8.7	8.9	0.0	12.0	10.1
Incr Delay (d2), s/veh	0.0	0.4	0.5	0.0	1.5	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.9	2.0	0.0	2.2	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	9.1	9.3	0.0	13.5	10.4
LnGrp LOS	A	A	A	A	B	B
Approach Vol, veh/h		1070	1121		530	
Approach Delay, s/veh		9.1	9.3		12.7	
Approach LOS		A	A		B	
Timer - Assigned Phs				4	6	8
Phs Duration (G+Y+Rc), s				24.0	18.8	24.0
Change Period (Y+Rc), s				6.0	6.0	6.0
Max Green Setting (Gmax), s				39.0	39.0	39.0
Max Q Clear Time (g_c+I1), s				11.8	10.7	12.5
Green Ext Time (p_c), s				5.2	2.0	5.5
Intersection Summary						
HCM 6th Ctrl Delay			9.9			
HCM 6th LOS			A			


Lanes, Volumes, Timings  
3: Blackstone St & Prosperity Ave

PM 2044+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	27	9	1021	36	1020	0	49	557	718	150	0
Future Volume (vph)	3	27	9	1021	36	1020	0	49	557	718	150	0
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	30		0	335		310	55		90	240		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor		0.99				0.98						
Frt		0.962				0.850			0.850			
Flt Protected	0.950			0.950	0.955					0.950		
Satd. Flow (prot)	1630	1781	0	1548	1690	1458	1716	1863	1458	3162	1863	0
Flt Permitted	0.950			0.950	0.521					0.950		
Satd. Flow (perm)	1630	1781	0	1548	922	1425	1716	1863	1458	3162	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				910			605			
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		98			1229			643			727	
Travel Time (s)		1.2			15.2			8.0			9.0	
Confl. Peds. (#/hr)			5			5						
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	29	10	1110	39	1109	0	53	605	780	163	0
Shared Lane Traffic (%)				48%								
Lane Group Flow (vph)	3	39	0	577	572	1109	0	53	605	780	163	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												

Lanes, Volumes, Timings  
3: Blackstone St & Prosperity Ave

PM 2044+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	24.1		10.0	24.1	24.1	10.0	24.0	24.0	10.0	24.0	
Total Split (s)	10.0	24.1		43.9	58.0	58.0	10.0	24.0	24.0	28.0	42.0	
Total Split (%)	8.3%	20.1%		36.6%	48.3%	48.3%	8.3%	20.0%	20.0%	23.3%	35.0%	
Maximum Green (s)	4.0	18.1		37.9	52.0	52.0	4.0	18.0	18.0	22.0	36.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		11.1			11.1	11.1		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		5			5	5		0	0		0	
Act Effct Green (s)	6.0	10.9		46.1	46.1	54.3		12.9	12.9	24.1	41.1	
Actuated g/C Ratio	0.06	0.10		0.44	0.44	0.52		0.12	0.12	0.23	0.39	
v/c Ratio	0.03	0.20		0.85	0.77	0.94		0.23	0.85	1.08	0.22	
Control Delay	52.3	37.1		43.6	37.2	21.9		44.2	16.4	95.3	22.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	52.3	37.1		43.6	37.2	21.9		44.2	16.4	95.3	22.6	
LOS	D	D		D	D	C		D	B	F	C	
Approach Delay		38.2			31.3			18.6			82.7	
Approach LOS		D			C			B			F	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 105.2

Natural Cycle: 140

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.08

Intersection Signal Delay: 41.7









Intersection LOS: D

Intersection Capacity Utilization 87.6%

ICU Level of Service E

























Analysis Period (min) 15

Splits and Phases: 3: Blackstone St & Prosperity Ave

 Ø1	 Ø2	 Ø3	 Ø4
28 s	24 s	43.9 s	24.1 s
 Ø5	 Ø6	 Ø7	 Ø8
10 s	42 s	10 s	58 s

# HCM 6th Signalized Intersection Summary 3: Blackstone St & Prosperity Ave
























PM 2044+Project  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										 		
Traffic Volume (veh/h)	3	27	9	1021	36	1020	0	49	557	718	150	0
Future Volume (veh/h)	3	27	9	1021	36	1020	0	49	557	718	150	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	0
Adj Flow Rate, veh/h	3	29	10	1138	0	1109	0	53	605	780	163	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	0
Cap, veh/h	33	187	64	1125	0	667	1	321	251	656	771	0
Arrive On Green	0.02	0.14	0.12	0.34	0.00	0.46	0.00	0.17	0.17	0.21	0.41	0.00
Sat Flow, veh/h	1641	1319	455	3281	0	1436	1641	1870	1460	3183	1870	0
Grp Volume(v), veh/h	3	0	39	1138	0	1109	0	53	605	780	163	0
Grp Sat Flow(s),veh/h/ln	1641	0	1773	1641	0	1436	1641	1870	1460	1591	1870	0
Q Serve(g_s), s	0.2	0.0	2.3	39.9	0.0	54.0	0.0	2.8	20.0	24.0	6.5	0.0
Cycle Q Clear(g_c), s	0.2	0.0	2.3	39.9	0.0	54.0	0.0	2.8	20.0	24.0	6.5	0.0
Prop In Lane	1.00		0.26	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	33	0	251	1125	0	667	1	321	251	656	771	0
V/C Ratio(X)	0.09	0.00	0.16	1.01	0.00	1.66	0.00	0.16	2.41	1.19	0.21	0.00
Avail Cap(c_a), veh/h	85	0	306	1125	0	667	85	321	251	656	771	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	55.9	0.0	44.1	38.2	0.0	31.2	0.0	41.1	48.2	46.2	22.0	0.0
Incr Delay (d2), s/veh	1.1	0.0	0.3	29.7	0.0	305.3	0.0	0.2	647.1	99.4	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	1.0	19.4	0.0	73.1	0.0	1.3	52.0	18.0	2.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.1	0.0	44.4	67.9	0.0	336.5	0.0	41.3	695.3	145.6	22.1	0.0
LnGrp LOS	E	A	D	F	A	F	A	D	F	F	C	A
Approach Vol, veh/h	42			2247			658			943		
Approach Delay, s/veh	45.3			200.5			642.6			124.3		
Approach LOS	D			F			F			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	28.0	24.0	43.9	20.5	0.0	52.0	6.4	58.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	22.0	18.0	37.9	18.1	4.0	36.0	4.0	52.0				
Max Q Clear Time (g_c+I26), s	22.0	22.0	41.9	4.3	0.0	8.5	2.2	56.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.1	0.0	0.5	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			255.1									
HCM 6th LOS			F									
Notes												















Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

PM 2044+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	728	1150	181	147	1244	316	173	353	269	293	126	461
Future Volume (vph)	728	1150	181	147	1244	316	173	353	269	293	126	461
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	270		0	155		85	155		0	200		205
Storage Lanes	2		1	1		1	1		0	2		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	0.88
Ped Bike Factor			0.97			0.98		0.99				0.97
Frt			0.850			0.850		0.935				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	1630	5085	1458	1630	3284	0	3162	1863	2567
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1410	1630	5085	1433	1630	3284	0	3162	1863	2493
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			148			143		189				225
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1229			2636			362			5336	
Travel Time (s)		15.2			32.7			4.5			66.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	791	1250	197	160	1352	343	188	384	292	318	137	501
Shared Lane Traffic (%)												
Lane Group Flow (vph)	791	1250	197	160	1352	343	188	676	0	318	137	501
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

PM 2044+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	32.7	32.7	10.0	45.6	45.6	10.0	47.0		10.0	49.9	49.9
Total Split (s)	11.0	44.1	44.1	14.0	47.1	47.1	12.0	50.9		11.0	49.9	49.9
Total Split (%)	9.2%	36.8%	36.8%	11.7%	39.3%	39.3%	10.0%	42.4%		9.2%	41.6%	41.6%
Maximum Green (s)	5.0	38.1	38.1	8.0	41.1	41.1	6.0	44.9		5.0	43.9	43.9
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		19.7	19.7		32.6	32.6		34.0			36.9	36.9
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	16.0	40.6	40.6	10.1	34.7	34.7	8.1	25.2		7.1	24.2	24.2
Actuated g/C Ratio	0.16	0.41	0.41	0.10	0.35	0.35	0.08	0.25		0.07	0.24	0.24
v/c Ratio	1.55	0.86	0.30	0.96	0.76	0.58	1.42	0.69		1.41	0.30	0.64
Control Delay	288.0	35.7	8.4	108.7	31.9	19.3	262.8	26.9		244.8	31.1	21.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	288.0	35.7	8.4	108.7	31.9	19.3	262.8	26.9		244.8	31.1	21.2
LOS	F	D	A	F	C	B	F	C		F	C	C
Approach Delay		122.5			36.2			78.2			97.0	
Approach LOS		F			D			E			F	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 99.1

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.55

Intersection Signal Delay: 84.8









Intersection LOS: F

Intersection Capacity Utilization 91.4%

ICU Level of Service F
























Analysis Period (min) 15

Splits and Phases: 4: Hillman St & Prosperity Ave

 Ø1	 Ø2	 Ø3	 Ø4
11 s	50.9 s	14 s	44.1 s
 Ø5	 Ø6	 Ø8	 Ø7
12 s	49.9 s	47.1 s	11 s

























HCM 6th Signalized Intersection Summary  
4: Hillman St & Prosperity Ave

PM 2044+Project  
03/13/2024

																
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations																
Traffic Volume (veh/h)	728	1150	181	147	1244	316	173	353	269	293	126	461				
Future Volume (veh/h)	728	1150	181	147	1244	316	173	353	269	293	126	461				
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0				
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97				
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Work Zone On Approach	No			No			No			No						
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723				
Adj Flow Rate, veh/h	791	1250	197	160	1352	343	188	384	292	318	137	501				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92				
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2				
Cap, veh/h	434	1391	555	165	1817	511	132	530	397	224	498	662				
Arrive On Green	0.14	0.39	0.39	0.10	0.36	0.36	0.08	0.28	0.26	0.07	0.27	0.27				
Sat Flow, veh/h	3183	3554	1419	1641	5106	1435	1641	1917	1438	3183	1870	2487				
Grp Volume(v), veh/h	791	1250	197	160	1352	343	188	356	320	318	137	501				
Grp Sat Flow(s),veh/h/ln	1591	1777	1419	1641	1702	1435	1641	1777	1578	1591	1870	1244				
Q Serve(g_s), s	13.5	32.8	9.7	9.7	23.0	14.1	8.0	18.0	18.5	7.0	5.8	11.9				
Cycle Q Clear(g_c), s	13.5	32.8	9.7	9.7	23.0	14.1	8.0	18.0	18.5	7.0	5.8	11.9				
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.91	1.00		1.00				
Lane Grp Cap(c), veh/h	434	1391	555	165	1817	511	132	491	436	224	498	662				
V/C Ratio(X)	1.82	0.90	0.35	0.97	0.74	0.67	1.42	0.72	0.73	1.42	0.28	0.76				
Avail Cap(c_a), veh/h	434	1435	573	165	2216	623	132	839	745	224	864	1150				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Uniform Delay (d), s/veh	42.9	28.4	21.4	44.5	28.0	13.4	45.7	32.5	33.5	46.2	28.9	14.1				
Incr Delay (d2), s/veh	379.8	7.8	0.4	60.5	1.1	2.1	228.3	2.0	2.4	212.0	0.3	1.8				
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
%ile BackOfQ(50%),veh/ln	27.8	13.8	3.0	6.5	8.6	4.1	11.5	7.4	6.9	9.2	2.4	3.0				
Unsig. Movement Delay, s/veh																
LnGrp Delay(d),s/veh	422.7	36.2	21.7	105.0	29.1	15.5	274.0	34.6	35.9	258.2	29.1	15.9				
LnGrp LOS	F	D	C	F	C	B	F	C	D	F	C	B				
Approach Vol, veh/h	2238		1855				864			956						
Approach Delay, s/veh	171.5		33.2				87.2			98.4						
Approach LOS	F		C				F			F						
Timer - Assigned Phs	1	2	3	4	5	6	7	8								
Phs Duration (G+Y+Rc), s	11.0	31.4	14.0	42.9	12.0	30.4	17.5	39.3								
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0								
Max Green Setting (Gmax),s	50	44.9	8.0	38.1	6.0	43.9	5.0	41.1								
Max Q Clear Time (g_c+l1)9s	20.5	20.5	11.7	34.8	10.0	13.9	15.5	25.0								
Green Ext Time (p_c), s	0.0	2.6	0.0	2.1	0.0	3.1	0.0	7.4								
Intersection Summary																
HCM 6th Ctrl Delay	104.0															
HCM 6th LOS	F															













Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

PM 2044+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	186	1279	455	118	1088	80	220	164	108	126	221	76
Future Volume (vph)	186	1279	455	118	1088	80	220	164	108	126	221	76
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	235		115	230		100	100		100	160		100
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96			0.97			0.97			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	5085	1458	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1406	1630	5085	1410	1630	1863	1415	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			176			136			191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2636			2650			5387			713	
Travel Time (s)		32.7			32.9			66.8			8.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	202	1390	495	128	1183	87	239	178	117	137	240	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	202	1390	495	128	1183	87	239	178	117	137	240	83
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

PM 2044+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	27.0	27.0	10.0	34.1	34.1	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (s)	18.0	46.4	46.4	11.0	39.4	39.4	17.0	47.6	47.6	15.0	45.6	45.6
Total Split (%)	15.0%	38.7%	38.7%	9.2%	32.8%	32.8%	14.2%	39.7%	39.7%	12.5%	38.0%	38.0%
Maximum Green (s)	12.0	40.4	40.4	5.0	33.4	33.4	11.0	41.6	41.6	9.0	39.6	39.6
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		21.1	21.1		32.6	32.6		32.6	32.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	14.1	42.8	42.8	7.1	35.7	35.7	13.1	24.3	24.3	11.1	22.2	22.2
Actuated g/C Ratio	0.14	0.42	0.42	0.07	0.35	0.35	0.13	0.24	0.24	0.11	0.22	0.22
v/c Ratio	0.89	0.93	0.71	1.13	0.66	0.15	1.13	0.40	0.24	0.77	0.59	0.18
Control Delay	82.5	41.2	23.4	169.0	31.1	1.7	144.9	34.2	1.3	73.7	40.7	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.5	41.2	23.4	169.0	31.1	1.7	144.9	34.2	1.3	73.7	40.7	0.8
LOS	F	D	C	F	C	A	F	C	A	E	D	A
Approach Delay		41.0			41.9			76.5			43.3	
Approach LOS		D			D			E			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 101.3

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.13

Intersection Signal Delay: 45.8









Intersection LOS: D

Intersection Capacity Utilization 83.9%

ICU Level of Service E

























Analysis Period (min) 15

Splits and Phases: 5: Laspina St & Prosperity Ave

 Ø1	 Ø2	 Ø4	 Ø3
15 s	47.6 s	46.4 s	11 s
 Ø5	 Ø6	 Ø7	 Ø8
17 s	45.6 s	18 s	39.4 s
























# HCM 6th Signalized Intersection Summary 5: Laspina St & Prosperity Ave

PM 2044+Project  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	186	1279	455	118	1088	80	220	164	108	126	221	76
Future Volume (veh/h)	186	1279	455	118	1088	80	220	164	108	126	221	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No				No			
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	202	1390	495	128	1183	87	239	178	117	137	240	83
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	235	1522	608	118	1821	506	218	418	315	185	379	290
Arrive On Green	0.14	0.43	0.43	0.07	0.36	0.36	0.13	0.22	0.22	0.11	0.20	0.20
Sat Flow, veh/h	1641	3554	1420	1641	5106	1418	1641	1870	1410	1641	1870	1429
Grp Volume(v), veh/h	202	1390	495	128	1183	87	239	178	117	137	240	83
Grp Sat Flow(s),veh/h/ln	1641	1777	1420	1641	1702	1418	1641	1870	1410	1641	1870	1429
Q Serve(g_s), s	11.7	35.8	16.5	7.0	18.9	4.1	13.0	8.0	5.1	7.9	11.5	4.8
Cycle Q Clear(g_c), s	11.7	35.8	16.5	7.0	18.9	4.1	13.0	8.0	5.1	7.9	11.5	4.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	235	1522	608	118	1821	506	218	418	315	185	379	290
V/C Ratio(X)	0.86	0.91	0.81	1.09	0.65	0.17	1.09	0.43	0.37	0.74	0.63	0.29
Avail Cap(c_a), veh/h	235	1544	617	118	1852	514	218	835	630	185	797	609
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.8	26.2	7.5	45.3	26.3	21.5	42.3	32.5	18.0	41.9	35.6	32.9
Incr Delay (d2), s/veh	25.7	8.6	8.1	108.6	0.8	0.2	88.2	0.7	0.7	14.7	1.7	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	14.9	4.8	6.2	7.0	1.3	10.3	3.4	2.2	3.7	5.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.6	34.8	15.6	153.9	27.1	21.7	130.5	33.2	18.8	56.6	37.3	33.5
LnGrp LOS	E	C	B	F	C	C	F	C	B	E	D	C
Approach Vol, veh/h	2087		1398				534				460	
Approach Delay, s/veh	33.3		38.4				73.6				42.4	
Approach LOS	C		D				E				D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	25.8	11.0	45.8	17.0	23.8	18.0	38.8				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	30.0	41.6	5.0	40.4	11.0	39.6	12.0	33.4				
Max Q Clear Time (g_c+I1),s	9.9	10.0	9.0	37.8	15.0	13.5	13.7	20.9				
Green Ext Time (p_c), s	0.0	1.1	0.0	2.0	0.0	1.1	0.0	4.8				
Intersection Summary												
HCM 6th Ctrl Delay	40.6											
HCM 6th LOS	D											

Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave













PM 2044+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	353	589	513	230	492	105	329	881	90	132	1193	375
Future Volume (vph)	353	589	513	230	492	105	329	881	90	132	1193	375
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98		1.00				0.98			0.98
Frt			0.850		0.974				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1808	0	1630	3539	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1432	1630	1808	0	1630	3539	1429	1630	3539	1426
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			305		9				136			266
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2667			5285	
Travel Time (s)		32.9			36.1			33.1			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	384	640	558	250	535	114	358	958	98	143	1297	408
Shared Lane Traffic (%)												
Lane Group Flow (vph)	384	640	558	250	649	0	358	958	98	143	1297	408
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												



Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

PM 2044+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	21.0	44.0	44.0	17.0	40.0		20.0	43.0	43.0	16.0	39.0	39.0
Total Split (%)	17.5%	36.7%	36.7%	14.2%	33.3%		16.7%	35.8%	35.8%	13.3%	32.5%	32.5%
Maximum Green (s)	15.0	38.0	38.0	11.0	34.0		14.0	37.0	37.0	10.0	33.0	33.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	17.0	40.0	40.0	13.0	36.0		16.0	39.0	39.0	12.0	35.0	35.0
Actuated g/C Ratio	0.14	0.33	0.33	0.11	0.30		0.13	0.32	0.32	0.10	0.29	0.29
v/c Ratio	1.67	1.03	0.82	1.42	1.18		1.65	0.83	0.18	0.88	1.26	0.68
Control Delay	352.6	83.9	27.4	258.1	137.8		345.5	45.1	2.5	97.9	160.2	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	352.6	83.9	27.4	258.1	137.8		345.5	45.1	2.5	97.9	160.2	18.8
LOS	F	F	C	F	F		F	D	A	F	F	B
Approach Delay		129.2			171.2			118.2			124.1	
Approach LOS		F			F			F			F	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.67

Intersection Signal Delay: 131.4









Intersection LOS: F

Intersection Capacity Utilization 119.7%

ICU Level of Service H
























Analysis Period (min) 15

Splits and Phases: 6: Mooney Blvd & Prosperity Ave

 Ø1	 Ø2	 Ø3	 Ø4
16 s	43 s	17 s	44 s
 Ø6	 Ø5	 Ø7	 Ø8
39 s	20 s	21 s	40 s

# HCM 6th Signalized Intersection Summary 6: Mooney Blvd & Prosperity Ave

PM 2044+Project  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	353	589	513	230	492	105	329	881	90	132	1193	375
Future Volume (veh/h)	353	589	513	230	492	105	329	881	90	132	1193	375
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	384	640	558	250	535	114	358	958	98	143	1297	408
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	232	623	478	178	447	95	219	1155	466	164	1036	418
Arrive On Green	0.14	0.33	0.33	0.11	0.30	0.28	0.13	0.32	0.32	0.10	0.29	0.29
Sat Flow, veh/h	1641	1870	1434	1641	1489	317	1641	3554	1434	1641	3554	1433
Grp Volume(v), veh/h	384	640	558	250	0	649	358	958	98	143	1297	408
Grp Sat Flow(s),veh/h/ln	1641	1870	1434	1641	0	1806	1641	1777	1434	1641	1777	1433
Q Serve(g_s), s	17.0	40.0	26.0	13.0	0.0	36.0	16.0	29.9	5.9	10.3	35.0	22.3
Cycle Q Clear(g_c), s	17.0	40.0	26.0	13.0	0.0	36.0	16.0	29.9	5.9	10.3	35.0	22.3
Prop In Lane	1.00		1.00	1.00		0.18	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	232	623	478	178	0	542	219	1155	466	164	1036	418
V/C Ratio(X)	1.65	1.03	1.17	1.41	0.00	1.20	1.64	0.83	0.21	0.87	1.25	0.98
Avail Cap(c_a), veh/h	232	623	478	178	0	542	219	1155	466	164	1036	418
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.5	40.0	16.9	53.5	0.0	42.2	52.0	37.4	29.3	53.2	42.5	18.3
Incr Delay (d2), s/veh	311.9	43.0	95.9	213.0	0.0	105.9	306.2	5.2	0.2	36.5	121.2	37.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	26.8	24.5	20.2	15.6	0.0	30.9	24.9	13.0	2.0	5.7	31.8	11.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	363.4	83.0	112.8	266.5	0.0	148.1	358.2	42.6	29.6	89.7	163.7	55.9
LnGrp LOS	F	F	F	F	A	F	F	D	C	F	F	E
Approach Vol, veh/h	1582			899			1414			1848		
Approach Delay, s/veh	161.6			181.0			121.6			134.2		
Approach LOS	F			F			F			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.0	43.0	17.0	44.0	20.0	39.0	21.0	40.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	30.0	37.0	11.0	38.0	14.0	33.0	15.0	34.0				
Max Q Clear Time (g_c+I1),s	11.2	31.9	15.0	42.0	18.0	37.0	19.0	38.0				
Green Ext Time (p_c), s	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay	146.0											
HCM 6th LOS	F											

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Volume (vph)	647	180	63	635	120	37
Future Volume (vph)	647	180	63	635	120	37
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1863	1458	1630	1863	1630	1458
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1863	1458	1630	1863	1630	1458
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	703	196	68	690	130	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	703	196	68	690	130	40
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	55.1%			ICU Level of Service B		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 14.1

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations ↑ ↑ ↑ ↑ ↑ ↑

Traffic Vol, veh/h 647 180 63 635 120 37

Future Vol, veh/h 647 180 63 635 120 37

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - 0 0 - 0 0

Veh in Median Storage0# - - 0 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 92 92 92 92 92 92

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 703 196 68 690 130 40

Major/Minor Major1 Major2 Minor1

Conflicting Flow All 0 0 899 0 1529 703

Stage 1 - - - - 703 -

Stage 2 - - - - 826 -

Critical Hdwy - - 4.12 - 6.42 6.22

Critical Hdwy Stg 1 - - - - 5.42 -

Critical Hdwy Stg 2 - - - - 5.42 -

Follow-up Hdwy - -2.218 -3.518 3.318

Pot Cap-1 Maneuver - - 756 -~ 129 438

Stage 1 - - - - 491 -

Stage 2 - - - - 430 -

Platoon blocked, % - - -

Mov Cap-1 Maneuver - - 756 -~ 117 438

Mov Cap-2 Maneuver - - - -~ 117 -

Stage 1 - - - - 491 -

Stage 2 - - - - 391 -

Approach EB WB NB

HCM Control Delay, s 0 0.9 147.4

HCM LOS F

Minor Lane/Major MvmNBLn1NBLn2 EBT EBR WBL WBT

Capacity (veh/h) 117 438 - - 756 -

HCM Lane V/C Ratio 1.1150.092 - -0.091 -

HCM Control Delay (s) 188.5 14 - - 10.2 -

HCM Lane LOS F B - - B -

HCM 95th %tile Q(veh) 7.9 0.3 - - 0.3 -




Notes





~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined \*: All major volume in platoon














Lanes, Volumes, Timings  
8: Prosperity Ave & Oakmore Rd

PM 2044+Project  
03/13/2024


























Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	123	369	286	39	29	215
Future Volume (vph)	123	369	286	39	29	215
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.984		0.881	
Flt Protected		0.988			0.994	
Satd. Flow (prot)	0	1840	1833	0	1502	0
Flt Permitted		0.988			0.994	
Satd. Flow (perm)	0	1840	1833	0	1502	0
Link Speed (mph)		55	55		55	
Link Distance (ft)		2108	5202		1848	
Travel Time (s)		26.1	64.5		22.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	134	401	311	42	32	234
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	535	353	0	266	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	69.8%			ICU Level of Service C		
Analysis Period (min)	15					


Intersection						
Int Delay, s/veh	4.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	123	369	286	39	29	215
Future Vol, veh/h	123	369	286	39	29	215
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None		- None		- None	
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	134	401	311	42	32	234
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	353	0	-	0	1001	332
Stage 1	-	-	-	-	332	-
Stage 2	-	-	-	-	669	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1206	-	-	-	269	710
Stage 1	-	-	-	-	727	-
Stage 2	-	-	-	-	509	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1206	-	-	-	231	710
Mov Cap-2 Maneuver	-	-	-	-	231	-
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	509	-
Approach	EB	WB		SB		
HCM Control Delay, s	2.1	0		16.7		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1206	-	-	-	570	
HCM Lane V/C Ratio	0.111	-	-	-	0.465	
HCM Control Delay (s)	8.4	0	-	-	16.7	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %tile Q(veh)	0.4	-	-	-	2.5	

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (vph)	0	241	1577	94	304	1908
Future Volume (vph)	0	241	1577	94	304	1908
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	0	540		0	80	
Storage Lanes	0	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.865		0.850		
Flt Protected					0.950	
Satd. Flow (prot)	0	1484	3539	1458	1630	3539
Flt Permitted					0.950	
Satd. Flow (perm)	0	1484	3539	1458	1630	3539
Link Speed (mph)	55		55			55
Link Distance (ft)	1218		2623			2667
Travel Time (s)	15.1		32.5			33.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	262	1714	102	330	2074
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	262	1714	102	330	2074
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	68.5%			ICU Level of Service C		
Analysis Period (min)	15					



Intersection						
Int Delay, s/veh	9.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗	↗	↗	↗↗
Traffic Vol, veh/h	0	241	1577	94	304	1908
Future Vol, veh/h	0	241	1577	94	304	1908
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	- None		- None		- None	
Storage Length	-	-	-	0	80	-
Veh in Median Storage	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	262	1714	102	330	2074
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	857	0	0	1816	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	301	-	-	334	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	301	-	-	334	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	62.2	0		11.4		
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	301	334	-	
HCM Lane V/C Ratio	-	-	0.87	0.989	-	
HCM Control Delay (s)	-	-	62.2	82.7	-	
HCM Lane LOS	-	-	F	F	-	
HCM 95th %tile Q(veh)	-	-	7.8	10.9	-	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	196	1236	315	137	926	115	109	281	76	124	385	93
Future Volume (vph)	196	1236	315	137	926	115	109	281	76	124	385	93
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		135	110		0	90		90	80		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97		1.00				0.98			0.98
Frt			0.850		0.983				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3465	0	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1408	1630	3465	0	1630	1863	1431	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191		12				136			136
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		841			2671			726			5387	
Travel Time (s)		10.4			33.1			9.0			66.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	213	1343	342	149	1007	125	118	305	83	135	418	101
Shared Lane Traffic (%)												
Lane Group Flow (vph)	213	1343	342	149	1132	0	118	305	83	135	418	101
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.9	29.9	10.0	28.4		10.0	39.9	39.9	10.0	44.1	44.1
Total Split (s)	20.0	49.9	49.9	14.0	43.9		12.0	42.1	42.1	14.0	44.1	44.1
Total Split (%)	16.7%	41.6%	41.6%	11.7%	36.6%		10.0%	35.1%	35.1%	11.7%	36.8%	36.8%
Maximum Green (s)	14.0	43.9	43.9	8.0	37.9		6.0	36.1	36.1	8.0	38.1	38.1
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		16.9	16.9		15.4			26.9	26.9		31.1	31.1
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	16.1	46.0	46.0	10.0	40.0		8.0	29.3	29.3	10.0	31.3	31.3
Actuated g/C Ratio	0.14	0.41	0.41	0.09	0.36		0.07	0.26	0.26	0.09	0.28	0.28
v/c Ratio	0.91	0.92	0.49	1.02	0.90		1.01	0.62	0.17	0.92	0.80	0.20
Control Delay	88.2	43.1	13.7	131.7	45.7		139.4	41.9	1.6	109.1	49.1	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	88.2	43.1	13.7	131.7	45.7		139.4	41.9	1.6	109.1	49.1	2.9
LOS	F	D	B	F	D		F	D	A	F	D	A
Approach Delay		42.9			55.7			58.0			54.4	
Approach LOS		D			E			E			D	

#### Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 111.5

Natural Cycle: 115

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 50.2









Intersection LOS: D

Intersection Capacity Utilization 84.3%

ICU Level of Service E
























Analysis Period (min) 15

Splits and Phases: 10: Laspina St & Tulare Ave

 Ø1	 Ø2	 Ø3	 Ø4
14 s	42.1 s	14 s	49.9 s
 Ø6	 Ø5	 Ø7	 Ø8
44.1 s	12 s	20 s	43.9 s

























HCM 6th Signalized Intersection Summary  
10: Laspina St & Tulare Ave


PM 2044+Project  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	196	1236	315	137	926	115	109	281	76	124	385	93
Future Volume (veh/h)	196	1236	315	137	926	115	109	281	76	124	385	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	213	1343	342	149	1007	125	118	305	83	135	418	101
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	241	1467	586	150	1134	141	120	481	368	150	515	395
Arrive On Green	0.15	0.41	0.41	0.09	0.36	0.34	0.07	0.26	0.26	0.09	0.28	0.28
Sat Flow, veh/h	1641	3554	1419	1641	3169	393	1641	1870	1432	1641	1870	1432
Grp Volume(v), veh/h	213	1343	342	149	564	568	118	305	83	135	418	101
Grp Sat Flow(s),veh/h/ln	1641	1777	1419	1641	1777	1786	1641	1870	1432	1641	1870	1432
Q Serve(g_s), s	13.9	38.9	14.0	9.9	32.6	32.7	7.8	15.8	5.0	8.9	22.7	3.9
Cycle Q Clear(g_c), s	13.9	38.9	14.0	9.9	32.6	32.7	7.8	15.8	5.0	8.9	22.7	3.9
Prop In Lane	1.00		1.00	1.00		0.22	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	241	1467	586	150	636	639	120	481	368	150	515	395
V/C Ratio(X)	0.89	0.92	0.58	0.99	0.89	0.89	0.98	0.63	0.23	0.90	0.81	0.26
Avail Cap(c_a), veh/h	241	1495	597	150	650	653	120	653	500	150	688	527
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.6	30.2	11.7	49.5	33.0	33.2	50.5	36.0	32.0	49.0	36.9	12.8
Incr Delay (d2), s/veh	29.9	9.0	1.4	70.4	13.9	14.0	75.8	1.4	0.3	44.7	5.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	16.7	3.9	6.8	15.2	15.4	5.6	6.9	1.7	5.3	10.4	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	75.6	39.2	13.1	119.9	46.9	47.2	126.2	37.4	32.3	93.7	42.3	13.2
LnGrp LOS	E	D	B	F	D	D	F	D	C	F	D	B
Approach Vol, veh/h	1898					1281		506		654		
Approach Delay, s/veh	38.6					55.5		57.2		48.4		
Approach LOS	D					E		E		D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.0	32.0	14.0	49.0	12.0	34.0	20.0	43.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	30.0	36.1	8.0	43.9	6.0	38.1	14.0	37.9				
Max Q Clear Time (g_c+I1),s	10.9	17.8	11.9	40.9	9.8	24.7	15.9	34.7				
Green Ext Time (p_c), s	0.0	1.3	0.0	2.1	0.0	1.6	0.0	1.6				
Intersection Summary												
HCM 6th Ctrl Delay	47.2											
HCM 6th LOS	D											

Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

PM 2044+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	354	872	346	133	667	368	175	869	119	367	901	465
Future Volume (vph)	354	872	346	133	667	368	175	869	119	367	901	465
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	420		185	125		125	80		0	475		475
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98		1.00				0.98
Frt			0.850			0.850		0.982				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3539	1458	1630	3463	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1411	1630	3539	1430	1630	3463	0	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			262			207		13				372
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2671			2887			1662			2623	
Travel Time (s)		33.1			35.8			20.6			32.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	385	948	376	145	725	400	190	945	129	399	979	505
Shared Lane Traffic (%)												
Lane Group Flow (vph)	385	948	376	145	725	400	190	1074	0	399	979	505
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	37.0	37.0	10.0	37.0	37.0	10.0	39.9		10.0	42.7	42.7
Total Split (s)	22.0	37.0	37.0	22.0	37.0	37.0	17.0	43.0		18.0	44.0	44.0
Total Split (%)	18.3%	30.8%	30.8%	18.3%	30.8%	30.8%	14.2%	35.8%		15.0%	36.7%	36.7%
Maximum Green (s)	16.0	31.0	31.0	16.0	31.0	31.0	11.0	37.0		12.0	38.0	38.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		24.0	24.0		24.0	24.0		26.9			29.7	29.7
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	18.3	33.0	33.0	16.1	30.8	30.8	13.0	39.0		14.0	40.0	40.0
Actuated g/C Ratio	0.15	0.28	0.28	0.14	0.26	0.26	0.11	0.33		0.12	0.34	0.34
v/c Ratio	1.52	0.96	0.64	0.66	0.79	0.76	1.06	0.93		2.07	1.55	0.69
Control Delay	290.0	62.6	17.3	62.9	47.5	29.2	135.4	53.0		524.9	286.1	14.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	290.0	62.6	17.3	62.9	47.5	29.2	135.4	53.0		524.9	286.1	14.5
LOS	F	E	B	E	D	C	F	D		F	F	B
Approach Delay		103.9			43.5			65.4			263.9	
Approach LOS		F			D			E			F	

#### Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 118.1

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 2.07

Intersection Signal Delay: 132.6









Intersection LOS: F

Intersection Capacity Utilization 112.1%

ICU Level of Service H

























Analysis Period (min) 15

#### Splits and Phases: 11: Mooney Blvd & Tulare Ave

















 Ø1	 Ø2	 Ø3	 Ø4
18 s	43 s	22 s	37 s
 Ø5	 Ø6	 Ø8	 Ø7
17 s	44 s	37 s	22 s

HCM 6th Signalized Intersection Summary  
11: Mooney Blvd & Tulare Ave

PM 2044+Project  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	354	872	346	133	667	368	175	869	119	367	901	465
Future Volume (veh/h)	354	872	346	133	667	368	175	869	119	367	901	465
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	385	948	376	145	725	400	190	945	129	399	979	505
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	253	1027	409	197	905	365	183	1045	143	197	641	491
Arrive On Green	0.15	0.29	0.29	0.12	0.25	0.25	0.11	0.33	0.32	0.12	0.34	0.34
Sat Flow, veh/h	1641	3554	1415	1641	3554	1431	1641	3128	427	1641	1870	1434
Grp Volume(v), veh/h	385	948	376	145	725	400	190	537	537	399	979	505
Grp Sat Flow(s),veh/h/ln	1641	1777	1415	1641	1777	1431	1641	1777	1778	1641	1870	1434
Q Serve(g_s), s	18.0	30.2	30.0	10.0	22.3	20.9	13.0	33.6	33.7	14.0	40.0	24.4
Cycle Q Clear(g_c), s	18.0	30.2	30.0	10.0	22.3	20.9	13.0	33.6	33.7	14.0	40.0	24.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.24	1.00		1.00
Lane Grp Cap(c), veh/h	253	1027	409	197	905	365	183	594	594	197	641	491
V/C Ratio(X)	1.52	0.92	0.92	0.74	0.80	1.10	1.04	0.90	0.90	2.03	1.53	1.03
Avail Cap(c_a), veh/h	253	1027	409	253	1005	405	183	594	594	197	641	491
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.4	40.2	40.2	49.6	40.7	21.4	51.9	37.1	37.3	51.4	38.4	14.2
Incr Delay (d2), s/veh	254.0	13.3	25.7	8.0	4.3	75.3	77.5	17.3	17.4	480.0	245.3	47.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	24.9	14.2	12.7	4.3	9.7	14.0	9.0	16.4	16.5	31.7	60.5	13.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	303.4	53.5	65.9	57.6	45.0	96.7	129.4	54.4	54.7	531.3	283.7	62.1
LnGrp LOS	F	D	E	E	D	F	F	D	D	F	F	F
Approach Vol, veh/h	1709			1270			1264			1883		
Approach Delay, s/veh	112.5			62.7			65.8			276.7		
Approach LOS	F			E			E			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.0	43.0	18.0	37.7	17.0	44.0	22.0	33.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	25.0	37.0	16.0	31.0	11.0	38.0	16.0	31.0				
Max Q Clear Time (g_c+I1), s	16.0	35.7	12.0	32.2	15.0	42.0	20.0	24.3				
Green Ext Time (p_c), s	0.0	0.7	0.1	0.0	0.0	0.0	0.0	2.9				
Intersection Summary												
HCM 6th Ctrl Delay	143.0											
HCM 6th LOS	F											

























												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	114	835	161	89	828	13	99	39	49	3	43	129
Future Volume (vph)	114	835	161	89	828	13	99	39	49	3	43	129
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.980			0.998			0.965			0.901	
Flt Protected		0.995			0.995			0.974			0.999	
Satd. Flow (prot)	0	1816	0	0	1850	0	0	1751	0	0	1677	0
Flt Permitted		0.995			0.995			0.974			0.999	
Satd. Flow (perm)	0	1816	0	0	1850	0	0	1751	0	0	1677	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	124	908	175	97	900	14	108	42	53	3	47	140
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1207	0	0	1011	0	0	203	0	0	190	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	
Intersection Summary												
Area Type:	Other											
Control Type:	Roundabout											
Intersection Capacity Utilization	111.7%				ICU Level of Service H							
Analysis Period (min)	15											

Intersection				
Intersection Delay, s/veh	46.4			
Intersection LOS	E			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	1207	1011	203	190
Demand Flow Rate, veh/h	1230	1031	207	194
Vehicles Circulating, veh/h	150	279	1055	1127
Vehicles Exiting, veh/h	1171	983	325	183
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	55.9	46.7	16.0	17.2
Approach LOS	F	E	C	C
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	1230	1031	207	194
Cap Entry Lane, veh/h	1184	1038	470	437
Entry HV Adj Factor	0.981	0.981	0.981	0.980
Flow Entry, veh/h	1207	1011	203	190
Cap Entry, veh/h	1162	1018	462	428
V/C Ratio	1.039	0.993	0.440	0.444
Control Delay, s/veh	55.9	46.7	16.0	17.2
LOS	F	E	C	C
95th %tile Queue, veh	24	19	2	2















Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	249	191	209	32	203	7	151	1161	32	14	1411	262
Future Volume (vph)	249	191	209	32	203	7	151	1161	32	14	1411	262
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.995			0.996			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1852	0	1630	5061	0	1630	4939	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1852	0	1630	5061	0	1630	4939	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			227		2			4			32	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	271	208	227	35	221	8	164	1262	35	15	1534	285
Shared Lane Traffic (%)												
Lane Group Flow (vph)	271	208	227	35	229	0	164	1297	0	15	1819	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	21.0	46.9	46.9	11.3	37.2		22.4	52.2		9.6	39.4	
Total Split (%)	17.5%	39.1%	39.1%	9.4%	31.0%		18.7%	43.5%		8.0%	32.8%	
Maximum Green (s)	15.5	41.4	41.4	5.8	31.7		16.9	46.7		4.1	33.9	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effct Green (s)	17.1	35.2	35.2	7.3	20.4		15.9	52.0		5.6	35.7	
Actuated g/C Ratio	0.16	0.33	0.33	0.07	0.19		0.15	0.49		0.05	0.34	
v/c Ratio	1.02	0.33	0.36	0.31	0.63		0.67	0.52		0.17	1.07	
Control Delay	107.0	29.6	5.3	57.8	46.9		57.6	20.6		56.4	78.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	107.0	29.6	5.3	57.8	46.9		57.6	20.6		56.4	78.5	
LOS	F	C	A	E	D		E	C		E	E	
Approach Delay		51.5			48.3			24.7			78.3	
Approach LOS		D			D			C			E	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 105.2

Natural Cycle: 130

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.07

Intersection Signal Delay: 53.7









Intersection LOS: D

Intersection Capacity Utilization 84.0%

ICU Level of Service E

Analysis Period (min) 15
























Splits and Phases: 1: Mooney Blvd & Cartmill Ave

			
Ø1	Ø2	Ø3	Ø4
9.6 s	52.2 s	11.3 s	46.9 s
			
Ø5	Ø6	Ø7	Ø8
22.4 s	39.4 s	21 s	37.2 s

# HCM 6th Signalized Intersection Summary

1: Mooney Blvd & Cartmill Ave

03/13/2024
























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	249	191	209	32	203	7	151	1161	32	14	1411	262
Future Volume (veh/h)	249	191	209	32	203	7	151	1161	32	14	1411	262
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	271	208	227	35	221	8	164	1262	35	15	1534	285
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	281	580	444	67	322	12	217	2346	65	47	1533	284
Arrive On Green	0.17	0.31	0.31	0.04	0.18	0.16	0.13	0.46	0.44	0.03	0.36	0.34
Sat Flow, veh/h	1641	1870	1433	1641	1792	65	1641	5103	142	1641	4306	797
Grp Volume(v), veh/h	271	208	227	35	0	229	164	842	455	15	1211	608
Grp Sat Flow(s),veh/h/ln	1641	1870	1433	1641	0	1857	1641	1702	1840	1641	1702	1699
Q Serve(g_s), s	16.3	8.6	12.9	2.1	0.0	11.5	9.6	17.6	17.7	0.9	35.4	35.4
Cycle Q Clear(g_c), s	16.3	8.6	12.9	2.1	0.0	11.5	9.6	17.6	17.7	0.9	35.4	35.4
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.08	1.00		0.47
Lane Grp Cap(c), veh/h	281	580	444	67	0	334	217	1565	846	47	1212	605
V/C Ratio(X)	0.97	0.36	0.51	0.53	0.00	0.69	0.75	0.54	0.54	0.32	1.00	1.00
Avail Cap(c_a), veh/h	281	807	618	120	0	620	304	1650	892	92	1212	605
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.9	26.6	28.1	46.8	0.0	38.2	41.6	19.3	19.3	47.3	32.0	32.4
Incr Delay (d2), s/veh	44.3	0.4	0.9	6.3	0.0	2.5	6.7	0.3	0.6	3.8	25.7	37.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.6	3.6	4.2	0.9	0.0	5.1	4.0	6.2	6.7	0.4	17.3	19.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	85.2	27.0	29.0	53.1	0.0	40.7	48.3	19.6	19.9	51.1	57.7	70.2
LnGrp LOS	F	C	C	D	A	D	D	B	B	D	E	F
Approach Vol, veh/h	706			264			1461			1834		
Approach Delay, s/veh	50.0			42.3			22.9			61.8		
Approach LOS	D			D			C			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.9	49.7	8.0	34.8	17.2	39.4	21.0	21.9				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax),s	46.7	5.8	41.4	16.9	33.9	15.5	31.7					
Max Q Clear Time (g_c+I1)2s	19.7	4.1	14.9	11.6	37.4	18.3	13.5					
Green Ext Time (p_c), s	0.0	5.9	0.0	1.6	0.2	0.0	0.7					
Intersection Summary												
HCM 6th Ctrl Delay	45.3											
HCM 6th LOS	D											






Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

PM 2044+Project w/ Mitigation  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	353	589	513	230	492	105	329	881	90	132	1193	375
Future Volume (vph)	353	589	513	230	492	105	329	881	90	132	1193	375
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	2		1	2		0	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.95	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor			0.98		1.00				0.98			0.98
Frt			0.850		0.974				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	3162	3435	0	3162	5085	1458	3162	5085	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1432	3162	3435	0	3162	5085	1429	3162	5085	1425
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			501		21				136			263
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2667			5285	
Travel Time (s)		32.9			36.1			33.1			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	384	640	558	250	535	114	358	958	98	143	1297	408
Shared Lane Traffic (%)												
Lane Group Flow (vph)	384	640	558	250	649	0	358	958	98	143	1297	408
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

PM 2044+Project w/ Mitigation  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	23.0	42.7	42.7	17.0	36.7		30.0	50.3	50.3	10.0	30.3	30.3
Total Split (%)	19.2%	35.6%	35.6%	14.2%	30.6%		25.0%	41.9%	41.9%	8.3%	25.3%	25.3%
Maximum Green (s)	17.0	36.7	36.7	11.0	30.7		24.0	44.3	44.3	4.0	24.3	24.3
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	18.0	31.7	31.7	12.8	26.5		19.4	39.9	39.9	6.1	26.6	26.6
Actuated g/C Ratio	0.17	0.30	0.30	0.12	0.25		0.18	0.37	0.37	0.06	0.25	0.25
v/c Ratio	0.72	0.61	0.72	0.66	0.75		0.62	0.50	0.16	0.80	1.02	0.74
Control Delay	51.8	35.0	10.5	55.8	42.0		46.0	27.3	2.1	82.4	72.3	23.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.8	35.0	10.5	55.8	42.0		46.0	27.3	2.1	82.4	72.3	23.4
LOS	D	D	B	E	D		D	C	A	F	E	C
Approach Delay		30.5			45.8			30.3			62.3	
Approach LOS		C			D			C			E	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 106.6

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 43.1

Intersection LOS: D

Intersection Capacity Utilization 75.4%

ICU Level of Service D
























Analysis Period (min) 15

Splits and Phases: 6: Mooney Blvd & Prosperity Ave

10 s	50.3 s	17 s	42.7 s
30.3 s	30 s	23 s	36.7 s

# HCM 6th Signalized Intersection Summary 6: Mooney Blvd & Prosperity Ave

PM 2044+Project w/  
Mitigation  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	353	589	513	230	492	105	329	881	90	132	1193	375
Future Volume (veh/h)	353	589	513	230	492	105	329	881	90	132	1193	375
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	384	640	558	250	535	114	358	958	98	143	1297	408
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	517	1017	410	376	703	149	508	1883	529	197	1385	388
Arrive On Green	0.16	0.29	0.29	0.12	0.24	0.22	0.16	0.37	0.37	0.06	0.27	0.27
Sat Flow, veh/h	3183	3554	1433	3183	2905	616	3183	5106	1435	3183	5106	1432
Grp Volume(v), veh/h	384	640	558	250	326	323	358	958	98	143	1297	408
Grp Sat Flow(s),veh/h/ln	1591	1777	1433	1591	1777	1744	1591	1702	1435	1591	1702	1432
Q Serve(g_s), s	11.1	15.2	16.7	7.3	16.5	16.7	10.3	14.1	4.5	4.3	24.1	16.0
Cycle Q Clear(g_c), s	11.1	15.2	16.7	7.3	16.5	16.7	10.3	14.1	4.5	4.3	24.1	16.0
Prop In Lane	1.00		1.00	1.00		0.35	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	517	1017	410	376	430	422	508	1883	529	197	1385	388
V/C Ratio(X)	0.74	0.63	1.36	0.67	0.76	0.76	0.71	0.51	0.19	0.73	0.94	1.05
Avail Cap(c_a), veh/h	624	1418	572	427	599	588	853	2438	685	197	1385	388
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.7	30.1	12.6	40.9	34.1	34.5	38.6	23.8	20.7	44.7	34.5	13.0
Incr Delay (d2), s/veh	3.9	0.6	176.9	3.3	3.6	3.9	1.8	0.2	0.2	12.5	12.1	59.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	6.0	24.5	2.8	7.0	7.0	3.9	5.1	1.4	1.9	10.6	10.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.6	30.8	189.5	44.2	37.8	38.4	40.4	24.0	20.9	57.2	46.6	72.5
LnGrp LOS	D	C	F	D	D	D	D	C	C	E	D	F
Approach Vol, veh/h	1582			899			1414			1848		
Approach Delay, s/veh	89.6			39.8			27.9			53.2		
Approach LOS	F			D			C			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	39.8	15.4	31.8	19.5	30.3	19.7	27.5				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	40	44.3	11.0	36.7	24.0	24.3	17.0	30.7				
Max Q Clear Time (g_c+l1),s	6.8	16.1	9.3	18.7	12.3	26.1	13.1	18.7				
Green Ext Time (p_c), s	0.0	5.0	0.2	5.2	1.1	0.0	0.6	2.0				
Intersection Summary												
HCM 6th Ctrl Delay	54.9											
HCM 6th LOS	D											



Lanes, Volumes, Timings  
7: Morrison St & Prosperity Ave

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	647	180	63	635	120	37
Future Volume (vph)	647	180	63	635	120	37
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1863	1458	1630	1863	1630	1458
Flt Permitted			0.192		0.950	
Satd. Flow (perm)	1863	1458	329	1863	1630	1458
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		196				40
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	703	196	68	690	130	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	703	196	68	690	130	40
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			24	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Number of Detectors	1	1	1	1	1	1
Detector Template						
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Detector Phase	4	4	8	8	2	2
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	62.0	62.0	62.0	62.0	28.0	28.0
Total Split (%)	68.9%	68.9%	68.9%	68.9%	31.1%	31.1%
Maximum Green (s)	56.0	56.0	56.0	56.0	22.0	22.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0

Lanes, Volumes, Timings  
7: Morrison St & Prosperity Ave

PM 2044+Project  
w/ Mitigation  
03/13/2024



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	44.6	44.6	44.6	44.6	33.4	33.4
Actuated g/C Ratio	0.50	0.50	0.50	0.50	0.37	0.37
v/c Ratio	0.76	0.24	0.42	0.75	0.21	0.07
Control Delay	23.5	1.9	20.4	22.9	23.9	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.5	1.9	20.4	22.9	23.9	8.8
LOS	C	A	C	C	C	A
Approach Delay	18.8			22.6	20.4	
Approach LOS	B			C	C	

Intersection Summary













Area Type: Other  
Cycle Length: 90  
Actuated Cycle Length: 90  
Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green  
Natural Cycle: 60  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 0.76  
Intersection Signal Delay: 20.5  
Intersection LOS: C  
Intersection Capacity Utilization 60.1%  
ICU Level of Service B  
Analysis Period (min) 15

Splits and Phases: 7: Morrison St & Prosperity Ave

Ø2 (L) 28 s	Ø4 62 s
Ø8 62 s	

# HCM 6th Signalized Intersection Summary 7: Morrison St & Prosperity Ave

PM 2044+Project  
w/ Mitigation  
03/13/2024













						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	647	180	63	635	120	37
Future Volume (veh/h)	647	180	63	635	120	37
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1723	1723	1870	1723	1723
Adj Flow Rate, veh/h	703	196	68	690	130	40
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	902	704	177	902	631	561
Arrive On Green	0.48	0.48	0.48	0.48	0.38	0.38
Sat Flow, veh/h	1870	1460	571	1870	1641	1460
Grp Volume(v), veh/h	703	196	68	690	130	40
Grp Sat Flow(s),veh/h/ln	1870	1460	571	1870	1641	1460
Q Serve(g_s), s	28.1	7.2	10.1	27.2	4.8	1.6
Cycle Q Clear(g_c), s	28.1	7.2	38.2	27.2	4.8	1.6
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	902	704	177	902	631	561
V/C Ratio(X)	0.78	0.28	0.38	0.76	0.21	0.07
Avail Cap(c_a), veh/h	1164	908	257	1164	631	561
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.78	0.78	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.3	13.9	35.2	19.1	18.5	17.5
Incr Delay (d2), s/veh	2.0	0.2	1.4	2.3	0.7	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.5	2.1	1.4	10.4	1.7	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	21.4	14.1	36.5	21.4	19.3	17.8
LnGrp LOS	C	B	D	C	B	B
Approach Vol, veh/h	899			758	170	
Approach Delay, s/veh	19.8			22.8	18.9	
Approach LOS	B			C	B	
Timer - Assigned Phs	2		4		8	
Phs Duration (G+Y+Rc), s	40.6		49.4		49.4	
Change Period (Y+Rc), s	6.0		6.0		6.0	
Max Green Setting (Gmax), s	22.0		56.0		56.0	
Max Q Clear Time (g_c+I1), s	6.8		30.1		40.2	
Green Ext Time (p_c), s	0.5		3.8		3.2	
Intersection Summary						
HCM 6th Ctrl Delay			20.9			
HCM 6th LOS			C			





Lanes, Volumes, Timings  
9: Mooney Blvd & Seminole Ave

PM 2044+Project  
w/ Mitigation  
03/13/2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	241	1577	94	304	1908
Future Volume (vph)	0	241	1577	94	304	1908
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	0	540		0	80	
Storage Lanes	1	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.850		0.850		
Flt Protected					0.950	
Satd. Flow (prot)	1716	1458	3539	1458	1630	3539
Flt Permitted					0.950	
Satd. Flow (perm)	1716	1458	3539	1458	1630	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		307		91		
Link Speed (mph)	55		55			55
Link Distance (ft)	1218		2623			2667
Travel Time (s)	15.1		32.5			33.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	262	1714	102	330	2074
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	262	1714	102	330	2074
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		24			24
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	1	1	1	1
Detector Template						
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	24.0	24.0	24.0	24.0	10.0	24.0
Total Split (s)	24.0	24.0	45.0	45.0	21.0	66.0

Lanes, Volumes, Timings  
9: Mooney Blvd & Seminole Ave

PM 2044+Project  
w/ Mitigation  
03/13/2024



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Split (%)	26.7%	26.7%	50.0%	50.0%	23.3%	73.3%
Maximum Green (s)	18.0	18.0	39.0	39.0	15.0	60.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	6.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)		8.9	41.0	41.0	28.1	73.1
Actuated g/C Ratio		0.10	0.46	0.46	0.31	0.81
v/c Ratio		0.62	1.06	0.14	0.65	0.72
Control Delay		9.3	67.0	4.5	35.0	6.1
Queue Delay		0.0	0.0	0.0	0.0	0.0
Total Delay		9.3	67.0	4.5	35.0	6.1
LOS		A	E	A	D	A
Approach Delay	9.3		63.5			10.1
Approach LOS	A		E			B

Intersection Summary















Area Type: Other  
Cycle Length: 90  
Actuated Cycle Length: 90  
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
Natural Cycle: 90  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 1.06  
Intersection Signal Delay: 31.7  
Intersection LOS: C  
Intersection Capacity Utilization 68.5%  
ICU Level of Service C  
Analysis Period (min) 15

Splits and Phases: 9: Mooney Blvd & Seminole Ave



# HCM 6th Signalized Intersection Summary 9: Mooney Blvd & Seminole Ave


















PM 2044+Project w/  
Mitigation  
03/13/2024

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (veh/h)	0	241	1577	94	304	1908
Future Volume (veh/h)	0	241	1577	94	304	1908
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1723	1723	1870	1723	1723	1870
Adj Flow Rate, veh/h	0	262	1714	102	330	2074
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	318	316	1640	674	310	2469
Arrive On Green	0.00	0.22	0.46	0.46	0.19	0.69
Sat Flow, veh/h	1641	1460	3647	1460	1641	3647
Grp Volume(v), veh/h	0	262	1714	102	330	2074
Grp Sat Flow(s),veh/h/ln	1641	1460	1777	1460	1641	1777
Q Serve(g_s), s	0.0	15.4	41.5	3.6	17.0	38.5
Cycle Q Clear(g_c), s	0.0	15.4	41.5	3.6	17.0	38.5
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	318	316	1640	674	310	2469
V/C Ratio(X)	0.00	0.83	1.05	0.15	1.06	0.84
Avail Cap(c_a), veh/h	328	324	1640	674	310	2469
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.00	1.00	0.09	0.09	0.31	0.31
Uniform Delay (d), s/veh	0.0	33.7	24.2	14.0	36.5	10.1
Incr Delay (d2), s/veh	0.0	16.0	22.4	0.0	47.4	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.4	19.5	1.0	10.3	9.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	49.7	46.6	14.1	83.9	11.2
LnGrp LOS	A	D	F	B	F	B
Approach Vol, veh/h	262		1816			2404
Approach Delay, s/veh	49.7		44.8			21.2
Approach LOS	D		D			C
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	21.0	45.5			66.5	23.5
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax),s	50	39.0			60.0	18.0
Max Q Clear Time (g_c+I1),s	19.0	43.5			40.5	17.4
Green Ext Time (p_c), s	0.0	0.0			11.6	0.1
Intersection Summary						
HCM 6th Ctrl Delay			32.4			
HCM 6th LOS			C			



Lanes, Volumes, Timings  
12: Morrison St & Tulare Ave

PM 2044+Project  
w/ Mitigation  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	114	835	161	89	828	13	99	39	49	3	43	129
Future Volume (vph)	114	835	161	89	828	13	99	39	49	3	43	129
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	0		1	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997	0.850		0.998			0.965			0.901	
Flt Protected		0.994			0.995			0.974			0.999	
Satd. Flow (prot)	0	1754	1385	0	1850	0	0	1751	0	0	1677	0
Flt Permitted		0.994			0.995			0.974			0.999	
Satd. Flow (perm)	0	1754	1385	0	1850	0	0	1751	0	0	1677	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	124	908	175	97	900	14	108	42	53	3	47	140
Shared Lane Traffic (%)			10%									
Lane Group Flow (vph)	0	1050	157	0	1011	0	0	203	0	0	190	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	
Intersection Summary												
Area Type:	Other											
Control Type:	Roundabout											
Intersection Capacity Utilization	137.0%						ICU Level of Service H					
Analysis Period (min)	15											























Intersection					
Intersection Delay, s/veh 29.2					
Intersection LOS D					
Approach	EB		WB		NB SB
Entry Lanes	2		1		1
Conflicting Circle Lanes	1		1		1
Adj Approach Flow, veh/h	1207		1011		203 190
Demand Flow Rate, veh/h	1230		1031		207 194
Vehicles Circulating, veh/h	150		279		1055 1127
Vehicles Exiting, veh/h	1171		983		325 183
Ped Vol Crossing Leg, #/h	0		0		0 0
Ped Cap Adj	1.000		1.000		1.000 1.000
Approach Delay, s/veh	18.6		46.7		16.0 17.2
Approach LOS	C		E		C C
Lane	Left	Right	Left	Left	Left
Designated Moves	LT	R	LTR	LTR	LTR
Assumed Moves	LT	R	LTR	LTR	LTR
RT Channelized					
Lane Util	0.855	0.145	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.609
Critical Headway, s	4.544	4.544	4.976	4.976	4.976
Entry Flow, veh/h	1052	178	1031	207	194
Cap Entry Lane, veh/h	1239	1239	1038	470	437
Entry HV Adj Factor	0.981	0.983	0.981	0.981	0.980
Flow Entry, veh/h	1032	175	1011	203	190
Cap Entry, veh/h	1215	1218	1018	462	428
V/C Ratio	0.849	0.144	0.993	0.440	0.444
Control Delay, s/veh	21.1	4.2	46.7	16.0	17.2
LOS	C	A	E	C	C
95th %tile Queue, veh	11	1	19	2	2

















Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

AM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	154	117	20	104	2	132	659	22	8	395	68
Future Volume (vph)	120	154	117	20	104	2	132	659	22	8	395	68
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.997			0.995			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1857	0	1630	3518	0	1630	3446	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1857	0	1630	3518	0	1630	3446	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			173		1			3			17	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	167	127	22	113	2	143	716	24	9	429	74
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	167	127	22	115	0	143	740	0	9	503	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

AM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	21.0	47.3	47.3	10.2	36.5		22.0	53.0		9.5	40.5	
Total Split (%)	17.5%	39.4%	39.4%	8.5%	30.4%		18.3%	44.2%		7.9%	33.8%	
Maximum Green (s)	15.5	41.8	41.8	4.7	31.0		16.5	47.5		4.0	35.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effct Green (s)	13.6	24.9	24.9	6.9	14.5		14.1	37.5		6.2	20.1	
Actuated g/C Ratio	0.18	0.33	0.33	0.09	0.19		0.19	0.49		0.08	0.27	
v/c Ratio	0.45	0.27	0.22	0.15	0.32		0.47	0.43		0.07	0.54	
Control Delay	40.1	22.3	2.2	45.5	32.7		40.0	16.2		46.0	27.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	40.1	22.3	2.2	45.5	32.7		40.0	16.2		46.0	27.8	
LOS	D	C	A	D	C		D	B		D	C	
Approach Delay		21.8			34.7			20.1			28.1	
Approach LOS		C			C			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 75.8

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.54

Intersection Signal Delay: 23.6









Intersection LOS: C

Intersection Capacity Utilization 52.9%

ICU Level of Service A























Analysis Period (min) 15

Splits and Phases: 1: Mooney Blvd & Cartmill Ave

 Ø1	 Ø2	 Ø3	 Ø4
9.5 s	53 s	10.2 s	47.3 s
 Ø5	 Ø6	 Ø8	 Ø7
22 s	40.5 s	36.5 s	21 s

HCM 6th Signalized Intersection Summary  
1: Mooney Blvd & Cartmill Ave

AM 2024  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	154	117	20	104	2	132	659	22	8	395	68
Future Volume (veh/h)	120	154	117	20	104	2	132	659	22	8	395	68
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	130	167	127	22	113	2	143	716	24	9	429	74
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	212	454	348	82	300	5	228	1260	42	63	781	134
Arrive On Green	0.13	0.24	0.24	0.05	0.16	0.13	0.14	0.36	0.33	0.04	0.26	0.23
Sat Flow, veh/h	1641	1870	1431	1641	1831	32	1641	3504	117	1641	3017	516
Grp Volume(v), veh/h	130	167	127	22	0	115	143	363	377	9	251	252
Grp Sat Flow(s),veh/h/ln	1641	1870	1431	1641	0	1864	1641	1777	1845	1641	1777	1756
Q Serve(g_s), s	3.9	3.8	3.8	0.7	0.0	2.8	4.3	8.5	8.5	0.3	6.3	6.5
Cycle Q Clear(g_c), s	3.9	3.8	3.8	0.7	0.0	2.8	4.3	8.5	8.5	0.3	6.3	6.5
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.06	1.00		0.29
Lane Grp Cap(c), veh/h	212	454	348	82	0	306	228	639	664	63	460	455
V/C Ratio(X)	0.61	0.37	0.37	0.27	0.00	0.38	0.63	0.57	0.57	0.14	0.55	0.55
Avail Cap(c_a), veh/h	539	1564	1197	196	0	1170	570	1682	1746	174	1253	1238
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.3	16.3	16.3	23.7	0.0	19.3	21.0	13.3	13.4	24.1	16.6	16.8
Incr Delay (d2), s/veh	2.9	0.5	0.6	1.7	0.0	0.8	2.8	0.8	0.8	1.0	1.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	1.3	1.0	0.3	0.0	1.0	1.5	2.5	2.6	0.1	2.1	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.2	16.8	16.9	25.4	0.0	20.1	23.8	14.1	14.1	25.1	17.6	17.9
LnGrp LOS	C	B	B	C	A	C	C	B	B	C	B	B
Approach Vol, veh/h		424			137			883			512	
Approach Delay, s/veh		19.1			20.9			15.7			17.8	
Approach LOS		B			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.0	22.6	6.6	16.6	11.2	17.4	10.7	12.5				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax),s	47.5	47.5	4.7	41.8	16.5	35.0	15.5	31.0				
Max Q Clear Time (g_c+I1),s	10.5	10.5	2.7	5.8	6.3	8.5	5.9	4.8				
Green Ext Time (p_c), s	0.0	2.8	0.0	1.1	0.3	1.8	0.2	0.3				
Intersection Summary												
HCM 6th Ctrl Delay			17.4									
HCM 6th LOS			B									

Lanes, Volumes, Timings  
2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

AM 2024  
03/13/2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (vph)	0	306	290	0	85	103
Future Volume (vph)	0	306	290	0	85	103
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	1630	1458
Flt Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	1630	1458
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						112
Link Speed (mph)		55	55		55	
Link Distance (ft)		349	727		300	
Travel Time (s)		4.3	9.0		3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	333	315	0	92	112
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	333	315	0	92	112
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors		1	1		1	1
Detector Template						
Leading Detector (ft)		50	50		50	50
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		50	50		50	50
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		4.0	4.0		4.0	4.0
Minimum Split (s)		24.0	24.0		24.0	24.0
Total Split (s)		63.0	63.0		57.0	57.0
Total Split (%)		52.5%	52.5%		47.5%	47.5%
Maximum Green (s)		57.0	57.0		51.0	51.0
Yellow Time (s)		5.0	5.0		5.0	5.0

Lanes, Volumes, Timings  
2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

AM 2024  
03/13/2024

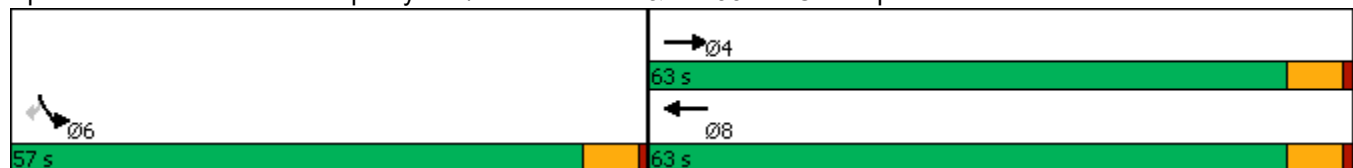


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		None	None		Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		10.0	10.0		9.1	9.1
Actuated g/C Ratio		0.37	0.37		0.33	0.33
v/c Ratio		0.26	0.24		0.17	0.20
Control Delay		6.7	6.6		7.5	2.9
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		6.7	6.6		7.5	2.9
LOS		A	A		A	A
Approach Delay		6.7	6.6		5.0	
Approach LOS		A	A		A	

Intersection Summary

Area Type: Other  
Cycle Length: 120  
Actuated Cycle Length: 27.2  
Natural Cycle: 50  
Control Type: Actuated-Uncoordinated  
Maximum v/c Ratio: 0.26  
Intersection Signal Delay: 6.3  
Intersection LOS: A  
Intersection Capacity Utilization 21.6%  
ICU Level of Service A  
Analysis Period (min) 15

Splits and Phases: 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp



# HCM 6th Signalized Intersection Summary 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

AM 2024  
03/13/2024


























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (veh/h)	0	306	290	0	85	103
Future Volume (veh/h)	0	306	290	0	85	103
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1723	1723
Adj Flow Rate, veh/h	0	333	315	0	92	112
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	1150	1150	0	476	423
Arrive On Green	0.00	0.32	0.32	0.00	0.29	0.29
Sat Flow, veh/h	0	3741	3741	0	1641	1460
Grp Volume(v), veh/h	0	333	315	0	92	112
Grp Sat Flow(s),veh/h/ln	0	1777	1777	0	1641	1460
Q Serve(g_s), s	0.0	1.4	1.4	0.0	0.9	1.2
Cycle Q Clear(g_c), s	0.0	1.4	1.4	0.0	0.9	1.2
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1150	1150	0	476	423
V/C Ratio(X)	0.00	0.29	0.27	0.00	0.19	0.26
Avail Cap(c_a), veh/h	0	10130	10130	0	4201	3738
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	5.2	5.2	0.0	5.5	5.7
Incr Delay (d2), s/veh	0.0	0.1	0.1	0.0	0.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	5.4	5.3	0.0	5.7	6.0
LnGrp LOS	A	A	A	A	A	A
Approach Vol, veh/h		333	315		204	
Approach Delay, s/veh		5.4	5.3		5.9	
Approach LOS		A	A		A	
Timer - Assigned Phs				4	6	8
Phs Duration (G+Y+Rc), s				10.7	10.0	10.7
Change Period (Y+Rc), s				6.0	6.0	6.0
Max Green Setting (Gmax), s				57.0	51.0	57.0
Max Q Clear Time (g_c+I1), s				3.4	3.2	3.4
Green Ext Time (p_c), s				1.4	0.8	1.3
Intersection Summary						
HCM 6th Ctrl Delay			5.5			
HCM 6th LOS			A			




Lanes, Volumes, Timings  
3: Blackstone St & Prosperity Ave

AM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	7	2	397	9	269	0	33	255	289	106	2
Future Volume (vph)	0	7	2	397	9	269	0	33	255	289	106	2
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	30		0	335		310	55		90	240		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor		1.00				0.98						
Frt		0.970				0.850			0.850		0.997	
Flt Protected				0.950	0.954					0.950		
Satd. Flow (prot)	1716	1798	0	1548	1688	1458	1716	1863	1458	3162	1857	0
Flt Permitted				0.950	0.736					0.950		
Satd. Flow (perm)	1716	1798	0	1548	1302	1425	1716	1863	1458	3162	1857	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				292			277		1	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		98			1229			643			727	
Travel Time (s)		1.2			15.2			8.0			9.0	
Confl. Peds. (#/hr)			5			5						
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	8	2	432	10	292	0	36	277	314	115	2
Shared Lane Traffic (%)				49%								
Lane Group Flow (vph)	0	10	0	220	222	292	0	36	277	314	117	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												

Lanes, Volumes, Timings  
3: Blackstone St & Prosperity Ave

AM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	24.1		10.0	24.1	24.1	10.0	24.0	24.0	10.0	24.0	
Total Split (s)	10.0	24.1		39.9	54.0	54.0	10.0	30.0	30.0	26.0	46.0	
Total Split (%)	8.3%	20.1%		33.3%	45.0%	45.0%	8.3%	25.0%	25.0%	21.7%	38.3%	
Maximum Green (s)	4.0	18.1		33.9	48.0	48.0	4.0	24.0	24.0	20.0	40.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		11.1			11.1	11.1		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		5			5	5		0	0		0	
Act Effct Green (s)		9.9		44.3	44.3	50.9		10.5	10.5	16.2	30.8	
Actuated g/C Ratio		0.11		0.49	0.49	0.57		0.12	0.12	0.18	0.34	
v/c Ratio		0.05		0.29	0.27	0.31		0.17	0.67	0.55	0.18	
Control Delay		33.0		19.9	19.4	2.5		38.2	13.4	37.8	20.7	
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay		33.0		19.9	19.4	2.5		38.2	13.4	37.8	20.7	
LOS		C		B	B	A		D	B	D	C	
Approach Delay		33.0			12.9			16.3			33.2	
Approach LOS		C			B			B			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 89.7

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 19.6









Intersection LOS: B

Intersection Capacity Utilization 41.2%

ICU Level of Service A

Analysis Period (min) 15
























Splits and Phases: 3: Blackstone St & Prosperity Ave

			
30 s	26 s	24.1 s	39.9 s
			
10 s	46 s	10 s	54 s

# HCM 6th Signalized Intersection Summary

























## 3: Blackstone St & Prosperity Ave

AM 2024  
03/13/2024

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	0	7	2	397	9	269	0	33	255	289	106	2	
Future Volume (veh/h)	0	7	2	397	9	269	0	33	255	289	106	2	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		1.00	1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach	No			No			No			No			
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723	
Adj Flow Rate, veh/h	0	8	2	439	0	292	0	36	277	314	115	2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2	
Cap, veh/h	3	162	41	700	0	559	3	472	368	538	888	15	
Arrive On Green	0.00	0.11	0.08	0.21	0.00	0.39	0.00	0.25	0.25	0.17	0.48	0.45	
Sat Flow, veh/h	1641	1432	358	3281	0	1435	1641	1870	1460	3183	1833	32	
Grp Volume(v), veh/h	0	0	10	439	0	292	0	36	277	314	0	117	
Grp Sat Flow(s),veh/h/ln	1641	0	1790	1641	0	1435	1641	1870	1460	1591	0	1865	
Q Serve(g_s), s	0.0	0.0	0.3	7.7	0.0	4.1	0.0	0.9	11.1	5.8	0.0	2.2	
Cycle Q Clear(g_c), s	0.0	0.0	0.3	7.7	0.0	4.1	0.0	0.9	11.1	5.8	0.0	2.2	
Prop In Lane	1.00		0.20	1.00		1.00	1.00		1.00	1.00		0.02	
Lane Grp Cap(c), veh/h	3	0	203	700	0	559	3	472	368	538	0	903	
V/C Ratio(X)	0.00	0.00	0.05	0.63	0.00	0.52	0.00	0.08	0.75	0.58	0.00	0.13	
Avail Cap(c_a), veh/h	155	0	567	1856	0	1130	155	766	598	1103	0	1234	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	
Uniform Delay (d), s/veh	0.0	0.0	25.3	22.7	0.0	3.1	0.0	18.1	21.9	24.3	0.0	9.0	
Incr Delay (d2), s/veh	0.0	0.0	0.1	0.9	0.0	0.8	0.0	0.1	3.1	1.0	0.0	0.1	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.1	2.6	0.0	2.1	0.0	0.3	3.4	1.9	0.0	0.7	
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh	0.0	0.0	25.4	23.6	0.0	3.8	0.0	18.2	25.0	25.3	0.0	9.1	
LnGrp LOS	A	A	C	C	A	A	A	B	C	C	A	A	
Approach Vol, veh/h	10			731				313				431	
Approach Delay, s/veh	25.4			15.7				24.2				20.9	
Approach LOS	C			B				C				C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8					
Phs Duration (G+Y+Rc), s	14.7	20.0	17.5	11.2	0.0	34.7	0.0	28.7					
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0					
Max Green Setting (Gmax), s	20.0	24.0	33.9	18.1	4.0	40.0	4.0	48.0					
Max Q Clear Time (g_c+I1), s	7.8	13.1	9.7	2.3	0.0	4.2	0.0	6.1					
Green Ext Time (p_c), s	1.0	0.9	1.8	0.0	0.0	0.4	0.0	1.3					
Intersection Summary													
HCM 6th Ctrl Delay			19.1										
HCM 6th LOS			B										
Notes													













Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

AM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	220	248	58	34	374	94	123	261	60	77	31	284
Future Volume (vph)	220	248	58	34	374	94	123	261	60	77	31	284
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	270		0	155		85	155		0	200		205
Storage Lanes	2		1	1		1	1		0	2		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	0.88
Ped Bike Factor			0.97			0.98		1.00				0.97
Frt			0.850			0.850		0.972				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	1630	5085	1458	1630	3429	0	3162	1863	2567
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1410	1630	5085	1433	1630	3429	0	3162	1863	2493
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			136		27				309
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1229			2636			362			5336	
Travel Time (s)		15.2			32.7			4.5			66.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	239	270	63	37	407	102	134	284	65	84	34	309
Shared Lane Traffic (%)												
Lane Group Flow (vph)	239	270	63	37	407	102	134	349	0	84	34	309
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

AM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	32.7	32.7	10.0	45.6	45.6	10.0	47.0		10.0	49.9	49.9
Total Split (s)	11.0	47.1	47.1	11.0	47.1	47.1	12.0	50.9		11.0	49.9	49.9
Total Split (%)	9.2%	39.3%	39.3%	9.2%	39.3%	39.3%	10.0%	42.4%		9.2%	41.6%	41.6%
Maximum Green (s)	5.0	41.1	41.1	5.0	41.1	41.1	6.0	44.9		5.0	43.9	43.9
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		19.7	19.7		32.6	32.6		34.0			36.9	36.9
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	7.8	24.3	24.3	7.8	15.9	15.9	8.9	19.7		7.8	15.6	15.6
Actuated g/C Ratio	0.12	0.37	0.37	0.12	0.24	0.24	0.13	0.30		0.12	0.24	0.24
v/c Ratio	0.64	0.21	0.10	0.19	0.33	0.23	0.61	0.33		0.23	0.08	0.38
Control Delay	41.3	17.8	0.3	37.9	21.5	3.5	46.3	18.6		35.5	20.1	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	41.3	17.8	0.3	37.9	21.5	3.5	46.3	18.6		35.5	20.1	4.2
LOS	D	B	A	D	C	A	D	B		D	C	A
Approach Delay		25.7			19.2			26.3			11.6	
Approach LOS		C			B			C			B	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 66

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 21.1









Intersection LOS: C

Intersection Capacity Utilization 47.7%

ICU Level of Service A

Analysis Period (min) 15
























Splits and Phases: 4: Hillman St & Prosperity Ave

 Ø1	 Ø2	 Ø3	 Ø4
11 s	50.9 s	11 s	47.1 s
 Ø5	 Ø6	 Ø8	 Ø7
12 s	49.9 s	47.1 s	11 s

# HCM 6th Signalized Intersection Summary

























## 4: Hillman St & Prosperity Ave

AM 2024  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	248	58	34	374	94	123	261	60	77	31	284
Future Volume (veh/h)	220	248	58	34	374	94	123	261	60	77	31	284
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	239	270	63	37	407	102	134	284	65	84	34	309
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	410	1014	403	112	1147	321	222	752	169	286	404	536
Arrive On Green	0.13	0.29	0.29	0.07	0.22	0.22	0.14	0.26	0.23	0.09	0.22	0.22
Sat Flow, veh/h	3183	3554	1414	1641	5106	1430	1641	2870	645	3183	1870	2480
Grp Volume(v), veh/h	239	270	63	37	407	102	134	174	175	84	34	309
Grp Sat Flow(s),veh/h/ln	1591	1777	1414	1641	1702	1430	1641	1777	1738	1591	1870	1240
Q Serve(g_s), s	3.8	3.2	1.8	1.2	3.6	1.9	4.2	4.3	4.5	1.3	0.8	3.4
Cycle Q Clear(g_c), s	3.8	3.2	1.8	1.2	3.6	1.9	4.2	4.3	4.5	1.3	0.8	3.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.37	1.00		1.00
Lane Grp Cap(c), veh/h	410	1014	403	112	1147	321	222	465	455	286	404	536
V/C Ratio(X)	0.58	0.27	0.16	0.33	0.35	0.32	0.60	0.37	0.38	0.29	0.08	0.58
Avail Cap(c_a), veh/h	410	2822	1123	212	4055	1136	242	1535	1502	410	1582	2097
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.3	15.0	14.5	24.1	17.7	6.3	22.1	16.4	16.8	23.1	17.0	5.8
Incr Delay (d2), s/veh	2.1	0.1	0.2	1.7	0.2	0.6	3.6	0.5	0.5	0.6	0.1	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	1.0	0.5	0.4	1.1	0.9	1.5	1.4	1.5	0.4	0.3	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.3	15.1	14.7	25.8	17.9	6.9	25.7	16.9	17.3	23.7	17.1	6.8
LnGrp LOS	C	B	B	C	B	A	C	B	B	C	B	A
Approach Vol, veh/h	572		546			483			427			
Approach Delay, s/veh	18.9		16.4			19.5			10.9			
Approach LOS	B		B			B			B			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.9	18.2	7.7	19.5	11.4	15.7	11.0	16.2				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	50	44.9	5.0	41.1	6.0	43.9	5.0	41.1				
Max Q Clear Time (g_c+I1)3s	6.5	6.5	3.2	5.2	6.2	5.4	5.8	5.6				
Green Ext Time (p_c), s	0.0	1.2	0.0	1.3	0.0	1.6	0.0	2.2				
Intersection Summary												
HCM 6th Ctrl Delay	16.7											
HCM 6th LOS	B											

Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave













AM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	217	60	37	269	43	118	173	66	53	162	95
Future Volume (vph)	31	217	60	37	269	43	118	173	66	53	162	95
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	235		115	230		100	100		100	160		100
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96			0.97			0.97			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	5085	1458	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1405	1630	5085	1410	1630	1863	1416	1630	1863	1433
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			191			136			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2636			2650			5387			713	
Travel Time (s)		32.7			32.9			66.8			8.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	236	65	40	292	47	128	188	72	58	176	103
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	236	65	40	292	47	128	188	72	58	176	103
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												



Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

AM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	27.0	27.0	10.0	34.1	34.1	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (s)	11.0	39.0	39.0	11.0	39.0	39.0	23.0	56.0	56.0	14.0	47.0	47.0
Total Split (%)	9.2%	32.5%	32.5%	9.2%	32.5%	32.5%	19.2%	46.7%	46.7%	11.7%	39.2%	39.2%
Maximum Green (s)	5.0	33.0	33.0	5.0	33.0	33.0	17.0	50.0	50.0	8.0	41.0	41.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		21.1	21.1		32.6	32.6		32.6	32.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	8.8	15.3	15.3	8.8	17.6	17.6	14.4	24.2	24.2	11.1	17.9	17.9
Actuated g/C Ratio	0.14	0.25	0.25	0.14	0.28	0.28	0.23	0.39	0.39	0.18	0.29	0.29
v/c Ratio	0.15	0.27	0.13	0.17	0.20	0.09	0.34	0.26	0.11	0.20	0.33	0.19
Control Delay	38.5	24.7	0.6	38.7	21.7	0.3	31.6	17.6	0.4	35.5	23.2	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.5	24.7	0.6	38.7	21.7	0.3	31.6	17.6	0.4	35.5	23.2	0.8
LOS	D	C	A	D	C	A	C	B	A	D	C	A
Approach Delay		21.4			20.8			19.1			18.5	
Approach LOS		C			C			B			B	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 62.2

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.34

Intersection Signal Delay: 19.9









Intersection LOS: B

Intersection Capacity Utilization 44.0%

ICU Level of Service A
























Analysis Period (min) 15

Splits and Phases: 5: Laspina St & Prosperity Ave

 Ø1	 Ø2	 Ø3	 Ø4
14 s	56 s	11 s	39 s
 Ø5	 Ø6	 Ø7	 Ø8
23 s	47 s	11 s	39 s
























# HCM 6th Signalized Intersection Summary 5: Laspina St & Prosperity Ave

AM 2024  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	217	60	37	269	43	118	173	66	53	162	95
Future Volume (veh/h)	31	217	60	37	269	43	118	173	66	53	162	95
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No				No			
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	34	236	65	40	292	47	128	188	72	58	176	103
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	122	689	273	129	1011	279	233	536	406	147	438	335
Arrive On Green	0.07	0.19	0.19	0.08	0.20	0.20	0.14	0.29	0.29	0.09	0.23	0.23
Sat Flow, veh/h	1641	3554	1407	1641	5106	1407	1641	1870	1415	1641	1870	1431
Grp Volume(v), veh/h	34	236	65	40	292	47	128	188	72	58	176	103
Grp Sat Flow(s),veh/h/ln	1641	1777	1407	1641	1702	1407	1641	1870	1415	1641	1870	1431
Q Serve(g_s), s	0.9	2.6	1.8	1.0	2.2	1.3	3.3	3.6	1.7	1.5	3.6	2.7
Cycle Q Clear(g_c), s	0.9	2.6	1.8	1.0	2.2	1.3	3.3	3.6	1.7	1.5	3.6	2.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	122	689	273	129	1011	279	233	536	406	147	438	335
V/C Ratio(X)	0.28	0.34	0.24	0.31	0.29	0.17	0.55	0.35	0.18	0.39	0.40	0.31
Avail Cap(c_a), veh/h	252	2730	1081	252	3922	1081	684	2134	1614	360	1765	1350
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.9	15.9	15.5	19.8	15.5	15.2	18.2	12.9	12.2	19.6	14.7	14.4
Incr Delay (d2), s/veh	1.2	0.3	0.4	1.3	0.2	0.3	2.0	0.4	0.2	1.7	0.6	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.8	0.5	0.4	0.6	0.3	1.1	1.1	0.4	0.5	1.2	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.1	16.2	16.0	21.2	15.7	15.4	20.2	13.3	12.4	21.3	15.3	14.9
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h	335		379				388		337			
Approach Delay, s/veh	16.6		16.2				15.4		16.2			
Approach LOS	B		B				B		B			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.1	17.1	7.6	12.8	10.5	14.7	7.4	13.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	30.0	50.0	5.0	33.0	17.0	41.0	5.0	33.0				
Max Q Clear Time (g_c+I1),s	3.5	5.6	3.0	4.6	5.3	5.6	2.9	4.2				
Green Ext Time (p_c), s	0.0	0.9	0.0	1.2	0.3	1.0	0.0	1.4				
Intersection Summary												
HCM 6th Ctrl Delay	16.1											
HCM 6th LOS	B											













Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

AM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	162	150	91	112	54	195	628	54	26	389	91
Future Volume (vph)	137	162	150	91	112	54	195	628	54	26	389	91
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98		0.99				0.97			0.98
Frt			0.850		0.951				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1760	0	1630	3539	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1432	1630	1760	0	1630	3539	1409	1630	3539	1425
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191		20				136			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2667			5285	
Travel Time (s)		32.9			36.1			33.1			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	149	176	163	99	122	59	212	683	59	28	423	99
Shared Lane Traffic (%)												
Lane Group Flow (vph)	149	176	163	99	181	0	212	683	59	28	423	99
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

AM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	23.0	43.0	43.0	18.0	38.0		29.0	49.0	49.0	10.0	30.0	30.0
Total Split (%)	19.2%	35.8%	35.8%	15.0%	31.7%		24.2%	40.8%	40.8%	8.3%	25.0%	25.0%
Maximum Green (s)	17.0	37.0	37.0	12.0	32.0		23.0	43.0	43.0	4.0	24.0	24.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	15.2	24.1	24.1	12.2	17.5		18.6	35.9	35.9	6.3	18.4	18.4
Actuated g/C Ratio	0.18	0.28	0.28	0.14	0.20		0.21	0.41	0.41	0.07	0.21	0.21
v/c Ratio	0.52	0.34	0.30	0.43	0.49		0.61	0.47	0.09	0.24	0.56	0.22
Control Delay	43.9	30.6	4.2	46.3	33.5		42.0	22.1	0.3	51.8	35.9	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.9	30.6	4.2	46.3	33.5		42.0	22.1	0.3	51.8	35.9	1.1
LOS	D	C	A	D	C		D	C	A	D	D	A
Approach Delay		25.8			38.1			25.2			30.5	
Approach LOS		C			D			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 86.6

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 28.2









Intersection LOS: C

Intersection Capacity Utilization 56.3%

ICU Level of Service B
























Analysis Period (min) 15

Splits and Phases: 6: Mooney Blvd & Prosperity Ave

 Ø1	 Ø2	 Ø3	 Ø4
10 s	49 s	18 s	43 s
 Ø5	 Ø6	 Ø7	 Ø8
29 s	30 s	23 s	38 s

HCM 6th Signalized Intersection Summary  
6: Mooney Blvd & Prosperity Ave




AM 2024  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	137	162	150	91	112	54	195	628	54	26	389	91
Future Volume (veh/h)	137	162	150	91	112	54	195	628	54	26	389	91
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	149	176	163	99	122	59	212	683	59	28	423	99
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	238	432	330	176	227	110	311	1231	491	94	759	305
Arrive On Green	0.15	0.23	0.23	0.11	0.19	0.16	0.19	0.35	0.35	0.06	0.21	0.21
Sat Flow, veh/h	1641	1870	1430	1641	1180	571	1641	3554	1417	1641	3554	1429
Grp Volume(v), veh/h	149	176	163	99	0	181	212	683	59	28	423	99
Grp Sat Flow(s),veh/h/ln	1641	1870	1430	1641	0	1751	1641	1777	1417	1641	1777	1429
Q Serve(g_s), s	5.3	4.9	6.1	3.5	0.0	5.8	7.4	9.6	1.8	1.0	6.6	3.6
Cycle Q Clear(g_c), s	5.3	4.9	6.1	3.5	0.0	5.8	7.4	9.6	1.8	1.0	6.6	3.6
Prop In Lane	1.00		1.00	1.00		0.33	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	238	432	330	176	0	337	311	1231	491	94	759	305
V/C Ratio(X)	0.63	0.41	0.49	0.56	0.00	0.54	0.68	0.55	0.12	0.30	0.56	0.32
Avail Cap(c_a), veh/h	504	1179	902	371	0	963	663	2586	1031	159	1494	601
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.8	20.2	20.7	26.2	0.0	22.8	23.3	16.4	13.8	28.0	21.7	20.5
Incr Delay (d2), s/veh	2.7	0.6	1.1	2.8	0.0	1.3	2.6	0.4	0.1	1.8	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	1.9	1.8	1.3	0.0	2.1	2.6	3.1	0.5	0.4	2.3	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.5	20.8	21.8	29.0	0.0	24.1	25.9	16.7	13.9	29.7	22.3	21.2
LnGrp LOS	C	C	C	C	A	C	C	B	B	C	C	C
Approach Vol, veh/h		488			280			954			550	
Approach Delay, s/veh		23.2			25.9			18.6			22.5	
Approach LOS		C			C			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.5	25.4	10.6	18.3	15.7	17.2	13.0	15.9				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	43.0	43.0	12.0	37.0	23.0	24.0	17.0	32.0				
Max Q Clear Time (g_c+I1),s	11.6	11.6	5.5	8.1	9.4	8.6	7.3	7.8				
Green Ext Time (p_c), s	0.0	3.3	0.1	1.2	0.6	1.9	0.3	0.6				
Intersection Summary												
HCM 6th Ctrl Delay			21.4									
HCM 6th LOS			C									

Lanes, Volumes, Timings  
7: Morrison St & Prosperity Ave

AM 2024  
03/13/2024

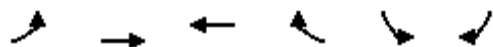
	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↲	
Traffic Volume (vph)	229	4	24	230	22	41
Future Volume (vph)	229	4	24	230	22	41
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.998				0.912	
Flt Protected				0.995	0.983	
Satd. Flow (prot)	1859	0	0	1853	1538	0
Flt Permitted				0.995	0.983	
Satd. Flow (perm)	1859	0	0	1853	1538	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	249	4	26	250	24	45
Shared Lane Traffic (%)						
Lane Group Flow (vph)	253	0	0	276	69	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization 39.8% ICU Level of Service A						
Analysis Period (min) 15						




Intersection						
Int Delay, s/veh	1.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	229	4	24	230	22	41
Future Vol, veh/h	229	4	24	230	22	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None		- None		- None	
Storage Length	-	-	-	-	0	-
Veh in Median Storage	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	249	4	26	250	24	45
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	253	0	553	251
Stage 1	-	-	-	-	251	-
Stage 2	-	-	-	-	302	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1312	-	494	788
Stage 1	-	-	-	-	791	-
Stage 2	-	-	-	-	750	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1312	-	483	788
Mov Cap-2 Maneuver	-	-	-	-	483	-
Stage 1	-	-	-	-	791	-
Stage 2	-	-	-	-	733	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0.7		11.2		
HCM LOS				B		
Minor Lane/Major Mvm	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	646	-	-	1312	-	
HCM Lane V/C Ratio	0.106	-	-	0.02	-	
HCM Control Delay (s)	11.2	-	-	7.8	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-	






Lanes, Volumes, Timings  
8: Prosperity Ave & Oakmore Rd

AM 2024  
03/13/2024














Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	99	166	158	29	17	90
Future Volume (vph)	99	166	158	29	17	90
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.979		0.886	
Flt Protected		0.982			0.992	
Satd. Flow (prot)	0	1829	1824	0	1508	0
Flt Permitted		0.982			0.992	
Satd. Flow (perm)	0	1829	1824	0	1508	0
Link Speed (mph)		55	55		55	
Link Distance (ft)		2108	5202		1848	
Travel Time (s)		26.1	64.5		22.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	180	172	32	18	98
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	288	204	0	116	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	41.3%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	3.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	99	166	158	29	17	90
Future Vol, veh/h	99	166	158	29	17	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None		- None		- None	
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0		0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	108	180	172	32	18	98
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	204	0	-	0	584	188
Stage 1	-	-	-	-	188	-
Stage 2	-	-	-	-	396	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1368	-	-	-	474	854
Stage 1	-	-	-	-	844	-
Stage 2	-	-	-	-	680	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1368	-	-	-	432	854
Mov Cap-2 Maneuver	-	-	-	-	432	-
Stage 1	-	-	-	-	770	-
Stage 2	-	-	-	-	680	-
Approach	EB	WB		SB		
HCM Control Delay, s	2.9	0		10.8		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1368	-	-	-	-	739
HCM Lane V/C Ratio	0.079	-	-	-	-	0.157
HCM Control Delay (s)	7.9	0	-	-	-	10.8
HCM Lane LOS	A	A	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	-	0.6

Lanes, Volumes, Timings  
9: Mooney Blvd & Seminole Ave
























AM 2024  
03/13/2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	203	775	16	43	562
Future Volume (vph)	0	203	775	16	43	562
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	0	540		0	80	
Storage Lanes	0	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.865		0.850		
Flt Protected					0.950	
Satd. Flow (prot)	0	1484	3539	1458	1630	3539
Flt Permitted					0.950	
Satd. Flow (perm)	0	1484	3539	1458	1630	3539
Link Speed (mph)	55		55			55
Link Distance (ft)	1218		2623			2667
Travel Time (s)	15.1		32.5			33.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	221	842	17	47	611
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	221	842	17	47	611
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	41.7%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	2.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗	↗	↗	↗↗
Traffic Vol, veh/h	0	203	775	16	43	562
Future Vol, veh/h	0	203	775	16	43	562
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	- None		- None		- None	
Storage Length	-	-	-	0	80	-
Veh in Median Storage	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	221	842	17	47	611
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	421	0	0	859	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	581	-	-	778	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	581	-	-	778	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	4.9	0		0.7		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	581	778	-	
HCM Lane V/C Ratio	-	-	0.38	0.06	-	
HCM Control Delay (s)	-	-	14.9	9.9	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	1.8	0.2	-	













Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

AM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	361	63	39	547	38	122	216	60	56	182	67
Future Volume (vph)	47	361	63	39	547	38	122	216	60	56	182	67
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		135	110		0	90		90	80		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97		1.00				0.98			0.98
Frt			0.850		0.990				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3496	0	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1408	1630	3496	0	1630	1863	1432	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191		6				136			136
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		841			2671			726			5387	
Travel Time (s)		10.4			33.1			9.0			66.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	392	68	42	595	41	133	235	65	61	198	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	392	68	42	636	0	133	235	65	61	198	73
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

AM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.9	29.9	10.0	28.4		10.0	39.9	39.9	10.0	44.1	44.1
Total Split (s)	13.0	42.0	42.0	11.0	40.0		22.0	53.0	53.0	14.0	45.0	45.0
Total Split (%)	10.8%	35.0%	35.0%	9.2%	33.3%		18.3%	44.2%	44.2%	11.7%	37.5%	37.5%
Maximum Green (s)	7.0	36.0	36.0	5.0	34.0		16.0	47.0	47.0	8.0	39.0	39.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		16.9	16.9		15.4			26.9	26.9		31.1	31.1
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	10.2	20.8	20.8	12.7	24.0		15.2	20.3	20.3	13.9	19.7	19.7
Actuated g/C Ratio	0.14	0.28	0.28	0.17	0.33		0.21	0.28	0.28	0.19	0.27	0.27
v/c Ratio	0.23	0.39	0.13	0.15	0.56		0.40	0.46	0.13	0.20	0.40	0.15
Control Delay	43.2	29.2	0.5	36.0	26.7		38.4	30.2	0.6	35.1	29.2	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.2	29.2	0.5	36.0	26.7		38.4	30.2	0.6	35.1	29.2	0.7
LOS	D	C	A	D	C		D	C	A	D	C	A
Approach Delay		26.8			27.2			28.3			24.0	
Approach LOS		C			C			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 73.7

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 26.8









Intersection LOS: C

Intersection Capacity Utilization 53.7%

ICU Level of Service A

























Analysis Period (min) 15

Splits and Phases: 10: Laspina St & Tulare Ave

 Ø2	 Ø1	 Ø4	 Ø3
53 s	14 s	42 s	11 s
 Ø5	 Ø6	 Ø8	 Ø7
22 s	45 s	40 s	13 s

HCM 6th Signalized Intersection Summary  
10: Laspina St & Tulare Ave

























AM 2024  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	361	63	39	547	38	122	216	60	56	182	67
Future Volume (veh/h)	47	361	63	39	547	38	122	216	60	56	182	67
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	51	392	68	42	595	41	133	235	65	61	198	73
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	123	787	312	219	942	65	225	438	335	204	414	317
Arrive On Green	0.07	0.22	0.22	0.13	0.28	0.24	0.14	0.23	0.23	0.12	0.22	0.22
Sat Flow, veh/h	1641	3554	1410	1641	3365	231	1641	1870	1430	1641	1870	1430
Grp Volume(v), veh/h	51	392	68	42	314	322	133	235	65	61	198	73
Grp Sat Flow(s),veh/h/ln	1641	1777	1410	1641	1777	1819	1641	1870	1430	1641	1870	1430
Q Serve(g_s), s	1.7	5.4	1.2	1.3	8.6	8.7	4.3	6.1	2.0	1.9	5.2	1.5
Cycle Q Clear(g_c), s	1.7	5.4	1.2	1.3	8.6	8.7	4.3	6.1	2.0	1.9	5.2	1.5
Prop In Lane	1.00		1.00	1.00		0.13	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	123	787	312	219	498	509	225	438	335	204	414	317
V/C Ratio(X)	0.41	0.50	0.22	0.19	0.63	0.63	0.59	0.54	0.19	0.30	0.48	0.23
Avail Cap(c_a), veh/h	264	2416	959	219	1145	1172	528	1640	1254	294	1372	1049
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.7	19.0	5.3	21.5	17.6	17.7	22.6	18.7	17.2	22.2	18.9	7.0
Incr Delay (d2), s/veh	2.2	0.5	0.3	0.4	1.3	1.3	2.5	1.0	0.3	0.8	0.9	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.8	0.6	0.4	2.9	3.0	1.5	2.2	0.6	0.7	1.9	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.9	19.5	5.7	22.0	18.9	19.0	25.1	19.8	17.4	23.0	19.8	7.4
LnGrp LOS	C	B	A	C	B	B	C	B	B	C	B	A
Approach Vol, veh/h	511		678			433			332			
Approach Delay, s/veh	18.4		19.2			21.0			17.7			
Approach LOS	B		B			C			B			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.0	17.1	11.5	16.4	11.7	16.4	8.2	19.6				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	30.0	47.0	5.0	36.0	16.0	39.0	7.0	34.0				
Max Q Clear Time (g_c+1),s	3.9	8.1	3.3	7.4	6.3	7.2	3.7	10.7				
Green Ext Time (p_c), s	0.0	1.1	0.0	1.9	0.2	0.9	0.0	2.2				
Intersection Summary												
HCM 6th Ctrl Delay	19.1											
HCM 6th LOS	B											















Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

AM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	308	77	67	388	189	129	527	59	136	290	138
Future Volume (vph)	184	308	77	67	388	189	129	527	59	136	290	138
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	420		185	125		125	80		0	475		475
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98		1.00				0.98
Frt			0.850			0.850		0.985				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3539	1458	1630	3475	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1412	1630	3539	1430	1630	3475	0	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			205		10				191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2671			2887			1662			2623	
Travel Time (s)		33.1			35.8			20.6			32.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	200	335	84	73	422	205	140	573	64	148	315	150
Shared Lane Traffic (%)												
Lane Group Flow (vph)	200	335	84	73	422	205	140	637	0	148	315	150
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

AM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	37.0	37.0	10.0	37.0	37.0	10.0	39.9		10.0	42.7	42.7
Total Split (s)	22.0	44.0	44.0	15.0	37.0	37.0	17.0	43.0		18.0	44.0	44.0
Total Split (%)	18.3%	36.7%	36.7%	12.5%	30.8%	30.8%	14.2%	35.8%		15.0%	36.7%	36.7%
Maximum Green (s)	16.0	38.0	38.0	9.0	31.0	31.0	11.0	37.0		12.0	38.0	38.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		24.0	24.0		24.0	24.0		26.9			29.7	29.7
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	17.1	23.0	23.0	17.2	19.9	19.9	12.9	24.6		14.0	25.7	25.7
Actuated g/C Ratio	0.19	0.25	0.25	0.19	0.22	0.22	0.14	0.27		0.15	0.28	0.28
v/c Ratio	0.66	0.38	0.17	0.24	0.55	0.44	0.61	0.68		0.60	0.61	0.28
Control Delay	49.7	33.3	0.7	37.7	35.7	7.8	54.0	34.5		51.2	35.1	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	49.7	33.3	0.7	37.7	35.7	7.8	54.0	34.5		51.2	35.1	3.0
LOS	D	C	A	D	D	A	D	C		D	D	A
Approach Delay		34.2			27.7			38.1			31.2	
Approach LOS		C			C			D			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 92.1

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 32.9

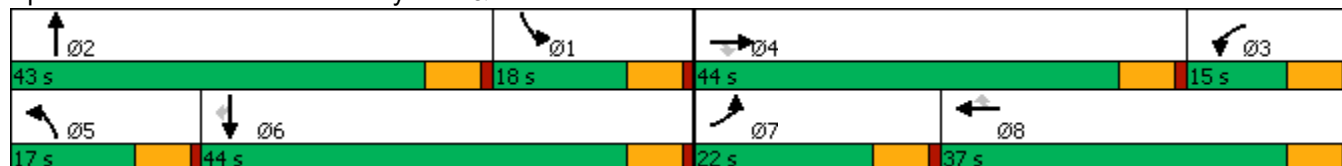
Intersection LOS: C

Intersection Capacity Utilization 63.9%

ICU Level of Service B

























Analysis Period (min) 15

Splits and Phases: 11: Mooney Blvd & Tulare Ave
























HCM 6th Signalized Intersection Summary  
11: Mooney Blvd & Tulare Ave













AM 2024  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	184	308	77	67	388	189	129	527	59	136	290	138
Future Volume (veh/h)	184	308	77	67	388	189	129	527	59	136	290	138
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	200	335	84	73	422	205	140	573	64	148	315	150
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	279	668	264	325	769	310	213	856	95	222	509	390
Arrive On Green	0.17	0.19	0.19	0.20	0.22	0.22	0.13	0.27	0.24	0.14	0.27	0.27
Sat Flow, veh/h	1641	3554	1406	1641	3554	1430	1641	3211	358	1641	1870	1432
Grp Volume(v), veh/h	200	335	84	73	422	205	140	316	321	148	315	150
Grp Sat Flow(s),veh/h/ln	1641	1777	1406	1641	1777	1430	1641	1777	1791	1641	1870	1432
Q Serve(g_s), s	8.7	6.4	2.5	2.8	8.0	6.2	6.1	12.0	12.1	6.5	11.1	6.4
Cycle Q Clear(g_c), s	8.7	6.4	2.5	2.8	8.0	6.2	6.1	12.0	12.1	6.5	11.1	6.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	279	668	264	325	769	310	213	474	478	222	509	390
V/C Ratio(X)	0.72	0.50	0.32	0.22	0.55	0.66	0.66	0.67	0.67	0.67	0.62	0.38
Avail Cap(c_a), veh/h	391	1881	744	325	1552	624	282	917	925	304	990	758
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.7	27.5	11.0	25.4	26.3	10.6	31.3	24.7	24.9	31.1	24.1	22.3
Incr Delay (d2), s/veh	3.7	0.6	0.7	0.3	0.6	2.4	3.4	1.6	1.6	3.4	1.2	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	2.5	1.2	1.0	3.0	3.0	2.4	4.6	4.7	2.5	4.4	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.4	28.1	11.7	25.8	26.9	13.0	34.7	26.4	26.6	34.5	25.3	23.0
LnGrp LOS	C	C	B	C	C	B	C	C	C	C	C	C
Approach Vol, veh/h		619			700			777			613	
Approach Delay, s/veh		27.6			22.7			28.0			26.9	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.2	24.2	19.0	18.2	13.8	24.6	16.8	20.4				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	20.0	37.0	9.0	38.0	11.0	38.0	16.0	31.0				
Max Q Clear Time (g_c+I1), s	8.5	14.1	4.8	8.4	8.1	13.1	10.7	10.0				
Green Ext Time (p_c), s	0.1	2.3	0.1	1.7	0.1	1.7	0.3	2.5				
Intersection Summary												
HCM 6th Ctrl Delay			26.3									
HCM 6th LOS			C									

Lanes, Volumes, Timings  
12: Morrison St & Tulare Ave























AM 2024  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	431	61	25	465	0	76	42	80	0	15	9
Future Volume (vph)	18	431	61	25	465	0	76	42	80	0	15	9
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850					0.902			0.948	
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1630	1863	1458	1630	1863	0	1630	1680	0	0	1766	0
Flt Permitted	0.950			0.950			0.950					
Satd. Flow (perm)	1630	1863	1458	1630	1863	0	1630	1680	0	0	1766	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	468	66	27	505	0	83	46	87	0	16	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	20	468	66	27	505	0	83	133	0	0	26	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	42.4%						ICU Level of Service A					
Analysis Period (min)	15											

Intersection												
Int Delay, s/veh	5.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	18	431	61	25	465	0	76	42	80	0	15	9
Future Vol, veh/h	18	431	61	25	465	0	76	42	80	0	15	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	- None		-	- None		-	- None		-	- None	
Storage Length	305	-	425	300	-	-	125	-	-	-	-	-
Veh in Median Storage, #	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	468	66	27	505	0	83	46	87	0	16	10
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	505	0	0	534	0	0	1080	1067	468	1167	1133	505
Stage 1	-	-	-	-	-	-	508	508	-	559	559	-
Stage 2	-	-	-	-	-	-	572	559	-	608	574	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1060	-	-	1034	-	-	196	222	595	171	203	567
Stage 1	-	-	-	-	-	-	547	539	-	513	511	-
Stage 2	-	-	-	-	-	-	505	511	-	483	503	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1060	-	-	1034	-	-	174	212	595	118	194	567
Mov Cap-2 Maneuver	-	-	-	-	-	-	174	212	-	118	194	-
Stage 1	-	-	-	-	-	-	537	529	-	503	498	-
Stage 2	-	-	-	-	-	-	468	498	-	370	493	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.4			29.1			20.5		
HCM LOS							D			C		
Minor Lane/Major Mvm	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	174	367	1060	-	-	1034	-	-	258			
HCM Lane V/C Ratio	0.475	0.361	0.018	-	-	0.026	-	-	0.101			
HCM Control Delay (s)	43.1	20.3	8.5	-	-	8.6	-	-	20.5			
HCM Lane LOS	E	C	A	-	-	A	-	-	C			
HCM 95th %tile Q(veh)	2.3	1.6	0.1	-	-	0.1	-	-	0.3			













Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

AM 2024+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	154	119	20	104	2	136	682	22	8	408	68
Future Volume (vph)	120	154	119	20	104	2	136	682	22	8	408	68
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.997			0.995			0.979	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1857	0	1630	3518	0	1630	3450	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1432	1630	1857	0	1630	3518	0	1630	3450	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			147		1			4			21	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	167	129	22	113	2	148	741	24	9	443	74
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	167	129	22	115	0	148	765	0	9	517	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

AM 2024+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	11.0	39.1	39.1	9.5	37.6		12.0	41.9		9.5	39.4	
Total Split (%)	11.0%	39.1%	39.1%	9.5%	37.6%		12.0%	41.9%		9.5%	39.4%	
Maximum Green (s)	5.5	33.6	33.6	4.0	32.1		6.5	36.4		4.0	33.9	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effct Green (s)	8.1	20.9	20.9	6.0	13.3		8.8	29.4		6.0	17.4	
Actuated g/C Ratio	0.13	0.34	0.34	0.10	0.22		0.14	0.48		0.10	0.28	
v/c Ratio	0.61	0.26	0.22	0.14	0.29		0.64	0.45		0.06	0.52	
Control Delay	46.5	17.5	4.0	36.2	23.5		46.3	14.3		35.6	20.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	46.5	17.5	4.0	36.2	23.5		46.3	14.3		35.6	20.5	
LOS	D	B	A	D	C		D	B		D	C	
Approach Delay		22.3			25.5			19.5			20.8	
Approach LOS		C			C			B			C	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 61.4

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 20.8









Intersection LOS: C

Intersection Capacity Utilization 53.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Mooney Blvd & Cartmill Ave























 Ø1	 Ø2	 Ø3	 Ø4
9.5 s	41.9 s	9.5 s	39.1 s
 Ø5	 Ø6	 Ø7	 Ø8
12 s	39.4 s	11 s	37.6 s



# HCM 6th Signalized Intersection Summary

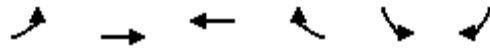
## 1: Mooney Blvd & Cartmill Ave

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	154	119	20	104	2	136	682	22	8	408	68
Future Volume (veh/h)	120	154	119	20	104	2	136	682	22	8	408	68
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	130	167	129	22	113	2	148	741	24	9	443	74
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	206	448	343	82	301	5	227	1273	41	63	797	132
Arrive On Green	0.13	0.24	0.24	0.05	0.16	0.14	0.14	0.36	0.33	0.04	0.26	0.23
Sat Flow, veh/h	1641	1870	1431	1641	1831	32	1641	3509	114	1641	3033	503
Grp Volume(v), veh/h	130	167	129	22	0	115	148	375	390	9	258	259
Grp Sat Flow(s),veh/h/ln	1641	1870	1431	1641	0	1864	1641	1777	1846	1641	1777	1759
Q Serve(g_s), s	3.9	3.9	3.9	0.7	0.0	2.8	4.4	8.8	8.8	0.3	6.5	6.6
Cycle Q Clear(g_c), s	3.9	3.9	3.9	0.7	0.0	2.8	4.4	8.8	8.8	0.3	6.5	6.6
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.06	1.00		0.29
Lane Grp Cap(c), veh/h	206	448	343	82	0	306	227	645	670	63	467	462
V/C Ratio(X)	0.63	0.37	0.38	0.27	0.00	0.38	0.65	0.58	0.58	0.14	0.55	0.56
Avail Cap(c_a), veh/h	222	1270	971	174	0	1211	254	1302	1353	174	1216	1204
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.5	16.4	16.4	23.7	0.0	19.3	21.1	13.3	13.4	24.0	16.4	16.7
Incr Delay (d2), s/veh	5.1	0.5	0.7	1.7	0.0	0.8	5.0	0.8	0.8	1.0	1.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	1.3	1.0	0.3	0.0	1.0	1.7	2.6	2.7	0.1	2.1	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.6	16.9	17.1	25.4	0.0	20.0	26.1	14.1	14.2	25.1	17.5	17.7
LnGrp LOS	C	B	B	C	A	C	C	B	B	C	B	B
Approach Vol, veh/h		426			137			913			526	
Approach Delay, s/veh		19.9			20.9			16.1			17.7	
Approach LOS		B			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.0	22.8	6.6	16.4	11.2	17.6	10.5	12.5				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax),s	40	36.4	4.0	33.6	6.5	33.9	5.5	32.1				
Max Q Clear Time (g_c+I1),s	10.8	10.8	2.7	5.9	6.4	8.6	5.9	4.8				
Green Ext Time (p_c), s	0.0	2.8	0.0	1.0	0.0	1.8	0.0	0.3				
Intersection Summary												
HCM 6th Ctrl Delay			17.7									
HCM 6th LOS			B									

Lanes, Volumes, Timings  
2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

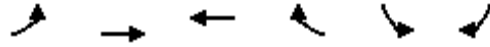
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Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (vph)	0	312	340	0	99	103
Future Volume (vph)	0	312	340	0	99	103
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Fr <sub>t</sub>						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	1630	1458
Flt Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	1630	1458
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						112
Link Speed (mph)		55	55		55	
Link Distance (ft)		349	727		300	
Travel Time (s)		4.3	9.0		3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	339	370	0	108	112
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	339	370	0	108	112
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors		1	1		1	1
Detector Template						
Leading Detector (ft)		50	50		50	50
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		50	50		50	50
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		4.0	4.0		4.0	4.0
Minimum Split (s)		24.0	24.0		24.0	24.0
Total Split (s)		45.0	45.0		45.0	45.0
Total Split (%)		50.0%	50.0%		50.0%	50.0%
Maximum Green (s)		39.0	39.0		39.0	39.0
Yellow Time (s)		5.0	5.0		5.0	5.0

Lanes, Volumes, Timings  
2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

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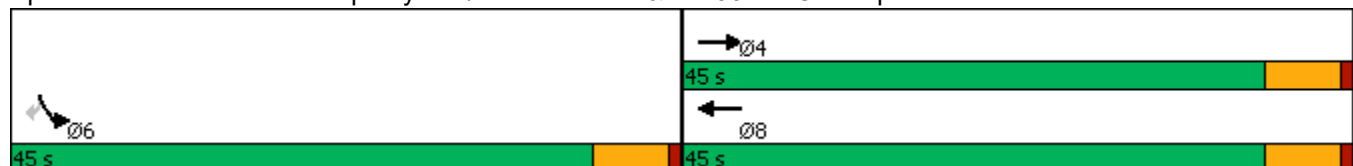


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		None	None		Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		10.3	10.3		9.4	9.4
Actuated g/C Ratio		0.37	0.37		0.34	0.34
v/c Ratio		0.26	0.28		0.20	0.20
Control Delay		6.8	6.9		7.8	3.0
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		6.8	6.9		7.8	3.0
LOS		A	A		A	A
Approach Delay		6.8	6.9		5.3	
Approach LOS		A	A		A	

Intersection Summary

Area Type: Other  
Cycle Length: 90  
Actuated Cycle Length: 27.8  
Natural Cycle: 50  
Control Type: Actuated-Uncoordinated  
Maximum v/c Ratio: 0.28  
Intersection Signal Delay: 6.5  
Intersection LOS: A  
Intersection Capacity Utilization 23.0%  
ICU Level of Service A  
Analysis Period (min) 15

Splits and Phases: 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp



# HCM 6th Signalized Intersection Summary 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp


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03/13/2024



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (veh/h)	0	312	340	0	99	103
Future Volume (veh/h)	0	312	340	0	99	103
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1723	1723
Adj Flow Rate, veh/h	0	339	370	0	108	112
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	1188	1188	0	470	418
Arrive On Green	0.00	0.33	0.33	0.00	0.29	0.29
Sat Flow, veh/h	0	3741	3741	0	1641	1460
Grp Volume(v), veh/h	0	339	370	0	108	112
Grp Sat Flow(s),veh/h/ln	0	1777	1777	0	1641	1460
Q Serve(g_s), s	0.0	1.5	1.6	0.0	1.1	1.3
Cycle Q Clear(g_c), s	0.0	1.5	1.6	0.0	1.1	1.3
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1188	1188	0	470	418
V/C Ratio(X)	0.00	0.29	0.31	0.00	0.23	0.27
Avail Cap(c_a), veh/h	0	6901	6901	0	3186	2835
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	5.2	5.2	0.0	5.8	5.8
Incr Delay (d2), s/veh	0.0	0.1	0.1	0.0	0.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	5.3	5.4	0.0	6.0	6.2
LnGrp LOS	A	A	A	A	A	A
Approach Vol, veh/h		339	370		220	
Approach Delay, s/veh		5.3	5.4		6.1	
Approach LOS		A	A		A	
Timer - Assigned Phs				4	6	8
Phs Duration (G+Y+Rc), s				11.1	10.1	11.1
Change Period (Y+Rc), s				6.0	6.0	6.0
Max Green Setting (Gmax), s				39.0	39.0	39.0
Max Q Clear Time (g_c+I1), s				3.5	3.3	3.6
Green Ext Time (p_c), s				1.4	0.8	1.5
Intersection Summary						
HCM 6th Ctrl Delay			5.5			
HCM 6th LOS			A			

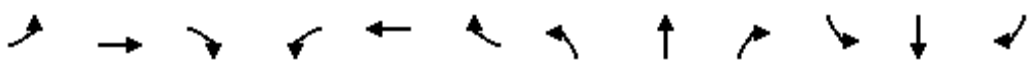
Lanes, Volumes, Timings  
3: Blackstone St & Prosperity Ave

AM 2024+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	7	2	420	9	310	0	33	267	304	106	2
Future Volume (vph)	0	7	2	420	9	310	0	33	267	304	106	2
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	30		0	335		310	55		90	240		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor		1.00				0.98						
Frt		0.970				0.850			0.850		0.997	
Flt Protected				0.950	0.954					0.950		
Satd. Flow (prot)	1716	1798	0	1548	1688	1458	1716	1863	1458	3162	1857	0
Flt Permitted				0.950	0.728					0.950		
Satd. Flow (perm)	1716	1798	0	1548	1288	1425	1716	1863	1458	3162	1857	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				337			290		1	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		98			1229			643			727	
Travel Time (s)		1.2			15.2			8.0			9.0	
Confl. Peds. (#/hr)			5			5						
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	8	2	457	10	337	0	36	290	330	115	2
Shared Lane Traffic (%)				49%								
Lane Group Flow (vph)	0	10	0	233	234	337	0	36	290	330	117	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												

Lanes, Volumes, Timings  
3: Blackstone St & Prosperity Ave

AM 2024+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	24.1		10.0	24.1	24.1	10.0	24.0	24.0	10.0	24.0	
Total Split (s)	10.0	24.1		39.9	54.0	54.0	10.0	30.0	30.0	26.0	46.0	
Total Split (%)	8.3%	20.1%		33.3%	45.0%	45.0%	8.3%	25.0%	25.0%	21.7%	38.3%	
Maximum Green (s)	4.0	18.1		33.9	48.0	48.0	4.0	24.0	24.0	20.0	40.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		11.1			11.1	11.1		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		5			5	5		0	0		0	
Act Effct Green (s)		9.9		44.6	44.6	51.2		10.6	10.6	16.6	31.3	
Actuated g/C Ratio		0.11		0.49	0.49	0.57		0.12	0.12	0.18	0.35	
v/c Ratio		0.05		0.31	0.28	0.35		0.16	0.68	0.57	0.18	
Control Delay		33.7		20.3	19.7	2.6		38.5	13.5	38.4	20.8	
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay		33.7		20.3	19.7	2.6		38.5	13.5	38.4	20.8	
LOS		C		C	B	A		D	B	D	C	
Approach Delay		33.7			12.7			16.3			33.8	
Approach LOS		C			B			B			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 90.5

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 19.5









Intersection LOS: B

Intersection Capacity Utilization 42.5%

ICU Level of Service A

























Analysis Period (min) 15

Splits and Phases: 3: Blackstone St & Prosperity Ave

 Ø2	 Ø1	 Ø4	 Ø3
30 s	26 s	24.1 s	39.9 s
 Ø5	 Ø6	 Ø7	 Ø8
10 s	46 s	10 s	54 s

# HCM 6th Signalized Intersection Summary 3: Blackstone St & Prosperity Ave

























AM 2024+Project  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										 		
Traffic Volume (veh/h)	0	7	2	420	9	310	0	33	267	304	106	2
Future Volume (veh/h)	0	7	2	420	9	310	0	33	267	304	106	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	0	8	2	464	0	337	0	36	290	330	115	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	2	157	39	717	0	558	2	483	377	546	898	16
Arrive On Green	0.00	0.11	0.08	0.22	0.00	0.39	0.00	0.26	0.26	0.17	0.49	0.46
Sat Flow, veh/h	1641	1432	358	3281	0	1435	1641	1870	1460	3183	1833	32
Grp Volume(v), veh/h	0	0	10	464	0	337	0	36	290	330	0	117
Grp Sat Flow(s),veh/h/ln	1641	0	1790	1641	0	1435	1641	1870	1460	1591	0	1865
Q Serve(g_s), s	0.0	0.0	0.3	8.5	0.0	5.2	0.0	1.0	12.2	6.3	0.0	2.3
Cycle Q Clear(g_c), s	0.0	0.0	0.3	8.5	0.0	5.2	0.0	1.0	12.2	6.3	0.0	2.3
Prop In Lane	1.00		0.20	1.00		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	2	0	196	717	0	558	2	483	377	546	0	914
V/C Ratio(X)	0.00	0.00	0.05	0.65	0.00	0.60	0.00	0.07	0.77	0.60	0.00	0.13
Avail Cap(c_a), veh/h	149	0	544	1782	0	1086	149	736	574	1060	0	1185
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	26.5	23.5	0.0	3.4	0.0	18.5	22.7	25.3	0.0	9.2
Incr Delay (d2), s/veh	0.0	0.0	0.1	1.0	0.0	1.1	0.0	0.1	3.5	1.1	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.1	2.9	0.0	2.7	0.0	0.4	3.8	2.1	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	26.6	24.5	0.0	4.5	0.0	18.6	26.2	26.4	0.0	9.2
LnGrp LOS	A	A	C	C	A	A	A	B	C	C	A	A
Approach Vol, veh/h	10			801				326			447	
Approach Delay, s/veh	26.6			16.1				25.3			21.9	
Approach LOS	C			B				C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.3	21.1	18.4	11.3	0.0	36.4	0.0	29.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	20.0	24.0	33.9	18.1	4.0	40.0	4.0	48.0				
Max Q Clear Time (g_c+I1),s	8.3	14.2	10.5	2.3	0.0	4.3	0.0	7.2				
Green Ext Time (p_c), s	1.0	0.9	1.9	0.0	0.0	0.4	0.0	1.5				
Intersection Summary												
HCM 6th Ctrl Delay			19.7									
HCM 6th LOS			B									
Notes												















Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

AM 2024+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	220	286	58	60	461	106	123	261	99	83	31	284
Future Volume (vph)	220	286	58	60	461	106	123	261	99	83	31	284
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	270		0	155		85	155		0	200		205
Storage Lanes	2		1	1		1	1		0	2		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	0.88
Ped Bike Factor			0.97			0.98		1.00				0.97
Frt			0.850			0.850		0.959				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	1630	5085	1458	1630	3378	0	3162	1863	2567
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1410	1630	5085	1433	1630	3378	0	3162	1863	2493
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			136		54				309
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1229			2636			362			5336	
Travel Time (s)		15.2			32.7			4.5			66.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	239	311	63	65	501	115	134	284	108	90	34	309
Shared Lane Traffic (%)												
Lane Group Flow (vph)	239	311	63	65	501	115	134	392	0	90	34	309
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

AM 2024+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	32.7	32.7	10.0	45.6	45.6	10.0	47.0		10.0	49.9	49.9
Total Split (s)	11.0	44.1	44.1	14.0	47.1	47.1	12.0	50.9		11.0	49.9	49.9
Total Split (%)	9.2%	36.8%	36.8%	11.7%	39.3%	39.3%	10.0%	42.4%		9.2%	41.6%	41.6%
Maximum Green (s)	5.0	38.1	38.1	8.0	41.1	41.1	6.0	44.9		5.0	43.9	43.9
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		19.7	19.7		32.6	32.6		34.0			36.9	36.9
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	8.6	22.4	22.4	10.1	17.4	17.4	8.8	20.4		7.7	16.2	16.2
Actuated g/C Ratio	0.13	0.33	0.33	0.15	0.25	0.25	0.13	0.30		0.11	0.24	0.24
v/c Ratio	0.60	0.27	0.11	0.27	0.39	0.25	0.64	0.38		0.25	0.08	0.38
Control Delay	40.4	21.3	0.4	36.9	22.3	4.7	50.0	18.5		37.2	21.0	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	40.4	21.3	0.4	36.9	22.3	4.7	50.0	18.5		37.2	21.0	4.2
LOS	D	C	A	D	C	A	D	B		D	C	A
Approach Delay		26.6			20.7			26.5			12.4	
Approach LOS		C			C			C			B	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 68.6

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 22.1









Intersection LOS: C

Intersection Capacity Utilization 50.2%

ICU Level of Service A

Analysis Period (min) 15
























Splits and Phases: 4: Hillman St & Prosperity Ave

 Ø1	 Ø2	 Ø3	 Ø4
11 s	50.9 s	14 s	44.1 s
 Ø5	 Ø6	 Ø8	 Ø7
12 s	49.9 s	47.1 s	11 s

# HCM 6th Signalized Intersection Summary

























## 4: Hillman St & Prosperity Ave

AM 2024+Project  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	286	58	60	461	106	123	261	99	83	31	284
Future Volume (veh/h)	220	286	58	60	461	106	123	261	99	83	31	284
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	239	311	63	65	501	115	134	284	108	90	34	309
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	396	1011	402	136	1239	347	220	653	242	284	401	531
Arrive On Green	0.12	0.28	0.28	0.08	0.24	0.24	0.13	0.26	0.22	0.09	0.21	0.21
Sat Flow, veh/h	3183	3554	1414	1641	5106	1431	1641	2522	934	3183	1870	2480
Grp Volume(v), veh/h	239	311	63	65	501	115	134	198	194	90	34	309
Grp Sat Flow(s),veh/h/ln	1591	1777	1414	1641	1702	1431	1641	1777	1679	1591	1870	1240
Q Serve(g_s), s	4.0	3.9	1.9	2.1	4.6	2.2	4.3	5.2	5.5	1.5	0.8	3.6
Cycle Q Clear(g_c), s	4.0	3.9	1.9	2.1	4.6	2.2	4.3	5.2	5.5	1.5	0.8	3.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.56	1.00		1.00
Lane Grp Cap(c), veh/h	396	1011	402	136	1239	347	220	460	435	284	401	531
V/C Ratio(X)	0.60	0.31	0.16	0.48	0.40	0.33	0.61	0.43	0.45	0.32	0.08	0.58
Avail Cap(c_a), veh/h	396	2533	1008	292	3912	1096	233	1481	1400	396	1526	2024
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.3	15.8	15.1	24.6	17.9	6.3	23.0	17.4	18.0	24.0	17.7	6.5
Incr Delay (d2), s/veh	2.6	0.2	0.2	2.6	0.2	0.6	4.1	0.6	0.7	0.6	0.1	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	1.2	0.5	0.8	1.5	1.0	1.6	1.8	1.8	0.5	0.3	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.9	16.0	15.3	27.2	18.1	6.9	27.1	18.0	18.7	24.6	17.8	7.5
LnGrp LOS	C	B	B	C	B	A	C	B	B	C	B	A
Approach Vol, veh/h	613		681				526		433			
Approach Delay, s/veh	19.8		17.1				20.6		11.8			
Approach LOS	B		B				C		B			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	18.6	8.7	20.0	11.6	16.0	11.0	17.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	50	44.9	8.0	38.1	6.0	43.9	5.0	41.1				
Max Q Clear Time (g_c+I1),s	35	7.5	4.1	5.9	6.3	5.6	6.0	6.6				
Green Ext Time (p_c), s	0.0	1.4	0.0	1.5	0.0	1.6	0.0	2.7				
Intersection Summary												
HCM 6th Ctrl Delay	17.6											
HCM 6th LOS	B											













Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

AM 2024+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	300	60	37	398	43	118	173	66	53	162	95
Future Volume (vph)	31	300	60	37	398	43	118	173	66	53	162	95
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	235		115	230		100	100		100	160		100
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97			0.97			0.97			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	5085	1458	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1409	1630	5085	1413	1630	1863	1418	1630	1863	1434
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164			164			164			164
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2636			2650			5387			713	
Travel Time (s)		32.7			32.9			66.8			8.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	326	65	40	433	47	128	188	72	58	176	103
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	326	65	40	433	47	128	188	72	58	176	103
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

AM 2024+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	27.0	27.0	10.0	34.1	34.1	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (s)	10.0	33.4	33.4	11.0	34.4	34.4	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (%)	10.0%	33.4%	33.4%	11.0%	34.4%	34.4%	10.0%	45.6%	45.6%	10.0%	45.6%	45.6%
Maximum Green (s)	4.0	27.4	27.4	5.0	28.4	28.4	4.0	39.6	39.6	4.0	39.6	39.6
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		21.1	21.1		32.6	32.6		32.6	32.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	6.9	14.7	14.7	8.0	15.0	15.0	6.9	22.1	22.1	6.9	16.3	16.3
Actuated g/C Ratio	0.13	0.27	0.27	0.15	0.27	0.27	0.13	0.40	0.40	0.13	0.30	0.30
v/c Ratio	0.17	0.34	0.13	0.17	0.31	0.09	0.63	0.25	0.11	0.28	0.32	0.19
Control Delay	33.8	19.6	0.6	32.4	18.2	0.4	46.8	16.1	0.3	35.5	17.7	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.8	19.6	0.6	32.4	18.2	0.4	46.8	16.1	0.3	35.5	17.7	1.4
LOS	C	B	A	C	B	A	D	B	A	D	B	A
Approach Delay		17.8			17.7			23.3			15.8	
Approach LOS		B			B			C			B	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 54.9

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 18.6








Intersection LOS: B

Intersection Capacity Utilization 46.2%

ICU Level of Service A

























Analysis Period (min) 15

Splits and Phases: 5: Laspina St & Prosperity Ave

 Ø1	 Ø2	 Ø3	 Ø4
10 s	45.6 s	11 s	33.4 s
 Ø5	 Ø6	 Ø7	 Ø8
10 s	45.6 s	10 s	34.4 s
























# HCM 6th Signalized Intersection Summary 5: Laspina St & Prosperity Ave

AM 2024+Project  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	300	60	37	398	43	118	173	66	53	162	95
Future Volume (veh/h)	31	300	60	37	398	43	118	173	66	53	162	95
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	34	326	65	40	433	47	128	188	72	58	176	103
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	120	793	315	127	1160	321	210	507	383	144	432	331
Arrive On Green	0.07	0.22	0.22	0.08	0.23	0.23	0.13	0.27	0.27	0.09	0.23	0.23
Sat Flow, veh/h	1641	3554	1410	1641	5106	1410	1641	1870	1414	1641	1870	1430
Grp Volume(v), veh/h	34	326	65	40	433	47	128	188	72	58	176	103
Grp Sat Flow(s),veh/h/ln	1641	1777	1410	1641	1702	1410	1641	1870	1414	1641	1870	1430
Q Serve(g_s), s	0.9	3.7	1.8	1.1	3.4	1.3	3.5	3.8	1.8	1.6	3.8	2.8
Cycle Q Clear(g_c), s	0.9	3.7	1.8	1.1	3.4	1.3	3.5	3.8	1.8	1.6	3.8	2.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	120	793	315	127	1160	321	210	507	383	144	432	331
V/C Ratio(X)	0.28	0.41	0.21	0.32	0.37	0.15	0.61	0.37	0.19	0.40	0.41	0.31
Avail Cap(c_a), veh/h	210	2225	883	245	3305	913	210	1657	1252	210	1657	1267
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.6	15.6	14.9	20.5	15.3	14.5	19.4	13.9	13.1	20.3	15.3	15.0
Incr Delay (d2), s/veh	1.3	0.3	0.3	1.4	0.2	0.2	5.1	0.5	0.2	1.8	0.6	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.1	0.4	0.4	1.0	0.3	1.3	1.2	0.4	0.5	1.2	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.9	15.9	15.2	21.9	15.5	14.7	24.5	14.3	13.4	22.1	15.9	15.5
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h	425		520			388			337			
Approach Delay, s/veh	16.3		15.9			17.5			16.9			
Approach LOS	B		B			B			B			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.1	16.7	7.6	14.5	10.0	14.9	7.4	14.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	40	39.6	5.0	27.4	4.0	39.6	4.0	28.4				
Max Q Clear Time (g_c+l1),s	3.6	5.8	3.1	5.7	5.5	5.8	2.9	5.4				
Green Ext Time (p_c), s	0.0	0.9	0.0	1.5	0.0	1.0	0.0	2.0				
Intersection Summary												
HCM 6th Ctrl Delay	16.6											
HCM 6th LOS	B											

Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave


AM 2024+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	247	150	102	245	81	195	628	63	41	389	91
Future Volume (vph)	137	247	150	102	245	81	195	628	63	41	389	91
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98		1.00				0.98			0.98
Frt			0.850		0.963				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1786	0	1630	3539	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1434	1630	1786	0	1630	3539	1431	1630	3539	1428
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			172		19				241			241
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2667			5285	
Travel Time (s)		32.9			36.1			33.1			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	149	268	163	111	266	88	212	683	68	45	423	99
Shared Lane Traffic (%)												
Lane Group Flow (vph)	149	268	163	111	354	0	212	683	68	45	423	99
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												



Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

AM 2024+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	17.0	42.7	42.7	10.0	35.7		16.0	32.3	32.3	10.0	26.3	26.3
Total Split (%)	17.9%	44.9%	44.9%	10.5%	37.6%		16.8%	34.0%	34.0%	10.5%	27.7%	27.7%
Maximum Green (s)	11.0	36.7	36.7	4.0	29.7		10.0	26.3	26.3	4.0	20.3	20.3
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	12.4	28.8	28.8	6.1	22.4		12.6	28.1	28.1	6.1	17.0	17.0
Actuated g/C Ratio	0.15	0.36	0.36	0.08	0.28		0.16	0.35	0.35	0.08	0.21	0.21
v/c Ratio	0.60	0.40	0.26	0.90	0.69		0.84	0.55	0.10	0.37	0.57	0.20
Control Delay	45.7	21.6	3.9	102.4	32.8		64.9	25.7	0.3	48.6	32.8	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.7	21.6	3.9	102.4	32.8		64.9	25.7	0.3	48.6	32.8	0.9
LOS	D	C	A	F	C		E	C	A	D	C	A
Approach Delay		22.8			49.4			32.5			28.5	
Approach LOS		C			D			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 80.7

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 32.5









Intersection LOS: C

Intersection Capacity Utilization 63.5%

ICU Level of Service B

























Analysis Period (min) 15

Splits and Phases: 6: Mooney Blvd & Prosperity Ave

 Ø2	 Ø1	 Ø3	 Ø4
32.3 s	10 s	10 s	42.7 s
 Ø6	 Ø5	 Ø7	 Ø8
26.3 s	16 s	17 s	35.7 s

# HCM 6th Signalized Intersection Summary 6: Mooney Blvd & Prosperity Ave

AM 2024+Project  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	137	247	150	102	245	81	195	628	63	41	389	91
Future Volume (veh/h)	137	247	150	102	245	81	195	628	63	41	389	91
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	149	268	163	111	266	88	212	683	68	45	423	99
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	226	602	461	139	359	119	278	983	396	149	706	284
Arrive On Green	0.14	0.32	0.32	0.08	0.27	0.24	0.17	0.28	0.28	0.09	0.20	0.20
Sat Flow, veh/h	1641	1870	1434	1641	1338	443	1641	3554	1432	1641	3554	1428
Grp Volume(v), veh/h	149	268	163	111	0	354	212	683	68	45	423	99
Grp Sat Flow(s),veh/h/ln	1641	1870	1434	1641	0	1780	1641	1777	1432	1641	1777	1428
Q Serve(g_s), s	6.1	8.0	3.1	4.7	0.0	12.9	8.7	12.2	1.7	1.8	7.7	2.6
Cycle Q Clear(g_c), s	6.1	8.0	3.1	4.7	0.0	12.9	8.7	12.2	1.7	1.8	7.7	2.6
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	226	602	461	139	0	478	278	983	396	149	706	284
V/C Ratio(X)	0.66	0.45	0.35	0.80	0.00	0.74	0.76	0.69	0.17	0.30	0.60	0.35
Avail Cap(c_a), veh/h	301	1021	783	139	0	796	278	1418	572	149	1118	449
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.0	19.0	4.6	31.9	0.0	23.9	28.1	23.0	8.2	30.1	25.8	9.3
Incr Delay (d2), s/veh	3.2	0.5	0.5	27.2	0.0	2.3	11.8	0.9	0.2	1.1	0.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	3.0	1.6	2.7	0.0	4.9	3.9	4.4	0.7	0.7	2.9	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.2	19.5	5.1	59.1	0.0	26.2	39.9	23.9	8.4	31.2	26.7	10.0
LnGrp LOS	C	B	A	E	A	C	D	C	A	C	C	B
Approach Vol, veh/h	580			465			963			567		
Approach Delay, s/veh	18.7			34.0			26.3			24.1		
Approach LOS	B			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.5	23.6	10.0	26.8	16.0	18.1	13.8	23.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	40	26.3	4.0	36.7	10.0	20.3	11.0	29.7				
Max Q Clear Time (g_c+I1),s	38	14.2	6.7	10.0	10.7	9.7	8.1	14.9				
Green Ext Time (p_c), s	0.0	2.6	0.0	1.6	0.0	1.6	0.1	1.1				
Intersection Summary												
HCM 6th Ctrl Delay	25.5											
HCM 6th LOS	C											

Lanes, Volumes, Timings  
7: Morrison St & Prosperity Ave

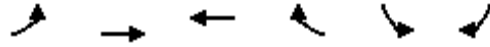
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03/13/2024




	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑	↙	↗
Traffic Volume (vph)	285	56	24	334	88	41
Future Volume (vph)	285	56	24	334	88	41
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1863	1458	1630	1863	1630	1458
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1863	1458	1630	1863	1630	1458
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	310	61	26	363	96	45
Shared Lane Traffic (%)						
Lane Group Flow (vph)	310	61	26	363	96	45
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	33.6%			ICU Level of Service A		
Analysis Period (min)	15					




Intersection						
Int Delay, s/veh	2.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	285	56	24	334	88	41
Future Vol, veh/h	285	56	24	334	88	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	0	-	0	0
Veh in Median Storage	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	310	61	26	363	96	45
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	371	0	725	310
Stage 1	-	-	-	-	310	-
Stage 2	-	-	-	-	415	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1188	-	392	730
Stage 1	-	-	-	-	744	-
Stage 2	-	-	-	-	666	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1188	-	383	730
Mov Cap-2 Maneuver	-	-	-	-	383	-
Stage 1	-	-	-	-	744	-
Stage 2	-	-	-	-	651	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0.5		15.2		
HCM LOS	C					
Minor Lane/Major Mvm	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	383	730	-	-	1188	-
HCM Lane V/C Ratio	0.25	0.061	-	-	0.022	-
HCM Control Delay (s)	17.5	10.3	-	-	8.1	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	1	0.2	-	-	0.1	-

Lanes, Volumes, Timings  
8: Prosperity Ave & Oakmore Rd

AM 2024+Project  
03/13/2024
















Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	99	174	162	29	17	90
Future Volume (vph)	99	174	162	29	17	90
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.979		0.886	
Flt Protected		0.982			0.992	
Satd. Flow (prot)	0	1829	1824	0	1508	0
Flt Permitted		0.982			0.992	
Satd. Flow (perm)	0	1829	1824	0	1508	0
Link Speed (mph)		55	55		55	
Link Distance (ft)		2108	5202		1848	
Travel Time (s)		26.1	64.5		22.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	189	176	32	18	98
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	297	208	0	116	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	42.0%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	3.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	99	174	162	29	17	90
Future Vol, veh/h	99	174	162	29	17	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None		- None		- None	
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0		0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	108	189	176	32	18	98
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	208	0	-	0	597	192
Stage 1	-	-	-	-	192	-
Stage 2	-	-	-	-	405	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1363	-	-	-	466	850
Stage 1	-	-	-	-	841	-
Stage 2	-	-	-	-	673	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1363	-	-	-	425	850
Mov Cap-2 Maneuver	-	-	-	-	425	-
Stage 1	-	-	-	-	766	-
Stage 2	-	-	-	-	673	-
Approach	EB	WB		SB		
HCM Control Delay, s	2.9	0		10.8		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1363	-	-	-	733	
HCM Lane V/C Ratio	0.079	-	-	-	0.159	
HCM Control Delay (s)	7.9	0	-	-	10.8	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.3	-	-	-	0.6	

Lanes, Volumes, Timings  
9: Mooney Blvd & Seminole Ave

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03/13/2024
























						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (vph)	1	212	781	16	54	563
Future Volume (vph)	1	212	781	16	54	563
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	0	540		0	80	
Storage Lanes	0	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.865		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	0	1484	3539	1458	1630	3539
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	0	1484	3539	1458	1630	3539
Link Speed (mph)	55		55			55
Link Distance (ft)	1218		2623			2667
Travel Time (s)	15.1		32.5			33.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	230	849	17	59	612
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1	230	849	17	59	612
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization Err%	ICU Level of Service H					
Analysis Period (min)	15					















Intersection						
Int Delay, s/veh	2.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗	↗	↗	↗↗
Traffic Vol, veh/h	1	212	781	16	54	563
Future Vol, veh/h	1	212	781	16	54	563
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	- None		- None		- None	
Storage Length	-	-	-	0	80	-
Veh in Median Storage	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	230	849	17	59	612
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1273	425	0	0	866	0
Stage 1	849	-	-	-	-	-
Stage 2	424	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	159	578	-	-	773	-
Stage 1	380	-	-	-	-	-
Stage 2	628	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	147	578	-	-	773	-
Mov Cap-2 Maneuver	147	-	-	-	-	-
Stage 1	380	-	-	-	-	-
Stage 2	580	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	15.3	0	0.9			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	578	773	-	
HCM Lane V/C Ratio	-	-	0.399	0.076	-	
HCM Control Delay (s)	-	-	15.3	10	-	
HCM Lane LOS	-	-	C	B	-	
HCM 95th %tile Q(veh)	-	-	1.9	0.2	-	

Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

AM 2024+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	382	63	45	572	48	122	216	61	59	182	67
Future Volume (vph)	47	382	63	45	572	48	122	216	61	59	182	67
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		135	110		0	90		90	80		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97		1.00				0.98			0.98
Frt			0.850		0.988				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3488	0	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1410	1630	3488	0	1630	1863	1433	1630	1863	1434
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			229		8				164			164
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		841			2671			726			5387	
Travel Time (s)		10.4			33.1			9.0			66.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	415	68	49	622	52	133	235	66	64	198	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	415	68	49	674	0	133	235	66	64	198	73
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.9	29.9	10.0	28.4		10.0	39.9	39.9	10.0	44.1	44.1
Total Split (s)	10.0	30.9	30.9	10.0	30.9		15.0	46.1	46.1	13.0	44.1	44.1
Total Split (%)	10.0%	30.9%	30.9%	10.0%	30.9%		15.0%	46.1%	46.1%	13.0%	44.1%	44.1%
Maximum Green (s)	4.0	24.9	24.9	4.0	24.9		9.0	40.1	40.1	7.0	38.1	38.1
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		16.9	16.9		15.4			26.9	26.9		31.1	31.1
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	6.5	18.3	18.3	8.7	20.5		11.4	25.8	25.8	10.3	17.9	17.9
Actuated g/C Ratio	0.10	0.27	0.27	0.13	0.30		0.17	0.38	0.38	0.15	0.26	0.26
v/c Ratio	0.33	0.44	0.12	0.24	0.64		0.49	0.33	0.10	0.26	0.40	0.15
Control Delay	43.0	25.1	0.5	36.8	25.6		39.8	21.8	0.3	34.2	24.2	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.0	25.1	0.5	36.8	25.6		39.8	21.8	0.3	34.2	24.2	0.6
LOS	D	C	A	D	C		D	C	A	C	C	A
Approach Delay		23.7			26.4			24.0			21.0	
Approach LOS		C			C			C			C	

#### Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 67.9

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 24.3









Intersection LOS: C

Intersection Capacity Utilization 54.6%

ICU Level of Service A

























Analysis Period (min) 15

Splits and Phases: 10: Laspina St & Tulare Ave

 Ø2	 Ø1	 Ø4	 Ø3
46.1 s	13 s	30.9 s	10 s
 Ø5	 Ø6	 Ø8	 Ø7
15 s	44.1 s	30.9 s	10 s
























# HCM 6th Signalized Intersection Summary 10: Laspina St & Tulare Ave

AM 2024+Project  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	382	63	45	572	48	122	216	61	59	182	67
Future Volume (veh/h)	47	382	63	45	572	48	122	216	61	59	182	67
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	51	415	68	49	622	52	133	235	66	64	198	73
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	122	798	317	224	948	79	221	436	334	200	413	315
Arrive On Green	0.07	0.22	0.22	0.14	0.29	0.25	0.13	0.23	0.23	0.12	0.22	0.22
Sat Flow, veh/h	1641	3554	1410	1641	3310	276	1641	1870	1430	1641	1870	1430
Grp Volume(v), veh/h	51	415	68	49	333	341	133	235	66	64	198	73
Grp Sat Flow(s),veh/h/ln	1641	1777	1410	1641	1777	1810	1641	1870	1430	1641	1870	1430
Q Serve(g_s), s	1.7	5.8	1.2	1.5	9.3	9.4	4.3	6.2	2.1	2.0	5.2	1.5
Cycle Q Clear(g_c), s	1.7	5.8	1.2	1.5	9.3	9.4	4.3	6.2	2.1	2.0	5.2	1.5
Prop In Lane	1.00		1.00	1.00		0.15	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	122	798	317	224	509	518	221	436	334	200	413	315
V/C Ratio(X)	0.42	0.52	0.21	0.22	0.66	0.66	0.60	0.54	0.20	0.32	0.48	0.23
Avail Cap(c_a), veh/h	175	1695	673	224	848	863	320	1397	1068	262	1330	1017
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.9	19.2	5.4	21.7	17.7	17.8	23.0	19.0	17.4	22.6	19.2	7.2
Incr Delay (d2), s/veh	2.3	0.5	0.3	0.5	1.4	1.4	2.6	1.0	0.3	0.9	0.9	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	2.0	0.6	0.5	3.1	3.2	1.5	2.3	0.6	0.7	1.9	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.2	19.7	5.8	22.2	19.1	19.3	25.6	20.0	17.7	23.5	20.0	7.6
LnGrp LOS	C	B	A	C	B	B	C	B	B	C	C	A
Approach Vol, veh/h	534					723		434		335		
Approach Delay, s/veh	18.7					19.4		21.4		18.0		
Approach LOS	B					B		C		B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.9	17.2	11.7	16.7	11.6	16.4	8.2	20.1				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	40.1	40.1	4.0	24.9	9.0	38.1	4.0	24.9				
Max Q Clear Time (g_c+11),s	4.0	8.2	3.5	7.8	6.3	7.2	3.7	11.4				
Green Ext Time (p_c), s	0.0	1.0	0.0	1.8	0.1	0.9	0.0	2.1				
Intersection Summary												
HCM 6th Ctrl Delay	19.4											
HCM 6th LOS	B											













Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

AM 2024+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	333	77	81	429	195	129	527	64	138	290	138
Future Volume (vph)	184	333	77	81	429	195	129	527	64	138	290	138
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	420		185	125		125	80		0	475		475
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98		1.00				0.98
Frt			0.850			0.850		0.984				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3539	1458	1630	3471	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1412	1630	3539	1430	1630	3471	0	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			212		11				150
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2671			2887			1662			2623	
Travel Time (s)		33.1			35.8			20.6			32.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	200	362	84	88	466	212	140	573	70	150	315	150
Shared Lane Traffic (%)												
Lane Group Flow (vph)	200	362	84	88	466	212	140	643	0	150	315	150
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

AM 2024+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	37.0	37.0	10.0	37.0	37.0	10.0	39.9		10.0	42.7	42.7
Total Split (s)	22.0	42.0	42.0	17.0	37.0	37.0	17.0	42.0		19.0	44.0	44.0
Total Split (%)	18.3%	35.0%	35.0%	14.2%	30.8%	30.8%	14.2%	35.0%		15.8%	36.7%	36.7%
Maximum Green (s)	16.0	36.0	36.0	11.0	31.0	31.0	11.0	36.0		13.0	38.0	38.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		24.0	24.0		24.0	24.0		26.9			29.7	29.7
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	17.2	29.9	29.9	11.6	21.1	21.1	12.9	25.1		14.4	26.6	26.6
Actuated g/C Ratio	0.18	0.32	0.32	0.12	0.22	0.22	0.14	0.27		0.15	0.28	0.28
v/c Ratio	0.67	0.32	0.15	0.44	0.59	0.44	0.63	0.69		0.60	0.60	0.29
Control Delay	51.5	27.8	0.5	50.0	36.7	7.6	56.0	35.4		52.0	35.2	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	51.5	27.8	0.5	50.0	36.7	7.6	56.0	35.4		52.0	35.2	6.2
LOS	D	C	A	D	D	A	E	D		D	D	A
Approach Delay		31.6			30.2			39.1			32.2	
Approach LOS		C			C			D			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 94.2

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 33.4

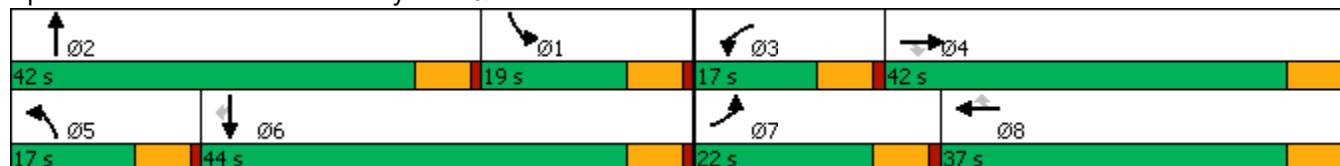
Intersection LOS: C

Intersection Capacity Utilization 65.1%

ICU Level of Service C

Analysis Period (min) 15
























Splits and Phases: 11: Mooney Blvd & Tulare Ave



# HCM 6th Signalized Intersection Summary

## 11: Mooney Blvd & Tulare Ave






















AM 2024+Project  
03/13/2024












												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	184	333	77	81	429	195	129	527	64	138	290	138
Future Volume (veh/h)	184	333	77	81	429	195	129	527	64	138	290	138
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No				No			
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	200	362	84	88	466	212	140	573	70	150	315	150
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	276	1073	427	151	802	323	211	843	103	223	510	391
Arrive On Green	0.17	0.30	0.30	0.09	0.23	0.23	0.13	0.27	0.24	0.14	0.27	0.27
Sat Flow, veh/h	1641	3554	1415	1641	3554	1430	1641	3175	387	1641	1870	1432
Grp Volume(v), veh/h	200	362	84	88	466	212	140	320	323	150	315	150
Grp Sat Flow(s),veh/h/ln	1641	1777	1415	1641	1777	1430	1641	1777	1785	1641	1870	1432
Q Serve(g_s), s	9.0	6.2	3.4	4.0	9.1	6.6	6.4	12.6	12.7	6.8	11.5	6.6
Cycle Q Clear(g_c), s	9.0	6.2	3.4	4.0	9.1	6.6	6.4	12.6	12.7	6.8	11.5	6.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.22	1.00		1.00
Lane Grp Cap(c), veh/h	276	1073	427	151	802	323	211	472	474	223	510	391
V/C Ratio(X)	0.72	0.34	0.20	0.58	0.58	0.66	0.66	0.68	0.68	0.67	0.62	0.38
Avail Cap(c_a), veh/h	378	1728	688	273	1501	604	273	864	868	315	957	733
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.8	21.2	20.2	34.0	27.0	10.8	32.4	25.7	25.9	32.1	24.8	23.1
Incr Delay (d2), s/veh	4.3	0.2	0.2	3.5	0.7	2.3	3.9	1.7	1.7	3.5	1.2	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	2.3	1.0	1.6	3.5	3.1	2.5	4.9	5.0	2.7	4.6	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.1	21.4	20.5	37.5	27.6	13.1	36.3	27.4	27.7	35.6	26.1	23.7
LnGrp LOS	D	C	C	D	C	B	D	C	C	D	C	C
Approach Vol, veh/h	646		766				783		615			
Approach Delay, s/veh	25.5		24.7				29.1		27.8			
Approach LOS	C		C				C		C			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.6	24.8	11.2	27.6	14.0	25.3	17.1	21.6				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	30.0	36.0	11.0	36.0	11.0	38.0	16.0	31.0				
Max Q Clear Time (g_c+l1),s	8.8	14.7	6.0	8.2	8.4	13.5	11.0	11.1				
Green Ext Time (p_c), s	0.2	2.3	0.1	1.8	0.1	1.7	0.3	2.7				
Intersection Summary												
HCM 6th Ctrl Delay	26.8											
HCM 6th LOS	C											



Lanes, Volumes, Timings  
12: Morrison St & Tulare Ave

AM 2024+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	431	61	25	465	2	76	43	80	2	18	70
Future Volume (vph)	51	431	61	25	465	2	76	43	80	2	18	70
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.999			0.903			0.895	
Flt Protected	0.950			0.950			0.950				0.999	
Satd. Flow (prot)	1630	1863	1458	1630	1861	0	1630	1682	0	0	1665	0
Flt Permitted	0.950			0.950			0.950				0.999	
Satd. Flow (perm)	1630	1863	1458	1630	1861	0	1630	1682	0	0	1665	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	55	468	66	27	505	2	83	47	87	2	20	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	55	468	66	27	507	0	83	134	0	0	98	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	49.2%				ICU Level of Service A							
Analysis Period (min)	15											

Intersection												
Int Delay, s/veh	8.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	51	431	61	25	465	2	76	43	80	2	18	70
Future Vol, veh/h	51	431	61	25	465	2	76	43	80	2	18	70
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	305	-	425	300	-	-	125	-	-	-	-	-
Veh in Median Storage, #	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	55	468	66	27	505	2	83	47	87	2	20	76























Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	507	0	0	534	0	0	1186	1139	468	1238	1204	506
Stage 1	-	-	-	-	-	-	578	578	-	560	560	-
Stage 2	-	-	-	-	-	-	608	561	-	678	644	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1058	-	-	1034	-	-	166	201	595	152	184	566
Stage 1	-	-	-	-	-	-	501	501	-	513	511	-
Stage 2	-	-	-	-	-	-	483	510	-	442	468	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1058	-	-	1034	-	-	124	186	595	99	170	566
Mov Cap-2 Maneuver	-	-	-	-	-	-	124	186	-	99	170	-
Stage 1	-	-	-	-	-	-	475	475	-	486	498	-
Stage 2	-	-	-	-	-	-	391	497	-	323	444	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			0.4			44			18.7		
HCM LOS							E			C		

Minor Lane/Major Mvm	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	124	336	1058	-	-	1034	-	-	360
HCM Lane V/C Ratio	0.666	0.398	0.052	-	-	0.026	-	-	0.272
HCM Control Delay (s)	78.7	22.6	8.6	-	-	8.6	-	-	18.7
HCM Lane LOS	F	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	3.6	1.8	0.2	-	-	0.1	-	-	1.1













Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

AM 2044  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	204	262	199	34	177	3	225	1123	37	14	673	116
Future Volume (vph)	204	262	199	34	177	3	225	1123	37	14	673	116
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.998			0.995			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1858	0	1630	3518	0	1630	3446	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1858	0	1630	3518	0	1630	3446	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			216		1			3			17	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	222	285	216	37	192	3	245	1221	40	15	732	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	285	216	37	195	0	245	1261	0	15	858	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

AM 2044  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	21.0	46.2	46.2	11.3	36.5		22.1	52.9		9.6	40.4	
Total Split (%)	17.5%	38.5%	38.5%	9.4%	30.4%		18.4%	44.1%		8.0%	33.7%	
Maximum Green (s)	15.5	40.7	40.7	5.8	31.0		16.6	47.4		4.1	34.9	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effct Green (s)	17.2	30.7	30.7	10.4	18.8		18.3	49.7		5.7	30.7	
Actuated g/C Ratio	0.17	0.30	0.30	0.10	0.19		0.18	0.49		0.06	0.30	
v/c Ratio	0.80	0.51	0.37	0.22	0.57		0.83	0.73		0.16	0.81	
Control Delay	65.2	36.1	6.5	47.7	44.4		66.5	25.5		55.5	39.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	65.2	36.1	6.5	47.7	44.4		66.5	25.5		55.5	39.5	
LOS	E	D	A	D	D		E	C		E	D	
Approach Delay		36.2			44.9			32.2			39.8	
Approach LOS		D			D			C			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 101.3

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 35.9









Intersection LOS: D

Intersection Capacity Utilization 74.4%

ICU Level of Service D

Analysis Period (min) 15























Splits and Phases: 1: Mooney Blvd & Cartmill Ave

 Ø1	 Ø2	 Ø4	 Ø3
9.6 s	52.9 s	46.2 s	11.3 s
 Ø5	 Ø6	 Ø7	 Ø8
22.1 s	40.4 s	21 s	36.5 s

# HCM 6th Signalized Intersection Summary

## 1: Mooney Blvd & Cartmill Ave

AM 2044  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	204	262	199	34	177	3	225	1123	37	14	673	116
Future Volume (veh/h)	204	262	199	34	177	3	225	1123	37	14	673	116
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	222	285	216	37	192	3	245	1221	40	15	732	126
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	278	412	315	192	308	5	300	1602	52	50	917	158
Arrive On Green	0.17	0.22	0.22	0.12	0.17	0.15	0.18	0.46	0.44	0.03	0.30	0.29
Sat Flow, veh/h	1641	1870	1430	1641	1836	29	1641	3508	115	1641	3015	519
Grp Volume(v), veh/h	222	285	216	37	0	195	245	618	643	15	431	427
Grp Sat Flow(s),veh/h/ln	1641	1870	1430	1641	0	1864	1641	1777	1846	1641	1777	1757
Q Serve(g_s), s	11.8	12.8	7.7	1.9	0.0	8.8	13.1	26.4	26.4	0.8	20.3	20.4
Cycle Q Clear(g_c), s	11.8	12.8	7.7	1.9	0.0	8.8	13.1	26.4	26.4	0.8	20.3	20.4
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.06	1.00		0.30
Lane Grp Cap(c), veh/h	278	412	315	192	0	313	300	812	843	50	540	534
V/C Ratio(X)	0.80	0.69	0.69	0.19	0.00	0.62	0.82	0.76	0.76	0.30	0.80	0.80
Avail Cap(c_a), veh/h	306	867	663	192	0	666	326	954	992	101	710	703
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.3	32.7	12.2	36.3	0.0	35.2	35.7	20.6	20.7	43.2	29.1	29.3
Incr Delay (d2), s/veh	12.9	2.1	2.7	0.5	0.0	2.0	13.9	3.1	3.0	3.3	4.8	4.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	5.5	3.9	0.7	0.0	3.9	5.9	9.9	10.3	0.4	8.5	8.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.2	34.8	14.8	36.8	0.0	37.2	49.6	23.7	23.6	46.5	33.9	34.2
LnGrp LOS	D	C	B	D	A	D	D	C	C	D	C	C
Approach Vol, veh/h	723			232			1506			873		
Approach Delay, s/veh	33.2			37.2			27.9			34.3		
Approach LOS	C			D			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.8	45.6	14.7	24.0	20.7	31.7	19.4	19.3				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax),s	47.4	5.8	40.7	16.6	34.9	15.5	31.0					
Max Q Clear Time (g_c+I1),s	28.4	3.9	14.8	15.1	22.4	13.8	10.8					
Green Ext Time (p_c), s	0.0	5.1	0.0	1.9	0.1	2.8	0.1	0.6				
Intersection Summary												
HCM 6th Ctrl Delay	31.4											
HCM 6th LOS	C											

Lanes, Volumes, Timings  
2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

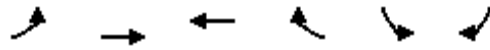
AM 2044  
03/13/2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (vph)	0	521	494	0	145	175
Future Volume (vph)	0	521	494	0	145	175
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	1630	1458
Flt Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	1630	1458
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						190
Link Speed (mph)		55	55		55	
Link Distance (ft)		349	727		300	
Travel Time (s)		4.3	9.0		3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	566	537	0	158	190
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	566	537	0	158	190
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors		1	1		1	1
Detector Template						
Leading Detector (ft)		50	50		50	50
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		50	50		50	50
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		4.0	4.0		4.0	4.0
Minimum Split (s)		24.0	24.0		24.0	24.0
Total Split (s)		63.0	63.0		57.0	57.0
Total Split (%)		52.5%	52.5%		47.5%	47.5%
Maximum Green (s)		57.0	57.0		51.0	51.0
Yellow Time (s)		5.0	5.0		5.0	5.0

Lanes, Volumes, Timings  
2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

AM 2044  
03/13/2024

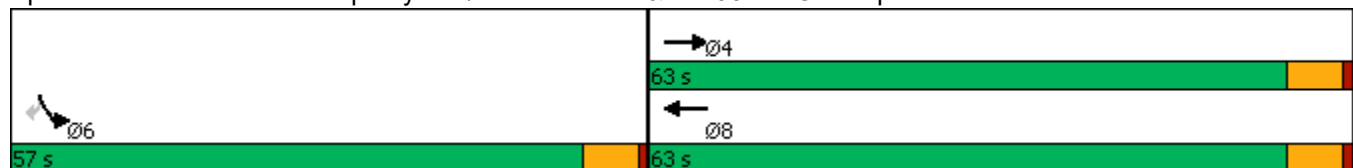


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		None	None		Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		13.1	13.1		11.1	11.1
Actuated g/C Ratio		0.41	0.41		0.34	0.34
v/c Ratio		0.40	0.38		0.28	0.30
Control Delay		8.0	7.8		9.8	3.4
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		8.0	7.8		9.8	3.4
LOS		A	A		A	A
Approach Delay		8.0	7.8		6.3	
Approach LOS		A	A		A	

Intersection Summary

Area Type: Other  
Cycle Length: 120  
Actuated Cycle Length: 32.3  
Natural Cycle: 50  
Control Type: Actuated-Uncoordinated  
Maximum v/c Ratio: 0.40  
Intersection Signal Delay: 7.5  
Intersection LOS: A  
Intersection Capacity Utilization 32.1%  
ICU Level of Service A  
Analysis Period (min) 15

Splits and Phases: 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp





# HCM 6th Signalized Intersection Summary

## 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp


AM 2044  
03/13/2024



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (veh/h)	0	521	494	0	145	175
Future Volume (veh/h)	0	521	494	0	145	175
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1723	1723
Adj Flow Rate, veh/h	0	566	537	0	158	190
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	1324	1324	0	513	457
Arrive On Green	0.00	0.37	0.37	0.00	0.31	0.31
Sat Flow, veh/h	0	3741	3741	0	1641	1460
Grp Volume(v), veh/h	0	566	537	0	158	190
Grp Sat Flow(s),veh/h/ln	0	1777	1777	0	1641	1460
Q Serve(g_s), s	0.0	3.0	2.8	0.0	1.9	2.6
Cycle Q Clear(g_c), s	0.0	3.0	2.8	0.0	1.9	2.6
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1324	1324	0	513	457
V/C Ratio(X)	0.00	0.43	0.41	0.00	0.31	0.42
Avail Cap(c_a), veh/h	0	8245	8245	0	3420	3043
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	6.0	5.9	0.0	6.6	6.9
Incr Delay (d2), s/veh	0.0	0.2	0.2	0.0	0.3	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.2	0.0	0.2	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	6.2	6.1	0.0	7.0	7.5
LnGrp LOS	A	A	A	A	A	A
Approach Vol, veh/h		566	537		348	
Approach Delay, s/veh		6.2	6.1		7.3	
Approach LOS		A	A		A	
Timer - Assigned Phs			4		6	8
Phs Duration (G+Y+Rc), s			13.5		12.0	13.5
Change Period (Y+Rc), s			6.0		6.0	6.0
Max Green Setting (Gmax), s			57.0		51.0	57.0
Max Q Clear Time (g_c+I1), s			5.0		4.6	4.8
Green Ext Time (p_c), s			2.5		1.3	2.3
Intersection Summary						
HCM 6th Ctrl Delay			6.4			
HCM 6th LOS			A			


Lanes, Volumes, Timings  
3: Blackstone St & Prosperity Ave

AM 2044  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	3	676	15	458	0	34	265	301	110	2
Future Volume (vph)	0	12	3	676	15	458	0	34	265	301	110	2
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	30		0	335		310	55		90	240		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor		1.00				0.98						
Frt		0.972				0.850			0.850		0.998	
Flt Protected				0.950	0.954					0.950		
Satd. Flow (prot)	1716	1803	0	1548	1688	1458	1716	1863	1458	3162	1859	0
Flt Permitted				0.950	0.724					0.950		
Satd. Flow (perm)	1716	1803	0	1548	1281	1426	1716	1863	1458	3162	1859	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				498			288		1	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		98			1229			643			727	
Travel Time (s)		1.2			15.2			8.0			9.0	
Confl. Peds. (#/hr)			5			5						
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	13	3	735	16	498	0	37	288	327	120	2
Shared Lane Traffic (%)				49%								
Lane Group Flow (vph)	0	16	0	375	376	498	0	37	288	327	122	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												

Lanes, Volumes, Timings  
3: Blackstone St & Prosperity Ave

AM 2044  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	24.1		10.0	24.1	24.1	10.0	24.0	24.0	10.0	24.0	
Total Split (s)	10.0	24.1		41.9	56.0	56.0	10.0	24.0	24.0	20.0	34.0	
Total Split (%)	9.1%	21.9%		38.1%	50.9%	50.9%	9.1%	21.8%	21.8%	18.2%	30.9%	
Maximum Green (s)	4.0	18.1		35.9	50.0	50.0	4.0	18.0	18.0	14.0	28.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		11.1			11.1	11.1		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		5			5	5		0	0		0	
Act Effct Green (s)		10.1		47.5	47.5	54.1		10.7	10.7	15.1	29.8	
Actuated g/C Ratio		0.11		0.52	0.52	0.59		0.12	0.12	0.16	0.32	
v/c Ratio		0.08		0.47	0.43	0.48		0.17	0.68	0.63	0.20	
Control Delay		33.7		20.9	19.8	2.7		39.1	13.6	43.1	23.4	
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay		33.7		20.9	19.8	2.7		39.1	13.6	43.1	23.4	
LOS		C		C	B	A		D	B	D	C	
Approach Delay		33.7			13.3			16.5			37.7	
Approach LOS		C			B			B			D	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 92

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 19.4

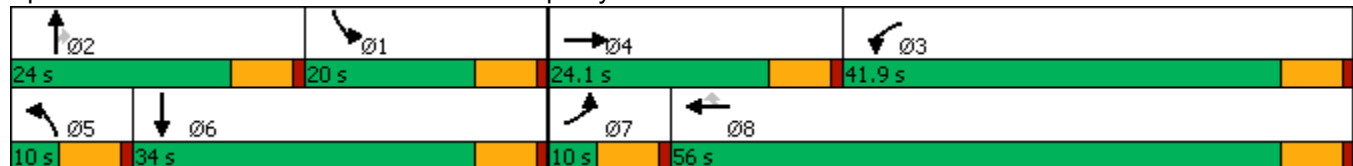
Intersection LOS: B

Intersection Capacity Utilization 49.7%

ICU Level of Service A

Analysis Period (min) 15
























Splits and Phases: 3: Blackstone St & Prosperity Ave



# HCM 6th Signalized Intersection Summary

























## 3: Blackstone St & Prosperity Ave

AM 2044  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	12	3	676	15	458	0	34	265	301	110	2
Future Volume (veh/h)	0	12	3	676	15	458	0	34	265	301	110	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	0	13	3	746	0	498	0	37	288	327	120	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	2	141	33	981	0	643	2	451	352	495	823	14
Arrive On Green	0.00	0.10	0.07	0.30	0.00	0.45	0.00	0.24	0.24	0.16	0.45	0.42
Sat Flow, veh/h	1641	1457	336	3281	0	1436	1641	1870	1460	3183	1834	31
Grp Volume(v), veh/h	0	0	16	746	0	498	0	37	288	327	0	122
Grp Sat Flow(s),veh/h/ln	1641	0	1794	1641	0	1436	1641	1870	1460	1591	0	1865
Q Serve(g_s), s	0.0	0.0	0.6	15.9	0.0	9.9	0.0	1.2	14.4	7.5	0.0	3.0
Cycle Q Clear(g_c), s	0.0	0.0	0.6	15.9	0.0	9.9	0.0	1.2	14.4	7.5	0.0	3.0
Prop In Lane	1.00		0.19	1.00		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	2	0	173	981	0	643	2	451	352	495	0	837
V/C Ratio(X)	0.00	0.00	0.09	0.76	0.00	0.77	0.00	0.08	0.82	0.66	0.00	0.15
Avail Cap(c_a), veh/h	128	0	467	1612	0	968	128	485	378	660	0	837
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	31.9	24.5	0.0	3.9	0.0	22.7	27.7	30.7	0.0	12.6
Incr Delay (d2), s/veh	0.0	0.0	0.2	1.2	0.0	2.2	0.0	0.1	12.5	1.5	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.3	5.5	0.0	4.6	0.0	0.5	5.6	2.7	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	32.2	25.8	0.0	6.2	0.0	22.7	40.1	32.2	0.0	12.6
LnGrp LOS	A	A	C	C	A	A	A	C	D	C	A	B
Approach Vol, veh/h	16			1244				325			449	
Approach Delay, s/veh	32.2			17.9				38.1			26.9	
Approach LOS	C			B				D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.0	22.6	27.1	11.5	0.0	38.6	0.0	38.5				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	45.0	18.0	35.9	18.1	4.0	28.0	4.0	50.0				
Max Q Clear Time (g_c+I1),s	9.5	16.4	17.9	2.6	0.0	5.0	0.0	11.9				
Green Ext Time (p_c), s	0.6	0.2	3.2	0.0	0.0	0.3	0.0	2.4				
Intersection Summary												
HCM 6th Ctrl Delay			23.2									
HCM 6th LOS			C									
Notes												













Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

AM 2044  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	375	423	99	58	637	160	128	272	62	80	32	296
Future Volume (vph)	375	423	99	58	637	160	128	272	62	80	32	296
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	270		0	155		85	155		0	200		205
Storage Lanes	2		1	1		1	1		0	2		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	0.88
Ped Bike Factor			0.97			0.98		1.00				0.97
Frt			0.850			0.850		0.972				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	1630	5085	1458	1630	3429	0	3162	1863	2567
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1410	1630	5085	1433	1630	3429	0	3162	1863	2493
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			142		27				322
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1229			2636			362			5336	
Travel Time (s)		15.2			32.7			4.5			66.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	408	460	108	63	692	174	139	296	67	87	35	322
Shared Lane Traffic (%)												
Lane Group Flow (vph)	408	460	108	63	692	174	139	363	0	87	35	322
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

AM 2044  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	32.7	32.7	10.0	45.6	45.6	10.0	47.0		10.0	49.9	49.9
Total Split (s)	11.0	47.1	47.1	11.0	47.1	47.1	12.0	50.9		11.0	49.9	49.9
Total Split (%)	9.2%	39.3%	39.3%	9.2%	39.3%	39.3%	10.0%	42.4%		9.2%	41.6%	41.6%
Maximum Green (s)	5.0	41.1	41.1	5.0	41.1	41.1	6.0	44.9		5.0	43.9	43.9
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		19.7	19.7		32.6	32.6		34.0			36.9	36.9
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	7.6	23.1	23.1	7.6	20.1	20.1	8.7	20.4		7.6	16.3	16.3
Actuated g/C Ratio	0.11	0.33	0.33	0.11	0.29	0.29	0.12	0.29		0.11	0.23	0.23
v/c Ratio	1.19	0.40	0.19	0.36	0.48	0.34	0.69	0.36		0.25	0.08	0.39
Control Delay	141.8	21.4	3.5	42.9	22.2	8.4	53.7	20.2		37.8	21.5	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	141.8	21.4	3.5	42.9	22.2	8.4	53.7	20.2		37.8	21.5	4.3
LOS	F	C	A	D	C	A	D	C		D	C	A
Approach Delay		69.8			21.0			29.5			12.2	
Approach LOS		E			C			C			B	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 70.2

Natural Cycle: 130

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.19

Intersection Signal Delay: 37.8









Intersection LOS: D

Intersection Capacity Utilization 57.1%

ICU Level of Service B
























Analysis Period (min) 15

Splits and Phases: 4: Hillman St & Prosperity Ave

			
Ø1	Ø2	Ø3	Ø4
11 s	50.9 s	11 s	47.1 s
			
Ø5	Ø6	Ø8	Ø7
12 s	49.9 s	47.1 s	11 s

# HCM 6th Signalized Intersection Summary 4: Hillman St & Prosperity Ave

























AM 2044  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	375	423	99	58	637	160	128	272	62	80	32	296
Future Volume (veh/h)	375	423	99	58	637	160	128	272	62	80	32	296
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No				No			
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	408	460	108	63	692	174	139	296	67	87	35	322
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	365	1122	447	129	1427	400	215	750	167	265	399	529
Arrive On Green	0.11	0.32	0.32	0.08	0.28	0.28	0.13	0.26	0.23	0.08	0.21	0.21
Sat Flow, veh/h	3183	3554	1416	1641	5106	1432	1641	2876	640	3183	1870	2480
Grp Volume(v), veh/h	408	460	108	63	692	174	139	181	182	87	35	322
Grp Sat Flow(s),veh/h/ln	1591	1777	1416	1641	1702	1432	1641	1777	1739	1591	1870	1240
Q Serve(g_s), s	7.0	6.2	3.5	2.2	6.9	3.7	4.9	5.1	5.3	1.6	0.9	4.3
Cycle Q Clear(g_c), s	7.0	6.2	3.5	2.2	6.9	3.7	4.9	5.1	5.3	1.6	0.9	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.37	1.00		1.00
Lane Grp Cap(c), veh/h	365	1122	447	129	1427	400	215	464	454	265	399	529
V/C Ratio(X)	1.12	0.41	0.24	0.49	0.48	0.43	0.65	0.39	0.40	0.33	0.09	0.61
Avail Cap(c_a), veh/h	365	2506	999	188	3601	1010	215	1363	1335	365	1405	1862
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.1	16.4	15.5	27.0	18.3	6.8	25.2	18.6	19.0	26.4	19.3	8.0
Incr Delay (d2), s/veh	83.5	0.2	0.3	2.9	0.3	0.7	6.6	0.5	0.6	0.7	0.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	2.0	0.9	0.9	2.2	1.6	2.0	1.8	1.8	0.5	0.3	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	110.5	16.7	15.8	29.8	18.6	7.5	31.8	19.1	19.5	27.1	19.4	9.1
LnGrp LOS	F	B	B	C	B	A	C	B	B	C	B	A
Approach Vol, veh/h	976				929				502			
Approach Delay, s/veh	55.8				17.3				22.8			
Approach LOS	E				B				C			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.1	19.9	8.8	23.3	12.0	17.0	11.0	21.1				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	50	44.9	5.0	41.1	6.0	43.9	5.0	41.1				
Max Q Clear Time (g_c+I1),s	36	7.3	4.2	8.2	6.9	6.3	9.0	8.9				
Green Ext Time (p_c), s	0.0	1.3	0.0	2.4	0.0	1.7	0.0	4.0				
Intersection Summary												
HCM 6th Ctrl Delay	30.8											
HCM 6th LOS	C											















Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

AM 2044  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	370	102	63	458	73	123	180	69	55	169	99
Future Volume (vph)	53	370	102	63	458	73	123	180	69	55	169	99
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	235		115	230		100	100		100	160		100
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96			0.97			0.97			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	5085	1458	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1405	1630	5085	1410	1630	1863	1416	1630	1863	1433
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			191			136			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2636			2650			5387			713	
Travel Time (s)		32.7			32.9			66.8			8.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	58	402	111	68	498	79	134	196	75	60	184	108
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	402	111	68	498	79	134	196	75	60	184	108
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

AM 2044  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	27.0	27.0	10.0	34.1	34.1	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (s)	11.0	39.0	39.0	11.0	39.0	39.0	23.0	56.0	56.0	14.0	47.0	47.0
Total Split (%)	9.2%	32.5%	32.5%	9.2%	32.5%	32.5%	19.2%	46.7%	46.7%	11.7%	39.2%	39.2%
Maximum Green (s)	5.0	33.0	33.0	5.0	33.0	33.0	17.0	50.0	50.0	8.0	41.0	41.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		21.1	21.1		32.6	32.6		32.6	32.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	8.6	18.1	18.1	8.6	18.1	18.1	14.7	24.6	24.6	10.8	18.5	18.5
Actuated g/C Ratio	0.13	0.27	0.27	0.13	0.27	0.27	0.22	0.36	0.36	0.16	0.27	0.27
v/c Ratio	0.28	0.43	0.22	0.33	0.37	0.15	0.38	0.29	0.12	0.23	0.36	0.20
Control Delay	42.1	26.3	1.0	43.0	24.8	0.6	34.4	19.3	0.5	37.9	25.7	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.1	26.3	1.0	43.0	24.8	0.6	34.4	19.3	0.5	37.9	25.7	0.9
LOS	D	C	A	D	C	A	C	B	A	D	C	A
Approach Delay		23.0			23.7			20.8			20.2	
Approach LOS		C			C			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 67.9

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.43

Intersection Signal Delay: 22.3









Intersection LOS: C

Intersection Capacity Utilization 48.5%

ICU Level of Service A

























Analysis Period (min) 15

Splits and Phases: 5: Laspina St & Prosperity Ave

 Ø1	 Ø2	 Ø3	 Ø4
14 s	56 s	11 s	39 s
 Ø5	 Ø6	 Ø7	 Ø8
23 s	47 s	11 s	39 s
























# HCM 6th Signalized Intersection Summary 5: Laspina St & Prosperity Ave

AM 2044  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	370	102	63	458	73	123	180	69	55	169	99
Future Volume (veh/h)	53	370	102	63	458	73	123	180	69	55	169	99
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	58	402	111	68	498	79	134	196	75	60	184	108
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	136	826	328	144	1213	335	232	532	402	137	424	324
Arrive On Green	0.08	0.23	0.23	0.09	0.24	0.24	0.14	0.28	0.28	0.08	0.23	0.23
Sat Flow, veh/h	1641	3554	1411	1641	5106	1411	1641	1870	1414	1641	1870	1430
Grp Volume(v), veh/h	58	402	111	68	498	79	134	196	75	60	184	108
Grp Sat Flow(s),veh/h/ln	1641	1777	1411	1641	1702	1411	1641	1870	1414	1641	1870	1430
Q Serve(g_s), s	1.7	5.0	3.4	2.0	4.2	2.3	3.9	4.3	2.1	1.8	4.3	3.2
Cycle Q Clear(g_c), s	1.7	5.0	3.4	2.0	4.2	2.3	3.9	4.3	2.1	1.8	4.3	3.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	136	826	328	144	1213	335	232	532	402	137	424	324
V/C Ratio(X)	0.43	0.49	0.34	0.47	0.41	0.24	0.58	0.37	0.19	0.44	0.43	0.33
Avail Cap(c_a), veh/h	224	2422	961	224	3479	962	607	1894	1432	319	1566	1197
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.4	17.1	16.4	22.3	16.5	15.8	20.6	14.7	13.9	22.4	17.0	16.6
Incr Delay (d2), s/veh	2.1	0.4	0.6	2.4	0.2	0.4	2.3	0.4	0.2	2.2	0.7	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.6	0.9	0.7	1.3	0.6	1.3	1.4	0.5	0.6	1.5	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.5	17.5	17.0	24.7	16.8	16.2	22.9	15.1	14.1	24.6	17.7	17.2
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h	571		645				405				352	
Approach Delay, s/veh	18.1		17.5				17.5				18.7	
Approach LOS	B		B				B				B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.3	18.6	8.5	15.9	11.3	15.6	8.3	16.2				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	30.0	50.0	5.0	33.0	17.0	41.0	5.0	33.0				
Max Q Clear Time (g_c+l1),s	3.8	6.3	4.0	7.0	5.9	6.3	3.7	6.2				
Green Ext Time (p_c), s	0.0	1.0	0.0	2.1	0.3	1.0	0.0	2.5				
Intersection Summary												
HCM 6th Ctrl Delay	17.9											
HCM 6th LOS	B											


Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

AM 2044  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	233	276	256	155	191	92	332	1070	92	44	663	155
Future Volume (vph)	233	276	256	155	191	92	332	1070	92	44	663	155
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98		0.99				0.97			0.98
Frt			0.850		0.951				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1760	0	1630	3539	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1432	1630	1760	0	1630	3539	1410	1630	3539	1425
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			278		20				191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2667			5285	
Travel Time (s)		32.9			36.1			33.1			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	253	300	278	168	208	100	361	1163	100	48	721	168
Shared Lane Traffic (%)												
Lane Group Flow (vph)	253	300	278	168	308	0	361	1163	100	48	721	168
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

AM 2044  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	23.0	42.7	42.7	16.0	35.7		30.0	51.3	51.3	10.0	31.3	31.3
Total Split (%)	19.2%	35.6%	35.6%	13.3%	29.8%		25.0%	42.8%	42.8%	8.3%	26.1%	26.1%
Maximum Green (s)	17.0	36.7	36.7	10.0	29.7		24.0	45.3	45.3	4.0	25.3	25.3
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	19.1	32.1	32.1	12.0	25.1		26.1	48.8	48.8	6.0	26.5	26.5
Actuated g/C Ratio	0.17	0.28	0.28	0.11	0.22		0.23	0.43	0.43	0.05	0.23	0.23
v/c Ratio	0.92	0.57	0.46	0.97	0.76		0.96	0.76	0.14	0.56	0.87	0.35
Control Delay	84.9	38.9	6.1	112.5	50.9		81.7	32.6	0.4	78.5	54.2	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	84.9	38.9	6.1	112.5	50.9		81.7	32.6	0.4	78.5	54.2	5.7
LOS	F	D	A	F	D		F	C	A	E	D	A
Approach Delay		42.0			72.6			41.5			46.7	
Approach LOS		D			E			D			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 112.8

Natural Cycle: 115

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 46.7

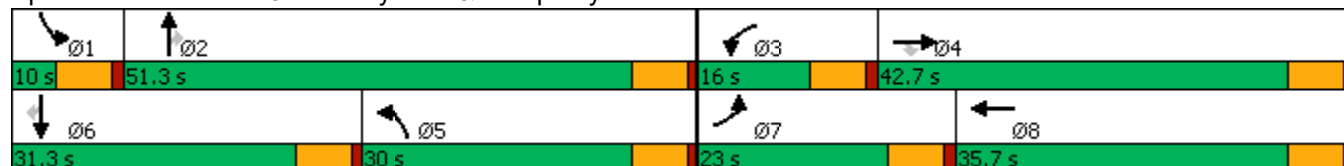
Intersection LOS: D

Intersection Capacity Utilization 82.5%

ICU Level of Service E
























Analysis Period (min) 15

Splits and Phases: 6: Mooney Blvd & Prosperity Ave



HCM 6th Signalized Intersection Summary  
6: Mooney Blvd & Prosperity Ave

AM 2044  
03/13/2024




												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	233	276	256	155	191	92	332	1070	92	44	663	155
Future Volume (veh/h)	233	276	256	155	191	92	332	1070	92	44	663	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	253	300	278	168	208	100	361	1163	100	48	721	168
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	279	523	400	176	257	123	382	1478	590	88	841	338
Arrive On Green	0.17	0.28	0.28	0.11	0.22	0.20	0.23	0.42	0.42	0.05	0.24	0.24
Sat Flow, veh/h	1641	1870	1432	1641	1184	569	1641	3554	1420	1641	3554	1431
Grp Volume(v), veh/h	253	300	278	168	0	308	361	1163	100	48	721	168
Grp Sat Flow(s),veh/h/ln	1641	1870	1432	1641	0	1753	1641	1777	1420	1641	1777	1431
Q Serve(g_s), s	16.9	15.4	10.2	11.4	0.0	18.7	24.1	31.7	4.9	3.2	21.7	7.2
Cycle Q Clear(g_c), s	16.9	15.4	10.2	11.4	0.0	18.7	24.1	31.7	4.9	3.2	21.7	7.2
Prop In Lane	1.00		1.00	1.00		0.32	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	279	523	400	176	0	380	382	1478	590	88	841	338
V/C Ratio(X)	0.91	0.57	0.69	0.95	0.00	0.81	0.94	0.79	0.17	0.54	0.86	0.50
Avail Cap(c_a), veh/h	279	649	497	176	0	498	382	1507	602	88	870	350
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.4	34.5	10.0	49.5	0.0	41.8	42.1	28.3	20.5	51.5	40.8	14.9
Incr Delay (d2), s/veh	30.6	1.0	3.1	53.7	0.0	7.5	32.0	2.8	0.1	6.7	8.4	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.9	6.7	6.0	7.1	0.0	8.4	12.5	12.8	1.5	1.4	9.9	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	76.0	35.5	13.1	103.2	0.0	49.3	74.1	31.1	20.6	58.2	49.1	16.0
LnGrp LOS	E	D	B	F	A	D	E	C	C	E	D	B
Approach Vol, veh/h	831			476			1624			937		
Approach Delay, s/veh	40.3			68.3			40.0			43.7		
Approach LOS	D			E			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	50.4	16.0	35.2	30.0	30.4	23.0	28.2				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	45.0	45.3	10.0	36.7	24.0	25.3	17.0	29.7				
Max Q Clear Time (g_c+l1),s	33.7	33.7	13.4	17.4	26.1	23.7	18.9	20.7				
Green Ext Time (p_c), s	0.0	4.6	0.0	2.1	0.0	0.7	0.0	0.7				
Intersection Summary												
HCM 6th Ctrl Delay	44.5											
HCM 6th LOS	D											

Lanes, Volumes, Timings  
7: Morrison St & Prosperity Ave

AM 2044  
03/13/2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↰	↱
Traffic Volume (vph)	390	7	41	392	37	70
Future Volume (vph)	390	7	41	392	37	70
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.997				0.912	
Flt Protected				0.995	0.983	
Satd. Flow (prot)	1857	0	0	1853	1538	0
Flt Permitted				0.995	0.983	
Satd. Flow (perm)	1857	0	0	1853	1538	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	424	8	45	426	40	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	432	0	0	471	116	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization 60.7%				ICU Level of Service B		
Analysis Period (min) 15						









Intersection						
Int Delay, s/veh	2.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	390	7	41	392	37	70
Future Vol, veh/h	390	7	41	392	37	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None		- None		- None	
Storage Length	-	-	-	-	0	-
Veh in Median Storage	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	424	8	45	426	40	76
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	432	0	944	428
Stage 1	-	-	-	-	428	-
Stage 2	-	-	-	-	516	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1128	-	291	627
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	599	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1128	-	276	627
Mov Cap-2 Maneuver	-	-	-	-	276	-
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	568	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.8		16.3	
HCM LOS					C	
Minor Lane/Major Mvm	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	435	-	-	1128	-	
HCM Lane V/C Ratio	0.267	-	-	0.04	-	
HCM Control Delay (s)	16.3	-	-	8.3	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	1.1	-	-	0.1	-	

Lanes, Volumes, Timings  
8: Prosperity Ave & Oakmore Rd

AM 2044  
03/13/2024
















Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	169	283	269	49	29	153
Future Volume (vph)	169	283	269	49	29	153
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.979		0.887	
Flt Protected		0.982			0.992	
Satd. Flow (prot)	0	1829	1824	0	1510	0
Flt Permitted		0.982			0.992	
Satd. Flow (perm)	0	1829	1824	0	1510	0
Link Speed (mph)		55	55		55	
Link Distance (ft)		2108	5202		1848	
Travel Time (s)		26.1	64.5		22.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	184	308	292	53	32	166
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	492	345	0	198	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	63.4%			ICU Level of Service B		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	4.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	169	283	269	49	29	153
Future Vol, veh/h	169	283	269	49	29	153
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None		- None		- None	
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0		0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	184	308	292	53	32	166
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	345	0	-	0	995	319
Stage 1	-	-	-	-	319	-
Stage 2	-	-	-	-	676	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1214	-	-	-	271	722
Stage 1	-	-	-	-	737	-
Stage 2	-	-	-	-	505	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1214	-	-	-	221	722
Mov Cap-2 Maneuver	-	-	-	-	221	-
Stage 1	-	-	-	-	602	-
Stage 2	-	-	-	-	505	-
Approach	EB	WB		SB		
HCM Control Delay, s	2	0		15.8		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1214	-	-	-	530	
HCM Lane V/C Ratio	0.151	-	-	-	0.373	
HCM Control Delay (s)	8.5	0	-	-	15.8	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %tile Q(veh)	0.5	-	-	-	1.7	

Lanes, Volumes, Timings  
9: Mooney Blvd & Seminole Ave

AM 2044  
03/13/2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (vph)	2	367	1400	29	78	1015
Future Volume (vph)	2	367	1400	29	78	1015
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	0	540		0	80	
Storage Lanes	0	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.865		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	0	1484	3539	1458	1630	3539
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	0	1484	3539	1458	1630	3539
Link Speed (mph)	55		55			55
Link Distance (ft)	1218		2623			2667
Travel Time (s)	15.1		32.5			33.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	399	1522	32	85	1103
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2	399	1522	32	85	1103
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization Err%	ICU Level of Service H					
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	16.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗	↗	↗	↗↗
Traffic Vol, veh/h	2	367	1400	29	78	1015
Future Vol, veh/h	2	367	1400	29	78	1015
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	- None		- None		- None	
Storage Length	-	-	-	0	80	-
Veh in Median Storage	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	399	1522	32	85	1103

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	2244	761	0
Stage 1	1522	-	-
Stage 2	722	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	36 ~ 348	-	-
Stage 1	166	-	-
Stage 2	442	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	29 ~ 348	-	-
Mov Cap-2 Maneuver	29	-	-
Stage 1	166	-	-
Stage 2	353	-	-
























Approach	WB	NB	SB
HCM Control Delay	28.4	0	1.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	348	422	-
HCM Lane V/C Ratio	-	-	1.146	0.201	-
HCM Control Delay (s)	-	-	128.4	15.7	-
HCM Lane LOS	-	-	F	C	-
HCM 95th %tile Q(veh)	-	-	15.8	0.7	-

Notes  
~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon













Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

AM 2044  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	615	107	66	932	65	127	225	62	58	189	70
Future Volume (vph)	80	615	107	66	932	65	127	225	62	58	189	70
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		135	110		0	90		90	80		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97		1.00				0.98			0.98
Frt			0.850		0.990				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3496	0	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1409	1630	3496	0	1630	1863	1432	1630	1863	1433
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			208		7				149			149
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		841			2671			726			5387	
Travel Time (s)		10.4			33.1			9.0			66.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	668	116	72	1013	71	138	245	67	63	205	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	668	116	72	1084	0	138	245	67	63	205	76
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

AM 2044  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.9	29.9	10.0	28.4		10.0	39.9	39.9	10.0	44.1	44.1
Total Split (s)	10.0	36.9	36.9	11.0	37.9		18.0	44.1	44.1	18.0	44.1	44.1
Total Split (%)	9.1%	33.5%	33.5%	10.0%	34.5%		16.4%	40.1%	40.1%	16.4%	40.1%	40.1%
Maximum Green (s)	4.0	30.9	30.9	5.0	31.9		12.0	38.1	38.1	12.0	38.1	38.1
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		16.9	16.9		15.4			26.9	26.9		31.1	31.1
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	6.1	35.9	35.9	7.1	34.4		13.1	24.6	24.6	10.7	19.5	19.5
Actuated g/C Ratio	0.07	0.40	0.40	0.08	0.39		0.15	0.28	0.28	0.12	0.22	0.22
v/c Ratio	0.78	0.47	0.17	0.56	0.80		0.58	0.48	0.13	0.32	0.50	0.18
Control Delay	87.7	24.0	0.5	60.6	31.8		48.6	31.2	0.5	43.2	34.3	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	87.7	24.0	0.5	60.6	31.8		48.6	31.2	0.5	43.2	34.3	0.9
LOS	F	C	A	E	C		D	C	A	D	C	A
Approach Delay		27.2			33.6			32.0			28.5	
Approach LOS		C			C			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 89.3

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 30.7









Intersection LOS: C

Intersection Capacity Utilization 66.9%

ICU Level of Service C

Analysis Period (min) 15
























Splits and Phases: 10: Laspina St & Tulare Ave

 Ø1	 Ø2	 Ø3	 Ø4
18 s	44.1 s	11 s	36.9 s
 Ø6	 Ø5	 Ø7	 Ø8
44.1 s	18 s	10 s	37.9 s



























HCM 6th Signalized Intersection Summary  
10: Laspina St & Tulare Ave

AM 2044  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	615	107	66	932	65	127	225	62	58	189	70
Future Volume (veh/h)	80	615	107	66	932	65	127	225	62	58	189	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No				No			
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	87	668	116	72	1013	71	138	245	67	63	205	76
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	133	1317	525	132	1243	87	212	483	370	122	379	290
Arrive On Green	0.08	0.37	0.37	0.08	0.37	0.34	0.13	0.26	0.26	0.07	0.20	0.20
Sat Flow, veh/h	1641	3554	1418	1641	3361	236	1641	1870	1432	1641	1870	1429
Grp Volume(v), veh/h	87	668	116	72	535	549	138	245	67	63	205	76
Grp Sat Flow(s),veh/h/ln	1641	1777	1418	1641	1777	1820	1641	1870	1432	1641	1870	1429
Q Serve(g_s), s	3.8	10.8	2.2	3.1	20.1	20.1	5.9	8.3	2.7	2.7	7.2	2.3
Cycle Q Clear(g_c), s	3.8	10.8	2.2	3.1	20.1	20.1	5.9	8.3	2.7	2.7	7.2	2.3
Prop In Lane	1.00		1.00	1.00		0.13	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	133	1317	525	132	657	673	212	483	370	122	379	290
V/C Ratio(X)	0.65	0.51	0.22	0.54	0.81	0.82	0.65	0.51	0.18	0.52	0.54	0.26
Avail Cap(c_a), veh/h	133	1583	632	155	815	835	311	1015	777	311	1015	775
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.9	18.0	4.6	32.7	21.0	21.1	30.6	23.4	21.3	32.9	26.4	12.0
Incr Delay (d2), s/veh	10.8	0.3	0.2	3.5	5.2	5.1	3.3	0.8	0.2	3.4	1.2	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	3.7	1.1	1.2	7.8	8.0	2.3	3.3	0.8	1.1	3.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.8	18.3	4.8	36.1	26.2	26.3	33.9	24.2	21.6	36.3	27.6	12.4
LnGrp LOS	D	B	A	D	C	C	C	C	C	D	C	B
Approach Vol, veh/h	871		1156				450			344		
Approach Delay, s/veh	19.1		26.9				26.8			25.8		
Approach LOS	B		C				C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.5	23.1	9.9	31.4	13.6	19.0	10.0	31.3				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	25.0	38.1	5.0	30.9	12.0	38.1	4.0	31.9				
Max Q Clear Time (g_c+l1),s	4.7	10.3	5.1	12.8	7.9	9.2	5.8	22.1				
Green Ext Time (p_c), s	0.1	1.1	0.0	3.2	0.1	1.0	0.0	3.2				
Intersection Summary												
HCM 6th Ctrl Delay	24.3											
HCM 6th LOS	C											













Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

AM 2044  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	313	525	131	114	661	322	220	898	101	183	494	235
Future Volume (vph)	313	525	131	114	661	322	220	898	101	183	494	235
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	420		185	125		125	80		0	475		475
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98		1.00				0.98
Frt			0.850			0.850		0.985				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3539	1458	1630	3475	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1412	1630	3539	1430	1630	3475	0	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			230			11			255
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2671			2887			1662			2623	
Travel Time (s)		33.1			35.8			20.6			32.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	340	571	142	124	718	350	239	976	110	199	537	255
Shared Lane Traffic (%)												
Lane Group Flow (vph)	340	571	142	124	718	350	239	1086	0	199	537	255
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

AM 2044  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	37.0	37.0	10.0	37.0	37.0	10.0	39.9		10.0	42.7	42.7
Total Split (s)	22.0	38.0	38.0	21.0	37.0	37.0	17.0	43.0		18.0	44.0	44.0
Total Split (%)	18.3%	31.7%	31.7%	17.5%	30.8%	30.8%	14.2%	35.8%		15.0%	36.7%	36.7%
Maximum Green (s)	16.0	32.0	32.0	15.0	31.0	31.0	11.0	37.0		12.0	38.0	38.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		24.0	24.0		24.0	24.0		26.9			29.7	29.7
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	18.0	33.5	33.5	14.9	30.3	30.3	15.2	38.7		14.0	37.5	37.5
Actuated g/C Ratio	0.15	0.29	0.29	0.13	0.26	0.26	0.13	0.33		0.12	0.32	0.32
v/c Ratio	1.36	0.56	0.26	0.60	0.78	0.65	1.13	0.94		1.02	0.90	0.40
Control Delay	223.4	38.5	2.8	61.2	47.2	19.0	148.0	53.9		121.8	57.7	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	223.4	38.5	2.8	61.2	47.2	19.0	148.0	53.9		121.8	57.7	5.5
LOS	F	D	A	E	D	B	F	D		F	E	A
Approach Delay		93.4			40.4			70.9			57.2	
Approach LOS		F			D			E			E	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 117.1

Natural Cycle: 140

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.36

Intersection Signal Delay: 65.1

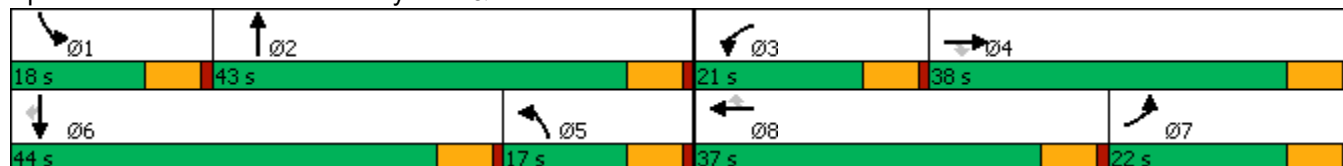
Intersection LOS: E

Intersection Capacity Utilization 91.5%

ICU Level of Service F

























Analysis Period (min) 15

Splits and Phases: 11: Mooney Blvd & Tulare Ave



















HCM 6th Signalized Intersection Summary  
11: Mooney Blvd & Tulare Ave

AM 2044  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	313	525	131	114	661	322	220	898	101	183	494	235
Future Volume (veh/h)	313	525	131	114	661	322	220	898	101	183	494	235
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	340	571	142	124	718	350	239	976	110	199	537	255
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	255	1073	427	175	901	363	215	1065	120	198	602	462
Arrive On Green	0.16	0.30	0.30	0.11	0.25	0.25	0.13	0.33	0.31	0.12	0.32	0.32
Sat Flow, veh/h	1641	3554	1415	1641	3554	1431	1641	3208	361	1641	1870	1434
Grp Volume(v), veh/h	340	571	142	124	718	350	239	541	545	199	537	255
Grp Sat Flow(s),veh/h/ln	1641	1777	1415	1641	1777	1431	1641	1777	1792	1641	1870	1434
Q Serve(g_s), s	18.0	15.5	6.0	8.5	21.9	19.6	15.2	33.8	33.9	14.0	31.6	17.0
Cycle Q Clear(g_c), s	18.0	15.5	6.0	8.5	21.9	19.6	15.2	33.8	33.9	14.0	31.6	17.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	255	1073	427	175	901	363	215	590	595	198	602	462
V/C Ratio(X)	1.33	0.53	0.33	0.71	0.80	0.96	1.11	0.92	0.92	1.00	0.89	0.55
Avail Cap(c_a), veh/h	255	1073	427	241	1013	408	215	598	603	198	646	495
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.9	33.6	13.8	50.0	40.4	20.9	50.3	37.1	37.3	50.9	37.3	32.4
Incr Delay (d2), s/veh	174.3	0.5	0.5	5.7	4.1	33.7	94.7	18.9	18.8	64.8	14.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	19.3	6.3	2.8	3.6	9.5	9.3	11.6	16.7	16.9	9.0	15.8	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	223.2	34.1	14.3	55.6	44.5	54.6	145.0	56.0	56.2	115.7	51.4	33.5
LnGrp LOS	F	C	B	E	D	D	F	E	E	F	D	C
Approach Vol, veh/h		1053			1192			1325			991	
Approach Delay, s/veh		92.5			48.6			72.1			59.7	
Approach LOS		F			D			E			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.0	42.5	16.4	39.0	19.2	41.3	22.0	33.4				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	25.0	37.0	15.0	32.0	11.0	38.0	16.0	31.0				
Max Q Clear Time (g_c+I1), s	11.6	35.9	10.5	17.5	17.2	33.6	20.0	23.9				
Green Ext Time (p_c), s	0.0	0.6	0.1	2.6	0.0	1.4	0.0	2.8				
Intersection Summary												
HCM 6th Ctrl Delay			68.0									
HCM 6th LOS			E									

Lanes, Volumes, Timings  
12: Morrison St & Tulare Ave

AM 2044  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	640	74	43	792	0	129	72	136	0	26	15
Future Volume (vph)	31	640	74	43	792	0	129	72	136	0	26	15
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987						0.945			0.951	
Flt Protected		0.998			0.997			0.981				
Satd. Flow (prot)	0	1835	0	0	1857	0	0	1727	0	0	1771	0
Flt Permitted		0.998			0.997			0.981				
Satd. Flow (perm)	0	1835	0	0	1857	0	0	1727	0	0	1771	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	696	80	47	861	0	140	78	148	0	28	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	810	0	0	908	0	0	366	0	0	44	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	
Intersection Summary												
Area Type:	Other											
Control Type:	Roundabout											
Intersection Capacity Utilization	90.4%				ICU Level of Service E							
Analysis Period (min)	15											























Intersection				
Intersection Delay, s/veh	18.3			
Intersection LOS	C			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	810	908	366	44
Demand Flow Rate, veh/h	827	926	374	45
Vehicles Circulating, veh/h	77	258	745	1069
Vehicles Exiting, veh/h	1037	861	159	115
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	11.3	25.9	16.1	9.2
Approach LOS	B	D	C	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	827	926	374	45
Cap Entry Lane, veh/h	1276	1061	645	464
Entry HV Adj Factor	0.980	0.980	0.980	0.987
Flow Entry, veh/h	810	908	366	44
Cap Entry, veh/h	1250	1040	632	458
V/C Ratio	0.648	0.873	0.579	0.097
Control Delay, s/veh	11.3	25.9	16.1	9.2
LOS	B	D	C	A
95th %tile Queue, veh	5	12	4	0

















Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

AM 2044+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	204	262	201	34	177	3	229	1146	37	14	686	116
Future Volume (vph)	204	262	201	34	177	3	229	1146	37	14	686	116
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.998			0.995			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1858	0	1630	3518	0	1630	3446	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1858	0	1630	3518	0	1630	3446	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			218		1			3			16	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	222	285	218	37	192	3	249	1246	40	15	746	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	285	218	37	195	0	249	1286	0	15	872	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

AM 2044+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	21.0	46.9	46.9	11.3	37.2		22.4	52.2		9.6	39.4	
Total Split (%)	17.5%	39.1%	39.1%	9.4%	31.0%		18.7%	43.5%		8.0%	32.8%	
Maximum Green (s)	15.5	41.4	41.4	5.8	31.7		16.9	46.7		4.1	33.9	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effct Green (s)	17.2	33.7	33.7	7.3	18.8		18.6	50.3		5.7	31.1	
Actuated g/C Ratio	0.17	0.33	0.33	0.07	0.18		0.18	0.49		0.06	0.31	
v/c Ratio	0.81	0.46	0.35	0.32	0.57		0.84	0.74		0.17	0.82	
Control Delay	66.0	31.7	5.4	56.8	44.5		66.9	25.9		55.3	40.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	66.0	31.7	5.4	56.8	44.5		66.9	25.9		55.3	40.3	
LOS	E	C	A	E	D		E	C		E	D	
Approach Delay		34.3			46.5			32.5			40.5	
Approach LOS		C			D			C			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 101.9

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 36.0









Intersection LOS: D

Intersection Capacity Utilization 75.0%

ICU Level of Service D

Analysis Period (min) 15






















Splits and Phases: 1: Mooney Blvd & Cartmill Ave

			
Ø1	Ø2	Ø3	Ø4
9.6 s	52.2 s	11.3 s	46.9 s
			
Ø5	Ø6	Ø7	Ø8
22.4 s	39.4 s	21 s	37.2 s

# HCM 6th Signalized Intersection Summary

## 1: Mooney Blvd & Cartmill Ave

AM 2044+Project  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	204	262	201	34	177	3	229	1146	37	14	686	116
Future Volume (veh/h)	204	262	201	34	177	3	229	1146	37	14	686	116
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	222	285	218	37	192	3	249	1246	40	15	746	126
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	277	548	420	71	307	5	303	1616	52	49	924	156
Arrive On Green	0.17	0.29	0.29	0.04	0.17	0.15	0.18	0.46	0.44	0.03	0.31	0.29
Sat Flow, veh/h	1641	1870	1433	1641	1836	29	1641	3511	113	1641	3025	511
Grp Volume(v), veh/h	222	285	218	37	0	195	249	630	656	15	438	434
Grp Sat Flow(s),veh/h/ln	1641	1870	1433	1641	0	1864	1641	1777	1846	1641	1777	1759
Q Serve(g_s), s	12.0	11.7	11.7	2.0	0.0	9.0	13.4	27.3	27.4	0.8	20.9	21.0
Cycle Q Clear(g_c), s	12.0	11.7	11.7	2.0	0.0	9.0	13.4	27.3	27.4	0.8	20.9	21.0
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.06	1.00		0.29
Lane Grp Cap(c), veh/h	277	548	420	71	0	312	303	818	850	49	543	537
V/C Ratio(X)	0.80	0.52	0.52	0.52	0.00	0.63	0.82	0.77	0.77	0.30	0.81	0.81
Avail Cap(c_a), veh/h	303	870	667	130	0	671	327	929	965	100	682	676
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.8	27.2	27.2	43.2	0.0	35.7	36.1	20.8	20.9	43.8	29.5	29.7
Incr Delay (d2), s/veh	13.3	0.8	1.0	5.9	0.0	2.1	14.4	3.5	3.4	3.4	5.7	5.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	4.9	3.7	0.9	0.0	3.9	6.2	10.4	10.8	0.4	8.9	8.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.2	28.0	28.2	49.0	0.0	37.8	50.5	24.3	24.3	47.2	35.2	35.5
LnGrp LOS	D	C	C	D	A	D	D	C	C	D	D	D
Approach Vol, veh/h	725			232			1535			887		
Approach Delay, s/veh	34.8			39.6			28.6			35.6		
Approach LOS	C			D			C			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.8	46.4	8.0	31.0	21.0	32.2	19.6	19.4				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax),s	46.7	5.8	41.4	16.9	33.9	15.5	31.7					
Max Q Clear Time (g_c+l1),s	29.4	4.0	13.7	15.4	23.0	14.0	11.0					
Green Ext Time (p_c), s	0.0	5.1	0.0	1.9	0.1	2.7	0.1	0.6				
Intersection Summary												
HCM 6th Ctrl Delay	32.5											
HCM 6th LOS	C											

Lanes, Volumes, Timings  
2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

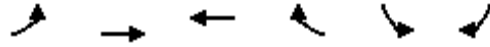
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Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (vph)	0	527	544	0	159	175
Future Volume (vph)	0	527	544	0	159	175
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Fr <sub>t</sub>						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	1630	1458
Flt Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	1630	1458
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						190
Link Speed (mph)		55	55		55	
Link Distance (ft)		349	727		300	
Travel Time (s)		4.3	9.0		3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	573	591	0	173	190
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	573	591	0	173	190
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors		1	1		1	1
Detector Template						
Leading Detector (ft)		50	50		50	50
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		50	50		50	50
Detector 1 Type		CI+Ex	CI+Ex		CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		4.0	4.0		4.0	4.0
Minimum Split (s)		24.0	24.0		24.0	24.0
Total Split (s)		45.0	45.0		45.0	45.0
Total Split (%)		50.0%	50.0%		50.0%	50.0%
Maximum Green (s)		39.0	39.0		39.0	39.0
Yellow Time (s)		5.0	5.0		5.0	5.0

Lanes, Volumes, Timings  
2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

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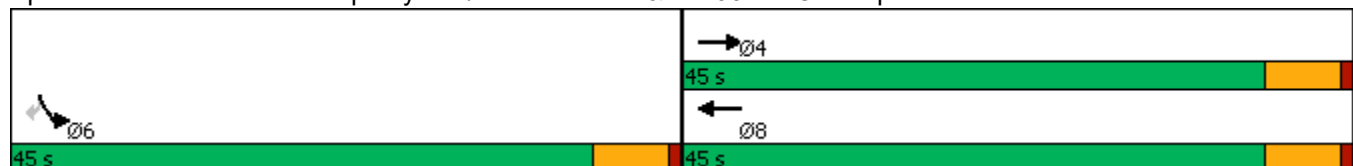


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		None	None		Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		13.1	13.1		11.3	11.3
Actuated g/C Ratio		0.40	0.40		0.35	0.35
v/c Ratio		0.40	0.42		0.31	0.30
Control Delay		8.2	8.3		10.0	3.4
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		8.2	8.3		10.0	3.4
LOS		A	A		A	A
Approach Delay		8.2	8.3		6.5	
Approach LOS		A	A		A	

Intersection Summary

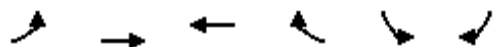
Area Type: Other  
Cycle Length: 90  
Actuated Cycle Length: 32.6  
Natural Cycle: 50  
Control Type: Actuated-Uncoordinated  
Maximum v/c Ratio: 0.42  
Intersection Signal Delay: 7.8  
Intersection LOS: A  
Intersection Capacity Utilization 33.5%  
ICU Level of Service A  
Analysis Period (min) 15

Splits and Phases: 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp



# HCM 6th Signalized Intersection Summary 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp
























AM 2044+Project  
03/13/2024



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (veh/h)	0	527	544	0	159	175
Future Volume (veh/h)	0	527	544	0	159	175
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1723	1723
Adj Flow Rate, veh/h	0	573	591	0	173	190
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	1343	1343	0	511	455
Arrive On Green	0.00	0.38	0.38	0.00	0.31	0.31
Sat Flow, veh/h	0	3741	3741	0	1641	1460
Grp Volume(v), veh/h	0	573	591	0	173	190
Grp Sat Flow(s),veh/h/ln	0	1777	1777	0	1641	1460
Q Serve(g_s), s	0.0	3.1	3.2	0.0	2.1	2.7
Cycle Q Clear(g_c), s	0.0	3.1	3.2	0.0	2.1	2.7
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1343	1343	0	511	455
V/C Ratio(X)	0.00	0.43	0.44	0.00	0.34	0.42
Avail Cap(c_a), veh/h	0	5653	5653	0	2610	2322
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	5.9	6.0	0.0	6.8	7.0
Incr Delay (d2), s/veh	0.0	0.2	0.2	0.0	0.4	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.2	0.0	0.2	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	6.2	6.2	0.0	7.2	7.6
LnGrp LOS	A	A	A	A	A	A
Approach Vol, veh/h		573	591		363	
Approach Delay, s/veh		6.2	6.2		7.4	
Approach LOS		A	A		A	
Timer - Assigned Phs				4	6	8
Phs Duration (G+Y+Rc), s				13.7	12.0	13.7
Change Period (Y+Rc), s				6.0	6.0	6.0
Max Green Setting (Gmax), s				39.0	39.0	39.0
Max Q Clear Time (g_c+l1), s				5.1	4.7	5.2
Green Ext Time (p_c), s				2.5	1.4	2.5
Intersection Summary						
HCM 6th Ctrl Delay			6.5			
HCM 6th LOS			A			

Lanes, Volumes, Timings  
3: Blackstone St & Prosperity Ave


AM 2044+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	3	699	15	499	0	34	277	316	110	2
Future Volume (vph)	0	12	3	699	15	499	0	34	277	316	110	2
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	30		0	335		310	55		90	240		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor		1.00				0.98						
Frt		0.972				0.850			0.850		0.998	
Flt Protected				0.950	0.954					0.950		
Satd. Flow (prot)	1716	1803	0	1548	1688	1458	1716	1863	1458	3162	1859	0
Flt Permitted				0.950	0.723					0.950		
Satd. Flow (perm)	1716	1803	0	1548	1279	1427	1716	1863	1458	3162	1859	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				542			301		1	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		98			1229			643			727	
Travel Time (s)		1.2			15.2			8.0			9.0	
Confl. Peds. (#/hr)			5			5						
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	13	3	760	16	542	0	37	301	343	120	2
Shared Lane Traffic (%)				49%								
Lane Group Flow (vph)	0	16	0	388	388	542	0	37	301	343	122	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												



Lanes, Volumes, Timings  
3: Blackstone St & Prosperity Ave

AM 2044+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	24.1		10.0	24.1	24.1	10.0	24.0	24.0	10.0	24.0	
Total Split (s)	10.0	24.1		33.9	48.0	48.0	10.0	24.0	24.0	23.0	37.0	
Total Split (%)	9.5%	23.0%		32.3%	45.7%	45.7%	9.5%	22.9%	22.9%	21.9%	35.2%	
Maximum Green (s)	4.0	18.1		27.9	42.0	42.0	4.0	18.0	18.0	17.0	31.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		11.1			11.1	11.1		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		5			5	5		0	0		0	
Act Effct Green (s)		10.0		39.7	39.7	46.2		10.7	10.7	15.8	30.5	
Actuated g/C Ratio		0.12		0.47	0.47	0.54		0.13	0.13	0.19	0.36	
v/c Ratio		0.07		0.54	0.49	0.53		0.16	0.67	0.58	0.18	
Control Delay		31.1		24.8	23.3	3.3		35.7	12.8	36.9	19.2	
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay		31.1		24.8	23.3	3.3		35.7	12.8	36.9	19.2	
LOS		C		C	C	A		D	B	D	B	
Approach Delay		31.1			15.5			15.3			32.2	
Approach LOS		C			B			B			C	

Intersection Summary

Area Type: Other

Cycle Length: 105

Actuated Cycle Length: 84.8

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 19.2









Intersection LOS: B

Intersection Capacity Utilization 50.8%

ICU Level of Service A
























Analysis Period (min) 15

Splits and Phases: 3: Blackstone St & Prosperity Ave

 Ø1	 Ø2	 Ø4	 Ø3
23 s	24 s	24.1 s	33.9 s
 Ø5	 Ø6	 Ø7	 Ø8
10 s	37 s	10 s	48 s

























# HCM 6th Signalized Intersection Summary 3: Blackstone St & Prosperity Ave

AM 2044+Project  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	12	3	699	15	499	0	34	277	316	110	2
Future Volume (veh/h)	0	12	3	699	15	499	0	34	277	316	110	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	0	13	3	771	0	542	0	37	301	343	120	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	3	167	38	1046	0	713	3	255	199	564	691	12
Arrive On Green	0.00	0.11	0.08	0.32	0.00	0.50	0.00	0.14	0.14	0.18	0.38	0.35
Sat Flow, veh/h	1641	1459	337	3281	0	1437	1641	1870	1460	3183	1834	31
Grp Volume(v), veh/h	0	0	16	771	0	542	0	37	301	343	0	122
Grp Sat Flow(s),veh/h/ln	1641	0	1795	1641	0	1437	1641	1870	1460	1591	0	1865
Q Serve(g_s), s	0.0	0.0	0.5	13.2	0.0	19.2	0.0	1.1	3.5	6.3	0.0	2.8
Cycle Q Clear(g_c), s	0.0	0.0	0.5	13.2	0.0	19.2	0.0	1.1	3.5	6.3	0.0	2.8
Prop In Lane	1.00		0.19	1.00		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	3	0	205	1046	0	713	3	255	199	564	0	703
V/C Ratio(X)	0.00	0.00	0.08	0.74	0.00	0.76	0.00	0.15	1.51	0.61	0.00	0.17
Avail Cap(c_a), veh/h	156	0	572	1556	0	1003	156	593	463	959	0	976
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	25.1	19.1	0.0	12.8	0.0	24.0	4.6	23.9	0.0	13.1
Incr Delay (d2), s/veh	0.0	0.0	0.2	1.0	0.0	2.2	0.0	0.3	242.8	1.1	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.2	4.1	0.0	4.6	0.0	0.4	15.7	2.1	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	25.3	20.2	0.0	15.0	0.0	24.3	247.4	25.0	0.0	13.2
LnGrp LOS	A	A	C	C	A	B	A	C	F	C	A	B
Approach Vol, veh/h	16			1313				338			465	
Approach Delay, s/veh	25.3			18.0				222.9			21.9	
Approach LOS	C			B				F			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.2	12.6	24.1	11.2	0.0	27.8	0.0	35.3				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	18.0	18.0	27.9	18.1	4.0	31.0	4.0	42.0				
Max Q Clear Time (g_c+I1),s	5.5	5.5	15.2	2.5	0.0	4.8	0.0	21.2				
Green Ext Time (p_c), s	0.9	1.1	2.9	0.0	0.0	0.3	0.0	2.4				
Intersection Summary												
HCM 6th Ctrl Delay			51.4									
HCM 6th LOS			D									
Notes												













Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

AM 2044+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	375	461	99	84	724	172	128	272	101	86	32	296
Future Volume (vph)	375	461	99	84	724	172	128	272	101	86	32	296
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	270		0	155		85	155		0	200		205
Storage Lanes	2		1	1		1	1		0	2		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	0.88
Ped Bike Factor			0.97			0.98		1.00				0.97
Frt			0.850			0.850		0.959				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	1630	5085	1458	1630	3378	0	3162	1863	2567
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1410	1630	5085	1433	1630	3378	0	3162	1863	2493
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			136		52				302
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1229			2636			362			5336	
Travel Time (s)		15.2			32.7			4.5			66.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	408	501	108	91	787	187	139	296	110	93	35	322
Shared Lane Traffic (%)												
Lane Group Flow (vph)	408	501	108	91	787	187	139	406	0	93	35	322
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

AM 2044+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	32.7	32.7	10.0	45.6	45.6	10.0	47.0		10.0	49.9	49.9
Total Split (s)	11.0	44.1	44.1	14.0	47.1	47.1	12.0	50.9		11.0	49.9	49.9
Total Split (%)	9.2%	36.8%	36.8%	11.7%	39.3%	39.3%	10.0%	42.4%		9.2%	41.6%	41.6%
Maximum Green (s)	5.0	38.1	38.1	8.0	41.1	41.1	6.0	44.9		5.0	43.9	43.9
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		19.7	19.7		32.6	32.6		34.0			36.9	36.9
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	8.3	23.0	23.0	10.5	21.6	21.6	8.7	21.1		7.6	16.9	16.9
Actuated g/C Ratio	0.11	0.32	0.32	0.14	0.30	0.30	0.12	0.29		0.10	0.23	0.23
v/c Ratio	1.13	0.45	0.20	0.39	0.52	0.36	0.72	0.40		0.28	0.08	0.40
Control Delay	120.2	23.9	3.8	40.9	23.1	9.7	58.2	20.1		39.5	22.2	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	120.2	23.9	3.8	40.9	23.1	9.7	58.2	20.1		39.5	22.2	5.2
LOS	F	C	A	D	C	A	E	C		D	C	A
Approach Delay		60.4			22.3			29.8			13.6	
Approach LOS		E			C			C			B	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 72.8

Natural Cycle: 130

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.13

Intersection Signal Delay: 34.9









Intersection LOS: C

Intersection Capacity Utilization 59.7%

ICU Level of Service B

























Analysis Period (min) 15

Splits and Phases: 4: Hillman St & Prosperity Ave

 Ø1	 Ø2	 Ø3	 Ø4
11 s	50.9 s	14 s	44.1 s
 Ø5	 Ø6	 Ø8	 Ø7
12 s	49.9 s	47.1 s	11 s

























HCM 6th Signalized Intersection Summary  
4: Hillman St & Prosperity Ave

AM 2044+Project  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	375	461	99	84	724	172	128	272	101	86	32	296
Future Volume (veh/h)	375	461	99	84	724	172	128	272	101	86	32	296
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	408	501	108	91	787	187	139	296	110	93	35	322
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	353	1096	437	164	1518	426	208	649	235	263	396	525
Arrive On Green	0.11	0.31	0.31	0.10	0.30	0.30	0.13	0.26	0.22	0.08	0.21	0.21
Sat Flow, veh/h	3183	3554	1416	1641	5106	1433	1641	2538	921	3183	1870	2479
Grp Volume(v), veh/h	408	501	108	91	787	187	139	205	201	93	35	322
Grp Sat Flow(s),veh/h/ln	1591	1777	1416	1641	1702	1433	1641	1777	1682	1591	1870	1240
Q Serve(g_s), s	7.0	7.2	3.6	3.3	8.1	4.1	5.1	6.1	6.5	1.7	0.9	4.6
Cycle Q Clear(g_c), s	7.0	7.2	3.6	3.3	8.1	4.1	5.1	6.1	6.5	1.7	0.9	4.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.55	1.00		1.00
Lane Grp Cap(c), veh/h	353	1096	437	164	1518	426	208	454	430	263	396	525
V/C Ratio(X)	1.16	0.46	0.25	0.56	0.52	0.44	0.67	0.45	0.47	0.35	0.09	0.61
Avail Cap(c_a), veh/h	353	2257	899	260	3486	978	208	1320	1250	353	1360	1803
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.1	17.6	16.3	27.1	18.4	6.7	26.3	19.8	20.4	27.4	20.0	8.6
Incr Delay (d2), s/veh	97.4	0.3	0.3	2.9	0.3	0.7	8.0	0.7	0.8	0.8	0.1	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.1	2.4	1.0	1.3	2.6	1.7	2.2	2.2	2.2	0.6	0.4	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	125.5	17.9	16.6	30.0	18.7	7.4	34.3	20.5	21.1	28.2	20.1	9.8
LnGrp LOS	F	B	B	C	B	A	C	C	C	C	C	A
Approach Vol, veh/h	1017			1065			545			450		
Approach Delay, s/veh	60.9			17.7			24.2			14.4		
Approach LOS	E			B			C			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.2	20.1	10.3	23.5	12.0	17.4	11.0	22.8				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	50	44.9	8.0	38.1	6.0	43.9	5.0	41.1				
Max Q Clear Time (g_c+l1)3s	7	8.5	5.3	9.2	7.1	6.6	9.0	10.1				
Green Ext Time (p_c), s	0.0	1.5	0.0	2.6	0.0	1.7	0.0	4.6				
Intersection Summary												
HCM 6th Ctrl Delay	32.6											
HCM 6th LOS	C											













Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

AM 2044+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	453	102	63	587	73	123	180	69	55	169	99
Future Volume (vph)	53	453	102	63	587	73	123	180	69	55	169	99
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	235		115	230		100	100		100	160		100
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97			0.97			0.97			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	5085	1458	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1409	1630	5085	1413	1630	1863	1418	1630	1863	1434
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164			164			164			164
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2636			2650			5387			713	
Travel Time (s)		32.7			32.9			66.8			8.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	58	492	111	68	638	79	134	196	75	60	184	108
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	492	111	68	638	79	134	196	75	60	184	108
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

AM 2044+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	27.0	27.0	10.0	34.1	34.1	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (s)	10.0	33.4	33.4	11.0	34.4	34.4	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (%)	10.0%	33.4%	33.4%	11.0%	34.4%	34.4%	10.0%	45.6%	45.6%	10.0%	45.6%	45.6%
Maximum Green (s)	4.0	27.4	27.4	5.0	28.4	28.4	4.0	39.6	39.6	4.0	39.6	39.6
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		21.1	21.1		32.6	32.6		32.6	32.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	6.6	17.2	17.2	7.7	20.2	20.2	6.6	20.4	20.4	6.6	17.1	17.1
Actuated g/C Ratio	0.11	0.28	0.28	0.12	0.32	0.32	0.11	0.33	0.33	0.11	0.27	0.27
v/c Ratio	0.34	0.51	0.22	0.34	0.39	0.14	0.78	0.32	0.13	0.35	0.36	0.21
Control Delay	40.1	22.9	2.4	38.4	19.1	0.5	66.3	20.6	0.5	40.5	21.2	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.1	22.9	2.4	38.4	19.1	0.5	66.3	20.6	0.5	40.5	21.2	1.8
LOS	D	C	A	D	B	A	E	C	A	D	C	A
Approach Delay		21.0			18.9			32.0			18.5	
Approach LOS		C			B			C			B	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 62.5

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 21.9








Intersection LOS: C

Intersection Capacity Utilization 50.4%

ICU Level of Service A

Analysis Period (min) 15

























Splits and Phases: 5: Laspina St & Prosperity Ave

			
Ø1	Ø2	Ø3	Ø4
10 s	45.6 s	11 s	33.4 s
			
Ø5	Ø6	Ø7	Ø8
10 s	45.6 s	10 s	34.4 s


























# HCM 6th Signalized Intersection Summary 5: Laspina St & Prosperity Ave

AM 2044+Project  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	453	102	63	587	73	123	180	69	55	169	99
Future Volume (veh/h)	53	453	102	63	587	73	123	180	69	55	169	99
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No				No			No	
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	58	492	111	68	638	79	134	196	75	60	184	108
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	135	924	367	144	1354	375	191	484	366	137	423	323
Arrive On Green	0.08	0.26	0.26	0.09	0.27	0.27	0.12	0.26	0.26	0.08	0.23	0.23
Sat Flow, veh/h	1641	3554	1413	1641	5106	1413	1641	1870	1413	1641	1870	1430
Grp Volume(v), veh/h	58	492	111	68	638	79	134	196	75	60	184	108
Grp Sat Flow(s),veh/h/ln	1641	1777	1413	1641	1702	1413	1641	1870	1413	1641	1870	1430
Q Serve(g_s), s	1.7	6.1	3.3	2.0	5.4	2.2	4.1	4.5	2.1	1.8	4.4	3.3
Cycle Q Clear(g_c), s	1.7	6.1	3.3	2.0	5.4	2.2	4.1	4.5	2.1	1.8	4.4	3.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	135	924	367	144	1354	375	191	484	366	137	423	323
V/C Ratio(X)	0.43	0.53	0.30	0.47	0.47	0.21	0.70	0.40	0.21	0.44	0.44	0.33
Avail Cap(c_a), veh/h	191	2024	805	223	3008	832	191	1508	1139	191	1508	1153
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.5	16.4	15.3	22.4	15.9	14.8	21.9	15.8	15.0	22.5	17.1	16.7
Incr Delay (d2), s/veh	2.1	0.5	0.5	2.4	0.3	0.3	11.0	0.5	0.3	2.2	0.7	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.9	0.8	0.7	1.6	0.6	1.8	1.5	0.6	0.7	1.5	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.7	16.9	15.8	24.8	16.2	15.0	32.9	16.4	15.2	24.7	17.8	17.3
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h	661		785				405			352		
Approach Delay, s/veh	17.4		16.8				21.6			18.9		
Approach LOS	B		B				C			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.3	17.4	8.5	17.4	10.0	15.7	8.3	17.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	40	39.6	5.0	27.4	4.0	39.6	4.0	28.4				
Max Q Clear Time (g_c+I1),s	3.8	6.5	4.0	8.1	6.1	6.4	3.7	7.4				
Green Ext Time (p_c), s	0.0	0.9	0.0	2.4	0.0	1.0	0.0	3.0				
Intersection Summary												
HCM 6th Ctrl Delay			18.2									
HCM 6th LOS			B									













Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

AM 2044+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	233	361	256	166	324	119	332	1070	101	59	663	155
Future Volume (vph)	233	361	256	166	324	119	332	1070	101	59	663	155
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98		0.99				0.98			0.98
Frt			0.850		0.960				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1779	0	1630	3539	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1432	1630	1779	0	1630	3539	1429	1630	3539	1425
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			278		15				136			168
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2667			5285	
Travel Time (s)		32.9			36.1			33.1			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	253	392	278	180	352	129	361	1163	110	64	721	168
Shared Lane Traffic (%)												
Lane Group Flow (vph)	253	392	278	180	481	0	361	1163	110	64	721	168
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

AM 2044+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	23.0	42.7	42.7	17.0	36.7		30.0	50.3	50.3	10.0	30.3	30.3
Total Split (%)	19.2%	35.6%	35.6%	14.2%	30.6%		25.0%	41.9%	41.9%	8.3%	25.3%	25.3%
Maximum Green (s)	17.0	36.7	36.7	11.0	30.7		24.0	44.3	44.3	4.0	24.3	24.3
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	19.0	38.7	38.7	13.0	32.7		26.0	46.3	46.3	6.0	26.3	26.3
Actuated g/C Ratio	0.16	0.32	0.32	0.11	0.27		0.22	0.39	0.39	0.05	0.22	0.22
v/c Ratio	0.98	0.65	0.43	1.02	0.97		1.02	0.85	0.17	0.79	0.93	0.38
Control Delay	102.1	41.0	5.6	126.7	76.4		100.4	41.1	2.8	110.4	65.5	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	102.1	41.0	5.6	126.7	76.4		100.4	41.1	2.8	110.4	65.5	8.4
LOS	F	D	A	F	E		F	D	A	F	E	A
Approach Delay		47.1			90.1			51.6			58.4	
Approach LOS		D			F			D			E	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Natural Cycle: 115

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 58.3









Intersection LOS: E

Intersection Capacity Utilization 90.1%

ICU Level of Service E

























Analysis Period (min) 15

Splits and Phases: 6: Mooney Blvd & Prosperity Ave

 Ø1	 Ø2	 Ø3	 Ø4
10 s	50.3 s	17 s	42.7 s
 Ø6	 Ø5	 Ø7	 Ø8
30.3 s	30 s	23 s	36.7 s

# HCM 6th Signalized Intersection Summary 6: Mooney Blvd & Prosperity Ave

AM 2044+Project  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	233	361	256	166	324	119	332	1070	101	59	663	155
Future Volume (veh/h)	233	361	256	166	324	119	332	1070	101	59	663	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	253	392	278	180	352	129	361	1163	110	64	721	168
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	260	603	462	178	354	130	355	1371	554	82	779	313
Arrive On Green	0.16	0.32	0.32	0.11	0.27	0.26	0.22	0.39	0.39	0.05	0.22	0.22
Sat Flow, veh/h	1641	1870	1434	1641	1298	476	1641	3554	1435	1641	3554	1430
Grp Volume(v), veh/h	253	392	278	180	0	481	361	1163	110	64	721	168
Grp Sat Flow(s),veh/h/ln	1641	1870	1434	1641	0	1774	1641	1777	1435	1641	1777	1430
Q Serve(g_s), s	18.4	21.6	10.4	13.0	0.0	32.5	26.0	35.9	6.1	4.6	23.8	8.3
Cycle Q Clear(g_c), s	18.4	21.6	10.4	13.0	0.0	32.5	26.0	35.9	6.1	4.6	23.8	8.3
Prop In Lane	1.00		1.00	1.00		0.27	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	260	603	462	178	0	483	355	1371	554	82	779	313
V/C Ratio(X)	0.97	0.65	0.60	1.01	0.00	1.00	1.02	0.85	0.20	0.78	0.93	0.54
Avail Cap(c_a), veh/h	260	603	462	178	0	483	355	1371	554	82	779	313
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.3	34.8	9.7	53.5	0.0	43.8	47.0	33.6	24.5	56.3	45.9	18.6
Incr Delay (d2), s/veh	48.4	2.5	2.2	70.9	0.0	39.6	51.7	5.2	0.2	37.1	16.9	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.7	9.6	6.0	8.6	0.0	18.7	15.1	15.2	2.0	2.7	11.8	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	98.7	37.3	11.9	124.4	0.0	83.5	98.7	38.8	24.7	93.5	62.8	20.4
LnGrp LOS	F	D	B	F	A	F	F	D	C	F	E	C
Approach Vol, veh/h	923			661			1634			953		
Approach Delay, s/veh	46.5			94.6			51.1			57.4		
Approach LOS	D			F			D			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	50.3	17.0	42.7	30.0	30.3	23.0	36.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	40.0	44.3	11.0	36.7	24.0	24.3	17.0	30.7				
Max Q Clear Time (g_c+I1),s	6.6	37.9	15.0	23.6	28.0	25.8	20.4	34.5				
Green Ext Time (p_c), s	0.0	3.2	0.0	2.2	0.0	0.0	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay	58.4											
HCM 6th LOS	E											

Lanes, Volumes, Timings  
7: Morrison St & Prosperity Ave

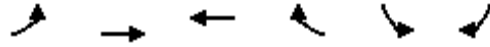
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03/13/2024




	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑	↖	↗
Traffic Volume (vph)	446	59	41	496	103	70
Future Volume (vph)	446	59	41	496	103	70
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1863	1458	1630	1863	1630	1458
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1863	1458	1630	1863	1630	1458
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	485	64	45	539	112	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	485	64	45	539	112	76
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	43.0%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	4.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	446	59	41	496	103	70
Future Vol, veh/h	446	59	41	496	103	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	0	-	0	0
Veh in Median Storage	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	485	64	45	539	112	76
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	549	0	1114	485
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	629	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1021	-	230	582
Stage 1	-	-	-	-	619	-
Stage 2	-	-	-	-	531	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1021	-	220	582
Mov Cap-2 Maneuver	-	-	-	-	220	-
Stage 1	-	-	-	-	619	-
Stage 2	-	-	-	-	508	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0.7		27		
HCM LOS	D					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	220	582	-	-	1021	-
HCM Lane V/C Ratio	0.509	0.131	-	-	0.044	-
HCM Control Delay (s)	37.2	12.1	-	-	8.7	-
HCM Lane LOS	E	B	-	-	A	-
HCM 95th %tile Q(veh)	2.6	0.4	-	-	0.1	-





Lanes, Volumes, Timings  
8: Prosperity Ave & Oakmore Rd














AM 2044+Project  
03/13/2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	169	291	273	49	29	153
Future Volume (vph)	169	291	273	49	29	153
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.980		0.887	
Flt Protected		0.982			0.992	
Satd. Flow (prot)	0	1829	1825	0	1510	0
Flt Permitted		0.982			0.992	
Satd. Flow (perm)	0	1829	1825	0	1510	0
Link Speed (mph)		55	55		55	
Link Distance (ft)		2108	5202		1848	
Travel Time (s)		26.1	64.5		22.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	184	316	297	53	32	166
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	500	350	0	198	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	64.0%			ICU Level of Service C		
Analysis Period (min)	15					



Intersection						
Int Delay, s/veh	4.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	169	291	273	49	29	153
Future Vol, veh/h	169	291	273	49	29	153
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None		- None		- None	
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #		0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	184	316	297	53	32	166
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	350	0	-	0	1008	324
Stage 1	-	-	-	-	324	-
Stage 2	-	-	-	-	684	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1209	-	-	-	267	717
Stage 1	-	-	-	-	733	-
Stage 2	-	-	-	-	501	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1209	-	-	-	218	717
Mov Cap-2 Maneuver	-	-	-	-	218	-
Stage 1	-	-	-	-	597	-
Stage 2	-	-	-	-	501	-
Approach	EB	WB		SB		
HCM Control Delay, s	1	0		15.9		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1209	-	-	-	525	
HCM Lane V/C Ratio	0.152	-	-	-	0.377	
HCM Control Delay (s)	8.5	0	-	-	15.9	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %tile Q(veh)	0.5	-	-	-	1.7	

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (vph)	2	376	1406	29	89	1016
Future Volume (vph)	2	376	1406	29	89	1016
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	0	540		0	80	
Storage Lanes	0	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.865		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	0	1484	3539	1458	1630	3539
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	0	1484	3539	1458	1630	3539
Link Speed (mph)	55		55			55
Link Distance (ft)	1218		2623			2667
Travel Time (s)	15.1		32.5			33.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	409	1528	32	97	1104
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2	409	1528	32	97	1104
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization Err%	ICU Level of Service H					
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 18.8

Movement WBL WBR NBT NBR SBL SBT

Lane Configurations 

Traffic Vol, veh/h 2 376 1406 29 89 1016

Future Vol, veh/h 2 376 1406 29 89 1016

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length - - - 0 80 -

Veh in Median Storage0# - 0 - - 0

Grade, % 0 - 0 - - 0

Peak Hour Factor 92 92 92 92 92 92

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 2 409 1528 32 97 1104

Major/Minor Minor1 Major1 Major2

Conflicting Flow All2274 764 0 0 1560 0

Stage 1 1528 - - - - -

Stage 2 746 - - - - -

Critical Hdwy 6.84 6.94 - - 4.14 -

Critical Hdwy Stg 1 5.84 - - - - -

Critical Hdwy Stg 2 5.84 - - - - -

Follow-up Hdwy 3.52 3.32 - - 2.22 -

Pot Cap-1 Maneuver 34 ~ 346 - - 420 -

Stage 1 165 - - - - -

Stage 2 430 - - - - -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver26 ~ 346 - - 420 -

Mov Cap-2 Maneuver26 - - - - -

Stage 1 165 - - - - -

Stage 2 331 - - - - -

Approach WB NB SB

HCM Control Delay, s 41 0 1.3

HCM LOS F

Minor Lane/Major Mvmt NBT NBR WBLn1 SBL SBT

Capacity (veh/h) - - 346 420 -

HCM Lane V/C Ratio - - 1.181 0.23 -

HCM Control Delay (s) - - 141 16.1 -

HCM Lane LOS - - F C -
























HCM 95th %tile Q(veh) - - 16.9 0.9 -













Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined \*: All major volume in platoon

Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

AM 2044+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	636	107	72	957	75	127	225	63	61	189	70
Future Volume (vph)	80	636	107	72	957	75	127	225	63	61	189	70
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		135	110		0	90		90	80		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97		1.00				0.98			0.98
Frt			0.850		0.989				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3491	0	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1408	1630	3491	0	1630	1863	1432	1630	1863	1433
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			142		7				142			142
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		841			2671			726			5387	
Travel Time (s)		10.4			33.1			9.0			66.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	691	116	78	1040	82	138	245	68	66	205	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	691	116	78	1122	0	138	245	68	66	205	76
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.9	29.9	10.0	28.4		10.0	39.9	39.9	10.0	44.1	44.1
Total Split (s)	10.0	38.9	38.9	12.0	40.9		20.0	46.1	46.1	18.0	44.1	44.1
Total Split (%)	8.7%	33.8%	33.8%	10.4%	35.6%		17.4%	40.1%	40.1%	15.7%	38.3%	38.3%
Maximum Green (s)	4.0	32.9	32.9	6.0	34.9		14.0	40.1	40.1	12.0	38.1	38.1
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		16.9	16.9		15.4			26.9	26.9		31.1	31.1
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	6.1	37.9	37.9	8.1	37.1		13.9	23.7	23.7	12.9	19.9	19.9
Actuated g/C Ratio	0.07	0.41	0.41	0.09	0.40		0.15	0.25	0.25	0.14	0.21	0.21
v/c Ratio	0.82	0.48	0.18	0.55	0.81		0.57	0.52	0.14	0.29	0.52	0.18
Control Delay	96.3	25.0	3.5	60.3	32.1		49.0	35.7	0.7	41.3	36.7	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	96.3	25.0	3.5	60.3	32.1		49.0	35.7	0.7	41.3	36.7	1.0
LOS	F	C	A	E	C		D	D	A	D	D	A
Approach Delay		29.1			34.0			34.5			29.7	
Approach LOS		C			C			C			C	

#### Intersection Summary

Area Type: Other

Cycle Length: 115

Actuated Cycle Length: 93.2

Natural Cycle: 105

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 32.0

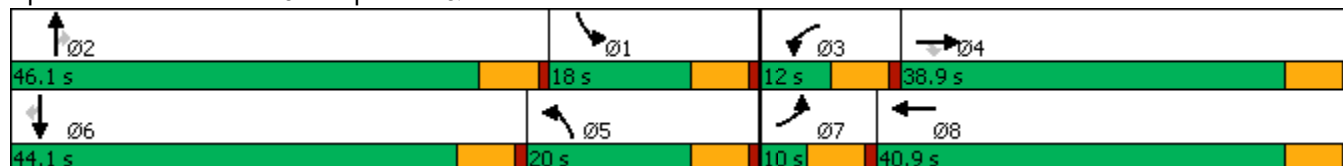
Intersection LOS: C

Intersection Capacity Utilization 68.0%

ICU Level of Service C

























Analysis Period (min) 15

Splits and Phases: 10: Laspina St & Tulare Ave



























# HCM 6th Signalized Intersection Summary 10: Laspina St & Tulare Ave

AM 2044+Project  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	636	107	72	957	75	127	225	63	61	189	70
Future Volume (veh/h)	80	636	107	72	957	75	127	225	63	61	189	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	87	691	116	78	1040	82	138	245	68	66	205	76
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	129	1336	533	139	1270	100	212	401	306	189	375	287
Arrive On Green	0.08	0.38	0.38	0.08	0.38	0.36	0.13	0.21	0.21	0.12	0.20	0.20
Sat Flow, veh/h	1641	3554	1418	1641	3328	262	1641	1870	1429	1641	1870	1429
Grp Volume(v), veh/h	87	691	116	78	555	567	138	245	68	66	205	76
Grp Sat Flow(s),veh/h/ln	1641	1777	1418	1641	1777	1814	1641	1870	1429	1641	1870	1429
Q Serve(g_s), s	3.9	11.5	2.3	3.5	21.4	21.5	6.1	9.0	2.1	2.8	7.5	2.4
Cycle Q Clear(g_c), s	3.9	11.5	2.3	3.5	21.4	21.5	6.1	9.0	2.1	2.8	7.5	2.4
Prop In Lane	1.00		1.00	1.00		0.14	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	129	1336	533	139	678	692	212	401	306	189	375	287
V/C Ratio(X)	0.67	0.52	0.22	0.56	0.82	0.82	0.65	0.61	0.22	0.35	0.55	0.27
Avail Cap(c_a), veh/h	129	1628	650	172	860	878	344	1033	790	301	984	752
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.1	18.4	4.7	33.5	21.2	21.3	31.6	27.1	11.8	31.1	27.3	12.8
Incr Delay (d2), s/veh	12.9	0.3	0.2	3.5	5.0	4.9	3.4	1.5	0.4	1.1	1.2	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	4.0	1.1	1.4	8.3	8.5	2.4	3.7	0.9	1.1	3.1	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.0	18.7	4.9	37.1	26.2	26.3	34.9	28.6	12.2	32.2	28.6	13.2
LnGrp LOS	D	B	A	D	C	C	C	C	B	C	C	B
Approach Vol, veh/h	894					1200		451		347		
Approach Delay, s/veh	19.7					26.9		28.0		25.9		
Approach LOS	B					C		C		C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.8	20.3	10.4	32.6	13.8	19.3	10.0	33.1				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	40.1	40.1	6.0	32.9	14.0	38.1	4.0	34.9				
Max Q Clear Time (g_c+l1),s	11.0	11.0	5.5	13.5	8.1	9.5	5.9	23.5				
Green Ext Time (p_c), s	0.1	1.1	0.0	3.3	0.2	1.0	0.0	3.6				
Intersection Summary												
HCM 6th Ctrl Delay	24.7											
HCM 6th LOS	C											

Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave













AM 2044+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	313	550	131	128	702	328	220	898	106	185	494	235
Future Volume (vph)	313	550	131	128	702	328	220	898	106	185	494	235
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	420		185	125		125	80		0	475		475
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98		1.00				0.98
Frt			0.850			0.850		0.984				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3539	1458	1630	3471	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1411	1630	3539	1430	1630	3471	0	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			142			211		11				255
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2671			2887			1662			2623	
Travel Time (s)		33.1			35.8			20.6			32.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	340	598	142	139	763	357	239	976	115	201	537	255
Shared Lane Traffic (%)												
Lane Group Flow (vph)	340	598	142	139	763	357	239	1091	0	201	537	255
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												



Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

AM 2044+Project  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	37.0	37.0	10.0	37.0	37.0	10.0	39.9		10.0	42.7	42.7
Total Split (s)	22.0	37.0	37.0	22.0	37.0	37.0	17.0	43.0		18.0	44.0	44.0
Total Split (%)	18.3%	30.8%	30.8%	18.3%	30.8%	30.8%	14.2%	35.8%		15.0%	36.7%	36.7%
Maximum Green (s)	16.0	31.0	31.0	16.0	31.0	31.0	11.0	37.0		12.0	38.0	38.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		24.0	24.0		24.0	24.0		26.9			29.7	29.7
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effct Green (s)	18.0	33.4	33.4	15.9	31.2	31.2	13.0	38.9		14.0	39.9	39.9
Actuated g/C Ratio	0.15	0.28	0.28	0.13	0.26	0.26	0.11	0.33		0.12	0.34	0.34
v/c Ratio	1.37	0.60	0.28	0.64	0.82	0.67	1.34	0.95		1.04	0.85	0.39
Control Delay	229.0	39.9	7.0	62.2	48.8	22.1	225.3	55.7		127.1	51.4	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	229.0	39.9	7.0	62.2	48.8	22.1	225.3	55.7		127.1	51.4	5.4
LOS	F	D	A	E	D	C	F	E		F	D	A
Approach Delay		95.1			42.7			86.2			54.9	
Approach LOS		F			D			F			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 118.2

Natural Cycle: 140

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.37

Intersection Signal Delay: 69.8









Intersection LOS: E

Intersection Capacity Utilization 92.5%

ICU Level of Service F

























Analysis Period (min) 15

Splits and Phases: 11: Mooney Blvd & Tulare Ave

 Ø1	 Ø2	 Ø3	 Ø4
18 s	43 s	22 s	37 s
 Ø5	 Ø6	 Ø8	 Ø7
17 s	44 s	37 s	22 s

















# HCM 6th Signalized Intersection Summary 11: Mooney Blvd & Tulare Ave

AM 2044+Project  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	313	550	131	128	702	328	220	898	106	185	494	235
Future Volume (veh/h)	313	550	131	128	702	328	220	898	106	185	494	235
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	340	598	142	139	763	357	239	976	115	201	537	255
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	251	1058	421	190	925	373	182	1055	124	196	635	487
Arrive On Green	0.15	0.30	0.30	0.12	0.26	0.26	0.11	0.33	0.31	0.12	0.34	0.34
Sat Flow, veh/h	1641	3554	1415	1641	3554	1432	1641	3190	376	1641	1870	1434
Grp Volume(v), veh/h	340	598	142	139	763	357	239	543	548	201	537	255
Grp Sat Flow(s),veh/h/ln	1641	1777	1415	1641	1777	1432	1641	1777	1789	1641	1870	1434
Q Serve(g_s), s	18.0	16.7	9.2	9.6	23.7	20.2	13.0	34.6	34.7	14.0	31.2	10.3
Cycle Q Clear(g_c), s	18.0	16.7	9.2	9.6	23.7	20.2	13.0	34.6	34.7	14.0	31.2	10.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	251	1058	421	190	925	373	182	588	592	196	635	487
V/C Ratio(X)	1.35	0.57	0.34	0.73	0.82	0.96	1.32	0.92	0.93	1.03	0.85	0.52
Avail Cap(c_a), veh/h	251	1058	421	251	999	402	182	590	594	196	637	489
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.7	34.8	32.2	50.1	40.9	21.0	52.2	37.9	38.1	51.7	35.9	11.7
Incr Delay (d2), s/veh	182.2	0.7	0.5	7.2	5.4	33.0	175.5	20.5	20.5	71.7	10.2	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	19.7	6.9	3.0	4.1	10.5	9.5	14.0	17.3	17.5	9.4	15.0	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	232.0	35.5	32.7	57.3	46.3	54.0	227.8	58.3	58.6	123.4	46.2	12.7
LnGrp LOS	F	D	C	E	D	D	F	E	E	F	D	B
Approach Vol, veh/h	1080			1259			1330			993		
Approach Delay, s/veh	97.0			49.7			88.9			53.2		
Approach LOS	F			D			F			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.0	42.9	17.6	38.9	17.0	43.9	22.0	34.6				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	25.0	37.0	16.0	31.0	11.0	38.0	16.0	31.0				
Max Q Clear Time (g_c+I1),s	16.0	36.7	11.6	18.7	15.0	33.2	20.0	25.7				
Green Ext Time (p_c), s	0.0	0.2	0.1	2.6	0.0	1.5	0.0	2.4				
Intersection Summary												
HCM 6th Ctrl Delay	72.6											
HCM 6th LOS	E											

Lanes, Volumes, Timings  
12: Morrison St & Tulare Ave

AM 2044+Project  
03/13/2024
























												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	640	74	43	792	2	129	73	136	2	29	76
Future Volume (vph)	64	640	74	43	792	2	129	73	136	2	29	76
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987						0.946			0.904	
Flt Protected		0.996			0.997			0.981			0.999	
Satd. Flow (prot)	0	1831	0	0	1857	0	0	1729	0	0	1682	0
Flt Permitted		0.996			0.997			0.981			0.999	
Satd. Flow (perm)	0	1831	0	0	1857	0	0	1729	0	0	1682	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	70	696	80	47	861	2	140	79	148	2	32	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	846	0	0	910	0	0	367	0	0	117	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	
Intersection Summary												
Area Type:	Other											
Control Type:	Roundabout											
Intersection Capacity Utilization	93.0%				ICU Level of Service F							
Analysis Period (min)	15											

Intersection				
Intersection Delay, s/veh	20.7			
Intersection LOS	C			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	846	910	367	117
Demand Flow Rate, veh/h	863	928	375	120
Vehicles Circulating, veh/h	83	295	783	1069
Vehicles Exiting, veh/h	1106	863	163	154
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	12.2	31.1	17.5	12.0
Approach LOS	B	D	C	B
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	863	928	375	120
Cap Entry Lane, veh/h	1268	1021	621	464
Entry HV Adj Factor	0.980	0.980	0.980	0.978
Flow Entry, veh/h	846	910	367	117
Cap Entry, veh/h	1243	1001	608	454
V/C Ratio	0.681	0.909	0.604	0.259
Control Delay, s/veh	12.2	31.1	17.5	12.0
LOS	B	D	C	B
95th %tile Queue, veh	6	14	4	1















Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

AM 2044+Project with Mitigation  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	204	262	201	34	177	3	229	1146	37	14	686	116
Future Volume (vph)	204	262	201	34	177	3	229	1146	37	14	686	116
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.998			0.995			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1858	0	1630	5055	0	1630	4951	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1858	0	1630	5055	0	1630	4951	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			218		1			5			29	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	222	285	218	37	192	3	249	1246	40	15	746	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	285	218	37	195	0	249	1286	0	15	872	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

AM 2044+Project with Mitigation  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	23.2	49.0	49.0	11.1	36.9		16.0	50.3		9.6	43.9	
Total Split (%)	19.3%	40.8%	40.8%	9.3%	30.8%		13.3%	41.9%		8.0%	36.6%	
Maximum Green (s)	17.7	43.5	43.5	5.6	31.4		10.5	44.8		4.1	38.4	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effct Green (s)	18.1	33.9	33.9	7.3	17.7		12.4	38.0		5.8	24.7	
Actuated g/C Ratio	0.20	0.38	0.38	0.08	0.20		0.14	0.42		0.06	0.28	
v/c Ratio	0.67	0.40	0.32	0.28	0.53		1.10	0.60		0.14	0.63	
Control Delay	47.8	25.0	4.8	51.1	38.6		130.5	22.9		50.9	29.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	47.8	25.0	4.8	51.1	38.6		130.5	22.9		50.9	29.8	
LOS	D	C	A	D	D		F	C		D	C	
Approach Delay		25.9			40.6			40.4			30.1	
Approach LOS		C			D			D			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 89.5

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.10

Intersection Signal Delay: 34.6









Intersection LOS: C

Intersection Capacity Utilization 69.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Mooney Blvd & Cartmill Ave
























 Ø2		 Ø1	 Ø3	 Ø4
50.3 s		9.6 s	11.1 s	49 s
 Ø5	 Ø6		 Ø8	 Ø7
16 s	43.9 s		36.9 s	23.2 s



# HCM 6th Signalized Intersection Summary

























## 1: Mooney Blvd & Cartmill Ave

AM 2044+Project with Mitigation  
03/13/2024

																
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations																
Traffic Volume (veh/h)	204	262	201	34	177	3	229	1146	37	14	686	116				
Future Volume (veh/h)	204	262	201	34	177	3	229	1146	37	14	686	116				
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0				
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97				
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Work Zone On Approach	No				No				No							
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723				
Adj Flow Rate, veh/h	222	285	218	37	192	3	249	1246	40	15	746	126				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92				
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2				
Cap, veh/h	293	577	442	80	328	5	262	1777	57	131	1184	198				
Arrive On Green	0.18	0.31	0.31	0.05	0.18	0.16	0.16	0.35	0.33	0.08	0.27	0.25				
Sat Flow, veh/h	1641	1870	1433	1641	1836	29	1641	5076	163	1641	4381	732				
Grp Volume(v), veh/h	222	285	218	37	0	195	249	835	451	15	578	294				
Grp Sat Flow(s),veh/h/ln	1641	1870	1433	1641	0	1864	1641	1702	1835	1641	1702	1709				
Q Serve(g_s), s	9.7	9.3	9.3	1.6	0.0	7.2	11.3	15.9	15.9	0.6	11.2	11.5				
Cycle Q Clear(g_c), s	9.7	9.3	9.3	1.6	0.0	7.2	11.3	15.9	15.9	0.6	11.2	11.5				
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.09	1.00		0.43				
Lane Grp Cap(c), veh/h	293	577	442	80	0	333	262	1192	643	131	920	462				
V/C Ratio(X)	0.76	0.49	0.49	0.46	0.00	0.59	0.95	0.70	0.70	0.11	0.63	0.64				
Avail Cap(c_a), veh/h	419	1120	858	155	0	816	262	2097	1131	131	1807	908				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Uniform Delay (d), s/veh	29.3	21.2	21.2	34.8	0.0	28.3	31.3	21.0	21.1	32.1	24.1	24.5				
Incr Delay (d2), s/veh	4.9	0.7	0.9	4.2	0.0	1.6	42.1	0.8	1.4	0.4	0.7	1.5				
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
%ile BackOfQ(50%),veh/ln	3.8	3.6	2.8	0.7	0.0	3.0	7.0	5.4	6.0	0.2	4.0	4.2				
Unsig. Movement Delay, s/veh																
LnGrp Delay(d),s/veh	34.2	21.8	22.0	38.9	0.0	29.9	73.4	21.8	22.5	32.5	24.8	25.9				
LnGrp LOS	C	C	C	D	A	C	E	C	C	C	C	C				
Approach Vol, veh/h	725				232				1535							
Approach Delay, s/veh	25.7				31.4				30.4							
Approach LOS	C				C				C							
Timer - Assigned Phs	1	2	3	4	5	6	7	8								
Phs Duration (G+Y+Rc), s	10.0	30.3	7.7	27.2	16.0	24.3	17.4	17.4								
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5								
Max Green Setting (Gmax),s	44.8	5.6	43.5	10.5	38.4	17.7	31.4									
Max Q Clear Time (g_c+l1),s	17.9	3.6	11.3	13.3	13.5	11.7	9.2									
Green Ext Time (p_c), s	0.0	5.9	0.0	1.9	0.0	3.7	0.4	0.6								
Intersection Summary																
HCM 6th Ctrl Delay	28.1															
HCM 6th LOS	C															













Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

AM 2044+Project with Mitigation  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	233	361	256	166	324	119	332	1070	101	59	663	155
Future Volume (vph)	233	361	256	166	324	119	332	1070	101	59	663	155
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor			0.98			0.98			0.98			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	5085	1458	3162	5085	1458	3162	5085	1458	3162	5085	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	5085	1432	3162	5085	1429	3162	5085	1429	3162	5085	1425
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			278			191			136			168
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2667			5285	
Travel Time (s)		32.9			36.1			33.1			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	253	392	278	180	352	129	361	1163	110	64	721	168
Shared Lane Traffic (%)												
Lane Group Flow (vph)	253	392	278	180	352	129	361	1163	110	64	721	168
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

AM 2044+Project with Mitigation  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7	32.7	10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	19.0	44.0	44.0	16.0	41.0	41.0	27.0	50.0	50.0	10.0	33.0	33.0
Total Split (%)	15.8%	36.7%	36.7%	13.3%	34.2%	34.2%	22.5%	41.7%	41.7%	8.3%	27.5%	27.5%
Maximum Green (s)	13.0	38.0	38.0	10.0	35.0	35.0	21.0	44.0	44.0	4.0	27.0	27.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.7	29.7		19.7	19.7		18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	13.8	18.6	18.6	11.6	16.4	14.3	17.3	34.5	34.5	6.3	20.8	20.8
Actuated g/C Ratio	0.16	0.22	0.22	0.14	0.19	0.17	0.20	0.41	0.41	0.07	0.24	0.24
v/c Ratio	0.50	0.35	0.52	0.42	0.36	0.32	0.56	0.56	0.17	0.28	0.58	0.35
Control Delay	39.5	29.2	7.6	41.1	31.2	3.0	36.4	22.1	2.9	46.8	31.6	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.5	29.2	7.6	41.1	31.2	3.0	36.4	22.1	2.9	46.8	31.6	7.6
LOS	D	C	A	D	C	A	D	C	A	D	C	A
Approach Delay		25.5			28.4			24.0			28.4	
Approach LOS		C			C			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 85

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.58

Intersection Signal Delay: 26.0









Intersection LOS: C

Intersection Capacity Utilization 53.3%

ICU Level of Service A

























Analysis Period (min) 15

Splits and Phases: 6: Mooney Blvd & Prosperity Ave

 Ø1	 Ø2	 Ø3	 Ø4
10 s	50 s	16 s	44 s
 Ø6	 Ø5	 Ø7	 Ø8
33 s	27 s	19 s	41 s

# HCM 6th Signalized Intersection Summary 6: Mooney Blvd & Prosperity Ave

AM 2044+Project with Mitigation  
03/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	233	361	256	166	324	119	332	1070	101	59	663	155
Future Volume (veh/h)	233	361	256	166	324	119	332	1070	101	59	663	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	253	392	278	180	352	129	361	1163	110	64	721	168
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	441	1194	334	357	1058	254	572	1795	504	223	1236	346
Arrive On Green	0.14	0.23	0.23	0.11	0.21	0.18	0.18	0.35	0.35	0.07	0.24	0.24
Sat Flow, veh/h	3183	5106	1430	3183	5106	1427	3183	5106	1434	3183	5106	1431
Grp Volume(v), veh/h	253	392	278	180	352	129	361	1163	110	64	721	168
Grp Sat Flow(s),veh/h/ln	1591	1702	1430	1591	1702	1427	1591	1702	1434	1591	1702	1431
Q Serve(g_s), s	5.1	4.4	6.8	3.7	4.0	5.6	7.2	13.2	3.7	1.3	8.6	4.1
Cycle Q Clear(g_c), s	5.1	4.4	6.8	3.7	4.0	5.6	7.2	13.2	3.7	1.3	8.6	4.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	441	1194	334	357	1058	254	572	1795	504	223	1236	346
V/C Ratio(X)	0.57	0.33	0.83	0.50	0.33	0.51	0.63	0.65	0.22	0.29	0.58	0.49
Avail Cap(c_a), veh/h	694	2968	831	555	2745	726	1064	3413	959	277	2152	603
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.7	21.9	7.3	28.8	23.2	25.6	26.1	18.7	15.7	30.4	23.0	7.7
Incr Delay (d2), s/veh	1.2	0.2	5.4	1.1	0.2	1.6	1.2	0.4	0.2	0.7	0.4	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	1.5	3.7	1.3	1.4	1.8	2.5	4.3	1.0	0.5	3.0	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.9	22.0	12.6	29.9	23.4	27.1	27.3	19.1	15.9	31.1	23.5	8.8
LnGrp LOS	C	C	B	C	C	C	C	B	B	C	C	A
Approach Vol, veh/h	923			661			1634			953		
Approach Delay, s/veh	21.1			25.9			20.7			21.4		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.8	28.2	11.7	20.1	16.4	20.7	13.5	18.3				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax),s	44.0	44.0	10.0	38.0	21.0	27.0	13.0	35.0				
Max Q Clear Time (g_c+l1),s	15.2	15.2	5.7	8.8	9.2	10.6	7.1	7.6				
Green Ext Time (p_c), s	0.0	6.4	0.2	2.9	1.2	3.6	0.5	2.0				
Intersection Summary												
HCM 6th Ctrl Delay	21.8											
HCM 6th LOS	C											

Lanes, Volumes, Timings  
7: Morrison St & Prosperity Ave

AM 2044+Project with Mitigation  
03/13/2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	446	59	41	496	103	70
Future Volume (vph)	446	59	41	496	103	70
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1863	1458	1630	1863	1630	1458
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1863	1458	1630	1863	1630	1458
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		64				76
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	485	64	45	539	112	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	485	64	45	539	112	76
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			24	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Number of Detectors	1	1	1	1	1	1
Detector Template						
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	8	5	
Permitted Phases		4				2
Detector Phase	4	4	3	8	5	2
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	24.0	24.0	10.0	24.0	10.0	24.0
Total Split (s)	38.0	38.0	10.0	38.0	17.0	32.0
Total Split (%)	42.2%	42.2%	11.1%	42.2%	18.9%	35.6%
Maximum Green (s)	32.0	32.0	4.0	32.0	11.0	26.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	Min
Walk Time (s)	7.0	7.0		7.0		7.0
Flash Dont Walk (s)	11.0	11.0		11.0		11.0
Pedestrian Calls (#/hr)	0	0		0		0
Act Effct Green (s)	18.2	18.2	4.3	23.2	9.1	9.0
Actuated g/C Ratio	0.40	0.40	0.10	0.51	0.20	0.20
v/c Ratio	0.65	0.10	0.29	0.56	0.34	0.22
Control Delay	16.7	3.8	29.6	9.5	22.0	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.7	3.8	29.6	9.5	22.0	7.8
LOS	B	A	C	A	C	A
Approach Delay	15.2			11.1	16.2	
Approach LOS	B			B	B	

#### Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 45.1

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 13.5

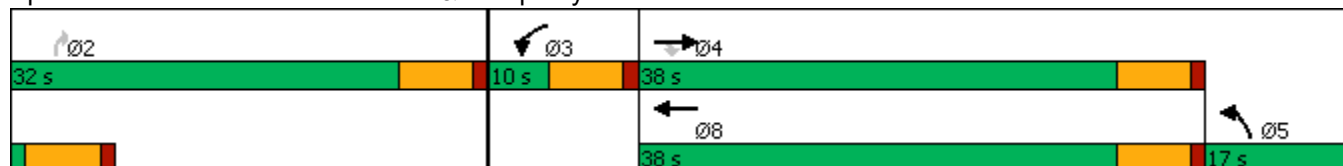
Intersection LOS: B

Intersection Capacity Utilization 48.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Morrison St & Prosperity Ave



HCM 6th Signalized Intersection Summary  
7: Morrison St & Prosperity Ave

AM 2044+Project with Mitigation  
03/13/2024

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (veh/h)	446	59	41	496	103	70
Future Volume (veh/h)	446	59	41	496	103	70
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1723	1723	1870	1723	1723
Adj Flow Rate, veh/h	485	64	45	539	112	76
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	641	500	66	1032	181	161
Arrive On Green	0.34	0.34	0.04	0.55	0.11	0.11
Sat Flow, veh/h	1870	1460	1641	1870	1641	1460
Grp Volume(v), veh/h	485	64	45	539	112	76
Grp Sat Flow(s),veh/h/ln	1870	1460	1641	1870	1641	1460
Q Serve(g_s), s	8.2	1.1	1.0	6.4	2.3	1.7
Cycle Q Clear(g_c), s	8.2	1.1	1.0	6.4	2.3	1.7
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	641	500	66	1032	181	161
V/C Ratio(X)	0.76	0.13	0.68	0.52	0.62	0.47
Avail Cap(c_a), veh/h	1686	1316	185	1686	508	452
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.4	8.0	16.8	5.0	15.1	14.8
Incr Delay (d2), s/veh	1.9	0.1	11.5	0.4	3.5	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.2	0.5	0.4	0.7	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	12.2	8.1	28.3	5.4	18.5	17.0
LnGrp LOS	B	A	C	A	B	B
Approach Vol, veh/h	549			584	188	
Approach Delay, s/veh	11.7			7.2	17.9	
Approach LOS	B			A	B	
Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		9.9	7.4	18.2		25.6
Change Period (Y+Rc), s		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s		11.0	4.0	32.0		32.0
Max Q Clear Time (g_c+I1), s		4.3	3.0	10.2		8.4
Green Ext Time (p_c), s		0.3	0.0	2.0		2.0
Intersection Summary						
HCM 6th Ctrl Delay			10.6			
HCM 6th LOS			B			



Lanes, Volumes, Timings  
9: Mooney Blvd & Seminole Ave

AM 2044+Project with Mitigation  
03/13/2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	376	1406	29	89	1016
Future Volume (vph)	2	376	1406	29	89	1016
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	0	540		0	80	
Storage Lanes	1	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1630	1458	3539	1458	1630	3539
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1630	1458	3539	1458	1630	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		171		28		
Link Speed (mph)	55		55			55
Link Distance (ft)	1218		2623			2667
Travel Time (s)	15.1		32.5			33.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	409	1528	32	97	1104
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2	409	1528	32	97	1104
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		24			24
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	1	1	1	1
Detector Template						
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	24.0	24.0	24.0	24.0	10.0	24.0
Total Split (s)	37.0	37.0	67.0	67.0	16.0	83.0

Lanes, Volumes, Timings  
9: Mooney Blvd & Seminole Ave

AM 2044+Project with Mitigation  
03/13/2024

	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Split (%)	30.8%	30.8%	55.8%	55.8%	13.3%	69.2%
Maximum Green (s)	31.0	31.0	61.0	61.0	10.0	77.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	6.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	25.5	27.5	68.4	68.4	12.1	84.5
Actuated g/C Ratio	0.21	0.23	0.57	0.57	0.10	0.70
v/c Ratio	0.01	0.88	0.76	0.04	0.59	0.44
Control Delay	33.5	45.6	24.0	5.7	66.8	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.5	45.6	24.0	5.7	66.8	9.0
LOS	C	D	C	A	E	A
Approach Delay	45.6		23.6			13.7
Approach LOS	D		C			B

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 16 (13%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 22.7

Intersection LOS: C

Intersection Capacity Utilization 70.8%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 9: Mooney Blvd & Seminole Ave




















# HCM 6th Signalized Intersection Summary 9: Mooney Blvd & Seminole Ave

AM 2044+Project with Mitigation  
03/13/2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	376	1406	29	89	1016
Future Volume (veh/h)	2	376	1406	29	89	1016
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1723	1723	1870	1723	1723	1870
Adj Flow Rate, veh/h	2	409	1528	32	97	1104
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	424	401	1909	784	144	2340
Arrive On Green	0.26	0.28	0.54	0.54	0.09	0.66
Sat Flow, veh/h	1641	1460	3647	1460	1641	3647
Grp Volume(v), veh/h	2	409	1528	32	97	1104
Grp Sat Flow(s),veh/h/ln	1641	1460	1777	1460	1641	1777
Q Serve(g_s), s	0.1	33.0	41.9	1.2	6.9	18.5
Cycle Q Clear(g_c), s	0.1	33.0	41.9	1.2	6.9	18.5
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	424	401	1909	784	144	2340
V/C Ratio(X)	0.00	1.02	0.80	0.04	0.67	0.47
Avail Cap(c_a), veh/h	424	401	1909	784	164	2340
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	0.09	0.09	0.82	0.82
Uniform Delay (d), s/veh	33.0	43.5	22.6	13.1	53.1	10.2
Incr Delay (d2), s/veh	0.0	49.7	0.3	0.0	7.2	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	16.7	15.4	0.4	3.0	6.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	33.0	93.2	22.9	13.2	60.2	10.7
LnGrp LOS	C	F	C	B	E	B
Approach Vol, veh/h	411		1560			1201
Approach Delay, s/veh	93.0		22.7			14.7
Approach LOS	F		C			B
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	14.6	68.4			83.0	37.0
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax),s	10.0	61.0			77.0	31.0
Max Q Clear Time (g_c+l1),s	8.9	43.9			20.5	35.0
Green Ext Time (p_c), s	0.0	7.4			5.8	0.0
Intersection Summary						
HCM 6th Ctrl Delay			28.8			
HCM 6th LOS			C			

Lanes, Volumes, Timings  
12: Morrison St & Tulare Ave

AM 2044+Project w/ Mitigation  
03/13/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	640	74	43	792	2	129	73	136	2	29	76
Future Volume (vph)	64	640	74	43	792	2	129	73	136	2	29	76
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	0		1	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998	0.850					0.946			0.904	
Flt Protected		0.995			0.997			0.981			0.999	
Satd. Flow (prot)	0	1757	1385	0	1857	0	0	1729	0	0	1682	0
Flt Permitted		0.995			0.997			0.981			0.999	
Satd. Flow (perm)	0	1757	1385	0	1857	0	0	1729	0	0	1682	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	70	696	80	47	861	2	140	79	148	2	32	83
Shared Lane Traffic (%)			10%									
Lane Group Flow (vph)	0	774	72	0	910	0	0	367	0	0	117	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	
Intersection Summary												
Area Type:	Other											
Control Type:	Roundabout											
Intersection Capacity Utilization	109.5%						ICU Level of Service H					
Analysis Period (min)	15											

Intersection					
Intersection Delay, s/veh 19.6					
Intersection LOS C					
Approach	EB		WB		NB SB
Entry Lanes	2		1		1
Conflicting Circle Lanes	1		1		1
Adj Approach Flow, veh/h	846		910		117
Demand Flow Rate, veh/h	863		928		120
Vehicles Circulating, veh/h	83		295		1069
Vehicles Exiting, veh/h	1106		863		154
Ped Vol Crossing Leg, #/h	0		0		0
Ped Cap Adj	1.000		1.000		1.000
Approach Delay, s/veh	9.1		31.1		12.0
Approach LOS	A		D		B
Lane	Left	Right	Left	Left	Left
Designated Moves	LT	R	LTR	LTR	LTR
Assumed Moves	LT	R	LTR	LTR	LTR
RT Channelized					
Lane Util	0.905	0.095	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.609
Critical Headway, s	4.544	4.544	4.976	4.976	4.976
Entry Flow, veh/h	781	82	928	375	120
Cap Entry Lane, veh/h	1317	1317	1021	621	464
Entry HV Adj Factor	0.981	0.976	0.980	0.980	0.978
Flow Entry, veh/h	766	80	910	367	117
Cap Entry, veh/h	1292	1285	1001	608	454
V/C Ratio	0.593	0.062	0.909	0.604	0.259
Control Delay, s/veh	9.7	3.3	31.1	17.5	12.0
LOS	A	A	D	C	B
95th %tile Queue, veh	4	0	14	4	1

## Turning Movement Count Report AM

Location ID: 1  
 North/South: Mooney Blvd  
 East/West: Cartmill Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
6:00	11	39	0	0	9	1	6	37	11	3	8	18	143
6:15	10	41	0	1	6	1	2	50	13	5	9	11	149
6:30	8	59	0	1	10	1	4	101	11	10	22	19	246
6:45	18	60	2	1	17	3	4	117	9	9	20	15	275
7:00	15	79	0	0	8	2	4	119	19	24	18	13	301
7:15	16	71	0	0	23	3	1	159	29	28	29	25	384
7:30	20	127	6	1	35	9	13	192	40	33	43	29	548
7:45	17	118	2	1	38	6	4	189	44	32	64	53	568

Total Volume:	115	594	10	5	146	26	38	964	176	144	213	183	2614
Approach %	16%	83%	1%	3%	82%	15%	3%	82%	15%	27%	39%	34%	

Peak Hr Begin:	7:00												
PHV	68	395	8	2	104	20	22	659	132	117	154	120	1801
PHF	0.770			0.700			0.830			0.656			

## Turning Movement Count Report PM

Location ID: 1  
 North/South: Mooney Blvd  
 East/West: Cartmill Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
16:00	45	159	2	4	31	11	3	154	27	25	36	34	531
16:15	41	190	2	4	30	6	4	169	19	36	30	31	562
16:30	37	180	3	1	33	7	4	150	19	26	26	23	509
16:45	34	199	0	1	23	8	6	163	24	42	26	42	568
17:00	44	207	5	1	31	0	6	176	20	18	25	35	568
17:15	39	221	0	1	32	4	3	174	22	33	35	46	610
17:30	51	230	4	1	22	4	2	145	18	17	21	41	556
17:45	36	158	0	1	27	6	2	120	19	22	15	35	441

Total Volume:	327	1544	16	14	229	46	30	1251	168	219	214	287	4345
Approach %	17%	82%	1%	5%	79%	16%	2%	86%	12%	30%	30%	40%	

Peak Hr Begin:	16:45												
PHV	168	857	9	4	108	16	17	658	84	110	107	164	2302
PHF	0.907			0.865			0.939			0.836			



## Pedestrian/Bicycle Count Report

Location ID: 1  
 North/South: Mooney Blvd  
 East/West: Cartmill Ave

Date: 01/16/24  
 City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	0	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	1	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	1	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

## Turning Movement Count Report AM

Location ID: 2  
 North/South: Prosperity Ave  
 East/West: SR 99 SB Offramp

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
6:00	0	43	0	3	0	12	0	36	0	0	0	0	94
6:15	0	39	0	9	0	15	0	23	0	0	0	0	86
6:30	0	39	0	15	0	14	0	33	0	0	0	0	101
6:45	0	53	0	20	0	11	0	45	0	0	0	0	129
7:00	0	51	0	25	0	11	0	50	0	0	0	0	137
7:15	0	52	0	19	0	26	0	43	0	0	0	0	140
7:30	0	90	0	22	0	22	0	83	0	0	0	0	217
7:45	0	113	0	37	0	26	0	114	0	0	0	0	290

Total Volume:	0	480	0	150	0	137	0	427	0	0	0	0	1194
Approach %	0%	100%	0%	52%	0%	48%	0%	100%	0%	0%	0%	0%	

Peak Hr Begin:	7:00												
PHV	0	306	0	103	0	85	0	290	0	0	0	0	784
PHF	0.677			0.746			0.636			0.000			

## Turning Movement Count Report PM

Location ID: 2  
 North/South: Prosperity Ave  
 East/West: SR 99 SB Offramp

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	0	144	0	24	0	44	0	151	0	0	0	0	363
16:15	0	120	0	24	0	40	0	131	0	0	0	0	315
16:30	0	145	0	18	0	48	0	128	0	0	0	0	339
16:45	0	135	0	19	0	41	0	145	0	0	0	0	340
17:00	0	141	0	14	0	39	0	152	0	0	0	0	346
17:15	0	147	0	25	0	60	0	140	0	0	0	0	372
17:30	0	154	0	17	0	32	0	155	0	0	0	0	358
17:45	0	156	1	24	0	33	0	143	0	0	0	0	357

Total Volume:	0	1142	1	165	0	337	0	1145	0	0	0	0	2790
Approach %	0%	100%	0%	33%	0%	67%	0%	100%	0%	0%	0%	0%	

Peak Hr Begin:	17:00												
PHV	0	598	1	80	0	164	0	590	0	0	0	0	1433
PHF	0.954			0.718			0.952			0.000			

## Pedestrian/Bicycle Count Report

Location ID: 2  
 North/South: Prosperity Ave  
 East/West: SR 99 SB Offramp

Date: 01/16/24  
 City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	0	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	0	2	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

## Turning Movement Count Report AM

Location ID: 3  
 North/South: Blackstone St  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
6:00	0	16	39	29	0	44	16	5	0	0	1	0	150
6:15	1	22	36	18	0	54	34	2	0	0	1	0	168
6:30	1	17	35	30	0	47	37	5	0	0	1	0	173
6:45	0	21	50	43	0	98	34	4	0	0	2	0	252
7:00	2	24	41	40	3	63	44	10	0	0	2	0	229
7:15	0	20	61	46	2	96	55	4	0	0	1	0	285
7:30	0	31	83	73	2	102	59	8	0	1	1	0	360
7:45	0	31	104	110	2	136	97	11	0	1	3	0	495

Total Volume:	4	182	449	389	9	640	376	49	0	2	12	0	2112
Approach %	1%	29%	71%	37%	1%	62%	88%	12%	0%	14%	86%	0%	

Peak Hr Begin:	7:00												
PHV	2	106	289	269	9	397	255	33	0	2	7	0	1369
PHF	0.735			0.680			0.667			0.563			

## Turning Movement Count Report PM

Location ID: 3  
 North/South: Blackstone St  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
16:00	1	43	152	138	3	122	128	16	0	1	1	0	605
16:15	0	34	150	134	5	149	116	12	0	1	5	0	606
16:30	0	38	177	147	6	146	136	10	0	1	4	0	665
16:45	0	44	151	152	2	131	119	10	0	1	2	1	613
17:00	0	31	161	135	6	137	141	19	0	2	5	0	637
17:15	0	31	160	132	7	167	107	8	0	1	5	1	619
17:30	0	36	171	129	8	152	71	11	0	1	5	0	584
17:45	0	38	144	131	6	125	76	16	0	2	2	1	541

Total Volume:	1	295	1266	1098	43	1129	894	102	0	10	29	3	4870
Approach %	0%	19%	81%	48%	2%	50%	90%	10%	0%	24%	69%	7%	

Peak Hr Begin:	16:30												
PHV	0	144	649	566	21	581	503	47	0	5	16	2	2534
PHF	0.922			0.954			0.859			0.821			

## Pedestrian/Bicycle Count Report

Location ID: 3  
 North/South: Blackstone St  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	1	0
6:15	0	0	0	0	0	0	0	1
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	0	1
7:00	1	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	1
7:45	1	0	0	0	0	0	0	1

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	0	0	2	0
16:15	0	1	0	0	0	0	1	1
16:30	0	1	0	0	0	0	0	0
16:45	2	1	0	0	0	0	2	0
17:00	3	1	0	0	1	0	1	1
17:15	0	0	0	0	0	0	1	0
17:30	0	0	0	0	1	0	1	0
17:45	1	0	0	0	0	0	3	0



## Turning Movement Count Report AM

Location ID: 4  
 North/South: Hillman St  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
6:00	27	9	8	6	42	2	15	14	22	8	30	11	194
6:15	34	3	4	10	40	2	7	17	19	13	29	16	194
6:30	31	5	8	10	46	7	11	34	13	10	33	26	234
6:45	42	8	9	11	80	5	15	45	33	14	32	26	320
7:00	38	4	8	20	75	5	10	37	18	7	37	39	298
7:15	60	9	14	18	82	6	12	52	19	21	55	38	386
7:30	79	11	28	30	104	12	14	86	36	17	56	56	529
7:45	107	7	27	26	113	11	24	86	50	13	100	87	651

Total Volume:	418	56	106	131	582	50	108	371	210	103	372	299	2806
Approach %	72%	10%	18%	17%	76%	7%	16%	54%	30%	13%	48%	39%	

Peak Hr Begin:	7:00												
PHV	284	31	77	94	374	34	60	261	123	58	248	220	1864
PHF	0.695			0.837			0.694			0.658			

## Turning Movement Count Report PM

Location ID: 4  
 North/South: Hillman St  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
16:00	95	26	68	60	160	18	32	93	42	15	160	95	864
16:15	80	19	58	59	183	23	38	73	38	19	146	102	838
16:30	123	27	47	51	172	15	43	107	45	30	179	106	945
16:45	101	24	67	41	146	14	40	86	35	21	126	104	805
17:00	114	33	69	36	160	14	32	78	43	27	159	116	881
17:15	105	37	82	48	183	22	38	68	43	28	149	101	904
17:30	94	20	58	63	180	26	30	73	44	19	152	92	851
17:45	89	29	47	49	147	23	20	54	36	18	120	72	704

Total Volume:	801	215	496	407	1331	155	273	632	326	177	1191	788	6792
Approach %	53%	14%	33%	22%	70%	8%	22%	51%	26%	8%	55%	37%	

Peak Hr Begin:	16:30												
PHV	443	121	265	176	661	65	153	339	166	106	613	427	3535
PHF	0.925			0.891			0.844			0.910			

## Pedestrian/Bicycle Count Report

Location ID: 4  
 North/South: Hillman St  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	0	1	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	1	0	0	1	0	0
7:00	0	1	0	0	0	0	0	0
7:15	0	1	0	0	0	0	0	0
7:30	1	0	0	0	0	0	0	0
7:45	0	1	3	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	2	0	0	0	1	0	0	0
16:15	0	1	0	0	0	0	0	0
16:30	0	0	0	0	0	0	1	0
16:45	0	0	0	0	0	1	4	0
17:00	0	0	2	0	1	0	1	0
17:15	1	0	1	0	0	0	1	0
17:30	1	0	0	0	0	0	0	0
17:45	3	0	0	0	0	0	2	0

## Turning Movement Count Report AM

Location ID: 5  
 North/South: Laspina St  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
6:00	6	1	0	1	24	3	4	5	14	10	32	1	101
6:15	5	8	5	0	29	3	8	2	10	11	25	4	110
6:30	12	9	3	3	38	1	9	9	12	14	35	1	146
6:45	18	18	3	4	48	6	10	12	20	10	44	4	197
7:00	20	17	10	3	36	5	15	16	22	10	32	6	192
7:15	18	29	9	9	49	10	17	26	27	11	41	8	254
7:30	27	42	19	12	84	10	16	57	34	22	72	8	403
7:45	30	74	15	19	100	12	18	74	35	17	72	9	475

Total Volume:	136	198	64	51	408	50	97	201	174	105	353	41	1878
Approach %	34%	50%	16%	10%	80%	10%	21%	43%	37%	21%	71%	8%	

Peak Hr Begin:	7:00												
PHV	95	162	53	43	269	37	66	173	118	60	217	31	1324
PHF	0.651			0.666			0.703			0.755			

## Turning Movement Count Report PM

Location ID: 5  
 North/South: Laspina St  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
16:00	15	60	40	9	165	17	25	37	62	64	152	25	671
16:15	18	55	27	11	132	23	31	39	57	79	151	26	649
16:30	15	54	33	15	134	16	28	35	47	75	168	27	647
16:45	15	51	31	8	156	15	27	45	56	67	130	23	624
17:00	20	45	33	12	142	14	27	44	51	54	167	24	633
17:15	23	62	24	12	104	24	22	34	57	71	149	35	617
17:30	13	45	18	5	133	10	22	45	51	76	144	31	593
17:45	17	27	24	11	146	10	19	35	53	53	109	17	521

Total Volume:	136	399	230	83	1112	129	201	314	434	539	1170	208	4955
Approach %	18%	52%	30%	6%	84%	10%	21%	33%	46%	28%	61%	11%	

Peak Hr Begin:	16:00												
PHV	63	220	131	43	587	71	111	156	222	285	601	101	2591
PHF	0.900			0.918			0.955			0.914			

## Pedestrian/Bicycle Count Report

Location ID: 5  
 North/South: Laspina St  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	0	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	1	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	2	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	2	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	3	0	1	0
16:15	0	0	0	0	2	0	1	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	1
17:00	0	0	0	0	1	1	2	1
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

## Turning Movement Count Report AM

Location ID: 6  
 North/South: Mooney Blvd  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
6:00	5	26	4	4	9	9	10	47	9	19	11	6	159
6:15	6	38	6	3	8	4	5	48	23	11	16	10	178
6:30	10	52	5	7	19	16	7	99	12	14	16	18	275
6:45	17	57	2	4	16	13	12	104	23	16	25	20	309
7:00	14	71	5	7	10	15	7	117	25	23	25	24	343
7:15	21	86	4	14	13	15	13	141	39	26	39	33	444
7:30	30	118	9	17	42	25	13	187	53	51	39	34	618
7:45	26	114	8	16	47	36	21	183	78	50	59	46	684

Total Volume:	129	562	43	72	164	133	88	926	262	210	230	191	3010
Approach %	18%	77%	6%	20%	44%	36%	7%	73%	21%	33%	36%	30%	

Peak Hr Begin:	7:00												
PHV	91	389	26	54	112	91	54	628	195	150	162	137	2089
PHF	0.806			0.649			0.777			0.724			



## Turning Movement Count Report PM

Location ID: 6  
 North/South: Mooney Blvd  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
16:00	67	154	7	11	42	25	13	118	75	67	48	55	682
16:15	37	155	17	9	40	36	9	128	47	91	58	61	688
16:30	52	142	12	5	45	35	10	123	48	72	63	46	653
16:45	62	190	13	8	46	24	7	123	52	66	57	51	699
17:00	47	171	13	13	52	29	15	154	44	78	58	58	732
17:15	59	197	15	14	40	38	7	117	49	85	28	52	701
17:30	35	168	23	15	39	27	11	108	43	81	43	43	636
17:45	47	162	9	5	23	21	7	101	55	55	29	49	563

Total Volume:	406	1339	109	80	327	235	79	972	413	595	384	415	5354
Approach %	22%	72%	6%	12%	51%	37%	5%	66%	28%	43%	28%	30%	

Peak Hr Begin:	16:30												
PHV	220	700	53	40	183	126	39	517	193	301	206	207	2785
PHF	0.898			0.928			0.879			0.920			

## Pedestrian/Bicycle Count Report

Location ID: 6  
 North/South: Mooney Blvd  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	1	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	1	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	1	0	0	0	1	1	1	1
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

## Turning Movement Count Report AM

Location ID: 7  
 North/South: Morrison St  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			Totals:
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
6:00	0	0	0	0	19	2	2	0	2	3	19	0	47
6:15	0	0	0	0	16	1	2	0	2	3	27	0	51
6:30	0	0	0	0	31	1	7	0	9	0	34	0	82
6:45	0	0	0	0	34	4	5	0	0	0	40	0	83
7:00	0	0	0	0	22	2	6	0	1	2	38	0	71
7:15	0	0	0	0	39	9	5	0	4	0	48	0	105
7:30	0	0	0	0	66	2	15	0	9	0	57	0	149
7:45	0	0	0	0	103	11	15	0	8	2	86	0	225

Total Volume:	0	0	0	0	330	32	57	0	35	10	349	0	813
Approach %	0%	0%	0%	0%	91%	9%	62%	0%	38%	3%	97%	0%	

Peak Hr Begin:	7:00												
PHV	0	0	0	0	230	24	41	0	22	4	229	0	550
PHF	0.000			0.557			0.656			0.662			

## Turning Movement Count Report PM

Location ID: 7  
 North/South: Morrison St  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
16:00	0	0	0	0	60	4	11	0	7	1	71	0	154
16:15	0	0	0	0	84	8	7	0	4	7	61	0	171
16:30	0	0	0	0	68	4	10	0	5	3	85	0	175
16:45	0	0	0	0	73	6	3	0	5	11	72	0	170
17:00	0	0	0	0	72	10	6	0	4	3	83	0	178
17:15	0	0	0	0	77	17	3	0	3	3	47	0	150
17:30	0	0	0	0	74	14	3	0	4	5	59	0	159
17:45	0	0	0	0	33	10	1	0	3	4	44	0	95

Total Volume:	0	0	0	0	541	73	44	0	35	37	522	0	1252
Approach %	0%	0%	0%	0%	88%	12%	56%	0%	44%	7%	93%	0%	

Peak Hr Begin:	16:15												
PHV	0	0	0	0	297	28	26	0	18	24	301	0	694
PHF	0.000			0.883			0.733			0.923			

## Pedestrian/Bicycle Count Report

Location ID: 7  
 North/South: Morrison St  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	0	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	1	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

## Turning Movement Count Report AM

Location ID: 10  
 North/South: Laspina St  
 East/West: Tulare Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
6:00	6	9	2	0	72	2	3	13	9	5	77	7	205
6:15	15	9	8	1	62	2	13	13	6	4	79	3	215
6:30	12	20	6	2	87	3	16	21	10	5	114	3	299
6:45	20	17	4	4	108	6	14	25	14	5	70	8	295
7:00	11	26	9	4	106	6	11	22	21	8	76	8	308
7:15	15	35	14	13	106	10	11	39	27	8	73	4	355
7:30	18	49	16	10	148	9	23	61	28	24	96	14	496
7:45	23	72	17	11	187	14	15	94	46	23	116	21	639

Total Volume:	120	237	76	45	876	52	106	288	161	82	701	68	2812
Approach %	28%	55%	18%	5%	90%	5%	19%	52%	29%	10%	82%	8%	

Peak Hr Begin:	7:00												
PHV	67	182	56	38	547	39	60	216	122	63	361	47	1798
PHF	0.681			0.736			0.642			0.736			

## Turning Movement Count Report PM

Location ID: 10  
 North/South: Laspina St  
 East/West: Tulare Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
16:00	17	96	27	18	135	25	20	78	24	46	148	39	673
16:15	26	108	32	14	115	24	16	61	21	36	128	30	611
16:30	23	83	33	16	119	20	17	58	26	41	166	23	625
16:45	27	94	27	10	149	17	13	75	29	37	176	24	678
17:00	12	92	30	12	134	17	18	72	28	39	184	38	676
17:15	27	101	22	21	122	22	21	65	22	68	165	30	686
17:30	27	98	32	16	121	33	21	62	21	42	140	27	640
17:45	16	77	27	16	122	24	10	53	25	31	108	21	530

Total Volume:	175	749	230	123	1017	182	136	524	196	340	1215	232	5119
Approach %	15%	65%	20%	9%	77%	14%	16%	61%	23%	19%	68%	13%	

Peak Hr Begin:	16:45												
PHV	93	385	111	59	526	89	73	274	100	186	665	119	2680
PHF	0.938			0.957			0.947			0.922			



## Pedestrian/Bicycle Count Report

Location ID: 10  
 North/South: Laspina St  
 East/West: Tulare Ave

Date: 01/16/24  
 City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	0	0
6:15	1	0	0	0	0	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	1	0	0	0	0	0
7:00	0	0	1	0	0	0	0	0
7:15	0	0	0	2	0	0	0	0
7:30	0	0	0	2	0	0	0	0
7:45	3	0	4	0	2	0	0	1

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	1	0	1	0	0	0	2	0
16:15	0	0	0	0	0	0	1	0
16:30	0	0	1	0	0	0	0	0
16:45	0	0	0	0	0	0	1	0
17:00	0	0	0	0	1	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

## Turning Movement Count Report AM

Location ID: 11  
 North/South: Mooney Blvd  
 East/West: Tulare Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
6:00	8	36	11	19	50	9	8	30	10	10	60	13	264
6:15	8	39	20	21	52	9	8	28	12	9	84	22	312
6:30	22	41	16	23	55	15	14	66	13	9	108	33	415
6:45	23	41	19	21	83	21	6	80	12	1	54	35	396
7:00	16	48	21	19	82	13	6	90	17	9	66	43	430
7:15	27	66	32	51	74	11	13	133	30	9	66	30	542
7:30	45	70	33	69	117	14	20	150	30	29	70	58	705
7:45	50	106	50	50	115	29	20	154	52	30	106	53	815

Total Volume:	199	447	202	273	628	121	95	731	176	106	614	287	3879
Approach %	23%	53%	24%	27%	61%	12%	9%	73%	18%	11%	61%	29%	

Peak Hr Begin:	7:00												
PHV	138	290	136	189	388	67	59	527	129	77	308	184	2492
PHF	0.684			0.805			0.791			0.753			

## Turning Movement Count Report PM

Location ID: 11  
 North/South: Mooney Blvd  
 East/West: Tulare Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
16:00	62	117	59	66	104	23	14	137	38	50	96	60	826
16:15	57	146	54	50	82	9	15	115	28	42	95	49	742
16:30	64	132	63	52	95	20	16	122	20	54	115	43	796
16:45	74	135	68	44	100	11	19	128	35	53	112	46	825
17:00	54	128	80	51	79	17	13	127	21	48	136	63	817
17:15	81	134	56	64	85	19	13	133	27	48	108	56	824
17:30	84	156	74	44	86	21	15	95	24	54	84	39	776
17:45	73	127	68	53	75	9	5	111	28	38	75	29	691

Total Volume:	549	1075	522	424	706	129	110	968	221	387	821	385	6297
Approach %	26%	50%	24%	34%	56%	10%	8%	75%	17%	24%	52%	24%	

Peak Hr Begin:	16:30												
PHV	273	529	267	211	359	67	61	510	103	203	471	208	3262
PHF	0.965			0.948			0.926			0.893			

## Pedestrian/Bicycle Count Report

Location ID: 11  
 North/South: Mooney Blvd  
 East/West: Tulare Ave

Date: 01/16/24  
 City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	0	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	1	0	1	0	0	1	0	0
7:00	0	0	0	0	0	0	0	0
7:15	1	0	1	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	0	0	0	0
16:15	1	0	0	0	0	0	1	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	1	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

## Turning Movement Count Report AM

Location ID: 12  
 North/South: Morrison St  
 East/West: Tulare Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
6:00	2	1	0	1	69	0	4	1	7	4	72	3	164
6:15	0	1	0	0	65	0	8	4	6	4	101	1	190
6:30	0	1	0	4	78	0	6	6	6	8	126	3	238
6:45	4	1	0	0	100	1	4	2	7	2	83	2	206
7:00	2	0	0	0	98	2	11	5	12	5	80	4	219
7:15	1	7	0	0	101	4	19	4	16	8	102	2	264
7:30	2	1	0	0	131	7	21	20	29	13	111	7	342
7:45	4	7	0	0	135	12	29	13	19	35	138	5	397

Total Volume:	15	19	0	5	777	26	102	55	102	79	813	27	2020
Approach %	44%	56%	0%	1%	96%	3%	39%	21%	39%	9%	88%	3%	

Peak Hr Begin:	7:00												
PHV	9	15	0	0	465	25	80	42	76	61	431	18	1222
PHF	0.545			0.833			0.707			0.716			

## Turning Movement Count Report PM

Location ID: 12  
 North/South: Morrison St  
 East/West: Tulare Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			Totals:
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	2	3	0	0	144	10	6	5	8	28	118	6	330
16:15	3	5	2	2	122	12	5	5	11	31	103	6	307
16:30	4	4	0	0	149	10	6	8	11	31	137	6	366
16:45	5	7	0	1	120	12	9	3	12	34	147	2	352
17:00	6	3	0	1	104	11	4	6	14	37	151	4	341
17:15	12	9	0	2	113	19	10	5	21	30	127	1	349
17:30	8	7	0	2	126	9	10	2	14	40	122	2	342
17:45	5	10	0	1	91	9	5	3	20	22	111	2	279

Total Volume:	45	48	2	9	969	92	55	37	111	253	1016	29	2666
Approach %	47%	51%	2%	1%	91%	9%	27%	18%	55%	19%	78%	2%	

Peak Hr Begin:	16:30												
PHV	27	23	0	4	486	52	29	22	58	132	562	13	1408
PHF	0.595			0.852			0.757			0.921			

## Pedestrian/Bicycle Count Report

Location ID: 12  
 North/South: Morrison St  
 East/West: Tulare Ave

Date: 01/16/24  
 City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	1	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	1	1	0	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0



## Turning Movement Count Report AM

Location ID: 1  
 North/South: Oakmore Street  
 East/West: Prosperity Avenue

Date: 02/01/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
6:00	5	0	0	1	7	0	0	0	0	0	16	2	31
6:15	8	0	0	0	13	0	0	0	0	0	19	4	44
6:30	7	0	2	1	10	0	0	0	0	0	18	4	42
6:45	14	0	0	1	22	0	0	0	0	0	21	8	66
7:00	13	0	0	1	10	1	0	0	0	0	22	14	61
7:15	21	0	4	7	25	0	0	0	0	0	36	25	118
7:30	24	0	7	7	47	0	0	0	0	0	51	39	175
7:45	32	0	6	14	76	0	0	0	0	0	57	21	206

Total Volume:	124	0	19	32	210	1	0	0	0	0	240	117	743
Approach %	87%	0%	13%	13%	86%	0%	0%	0%	0%	0%	67%	33%	

Peak Hr Begin:	7:00												
PHV	90	0	17	29	158	1	0	0	0	0	166	99	560
PHF	0.704			0.522			0.000			0.736			

## Turning Movement Count Report PM

Location ID: 1  
 North/South: Oakmore Street  
 East/West: Prosperity Avenue

Date: 02/01/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
16:00	17	0	2	2	43	0	0	0	0	0	40	19	123
16:15	29	0	6	5	38	0	0	0	0	0	48	13	139
16:30	20	0	4	1	50	0	0	0	0	0	46	18	139
16:45	24	0	6	6	34	0	0	0	0	0	44	22	136
17:00	28	0	2	10	42	0	0	0	0	0	65	13	160
17:15	54	0	5	6	36	0	0	0	0	0	55	19	175
17:30	25	0	2	1	31	0	0	0	0	0	28	10	97
17:45	10	0	1	4	21	0	0	0	0	0	46	6	88

Total Volume:	207	0	28	35	295	0	0	0	0	0	372	120	1057
Approach %	88%	0%	12%	11%	89%	0%	0%	0%	0%	0%	76%	24%	

Peak Hr Begin:	16:30												
PHV	126	0	17	23	162	0	0	0	0	0	210	72	610
PHF	0.606			0.889			0.000			0.904			

## Pedestrian/Bicycle Count Report

Location ID: 1  
 North/South: Oakmore Street  
 East/West: Prosperity Avenue

Date: 02/01/24  
 City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	0	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

## Turning Movement Count Report AM

Location ID: 2  
 North/South: Mooney Boulevard (SR 63)  
 East/West: Seminole Avenue

Date: 02/01/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			Totals:
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
6:00	0	63	2	12	0	0	0	53	0	0	0	0	130
6:15	0	64	5	26	0	0	1	59	0	0	0	0	155
6:30	0	71	9	23	0	0	6	87	0	0	0	0	196
6:45	0	83	8	17	0	1	6	112	0	0	0	0	227
7:00	0	90	9	23	0	0	4	132	0	0	0	0	258
7:15	0	110	8	37	0	0	3	166	1	0	0	0	325
7:30	0	163	12	65	0	1	2	244	1	0	0	0	488
7:45	0	199	14	78	0	0	7	233	0	0	0	0	531

Total Volume:	0	843	67	281	0	2	29	1086	2	0	0	0	2310
Approach %	0%	93%	7%	99%	0%	1%	3%	97%	0%	0%	0%	0%	

Peak Hr Begin:	7:00												
PHV	0	562	43	203	0	1	16	775	2	0	0	0	1602
PHF	0.710			0.654			0.803			0.000			

## Turning Movement Count Report PM

Location ID: 2  
 North/South: Mooney Boulevard (SR 63)  
 East/West: Seminole Avenue

Date: 02/01/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	0	220	28	20	0	1	12	219	0	0	0	0	500
16:15	0	247	34	24	0	0	17	185	0	0	0	0	507
16:30	0	220	40	30	0	0	13	211	0	0	0	0	514
16:45	0	270	37	30	0	0	19	213	0	0	0	0	569
17:00	0	260	34	27	0	0	5	213	0	0	0	0	539
17:15	0	305	49	33	0	0	15	231	0	0	0	0	633
17:30	0	265	49	33	0	0	10	213	0	0	0	0	570
17:45	0	267	36	25	0	0	10	154	1	0	0	0	493

Total Volume:	0	2054	307	222	0	1	101	1639	1	0	0	0	4325
Approach %	0%	87%	13%	100%	0%	0%	6%	94%	0%	0%	0%	0%	

Peak Hr Begin:	16:45												
PHV	0	1100	169	123	0	0	49	870	0	0	0	0	2311
PHF	0.896			0.932			0.934			0.000			

## Pedestrian/Bicycle Count Report

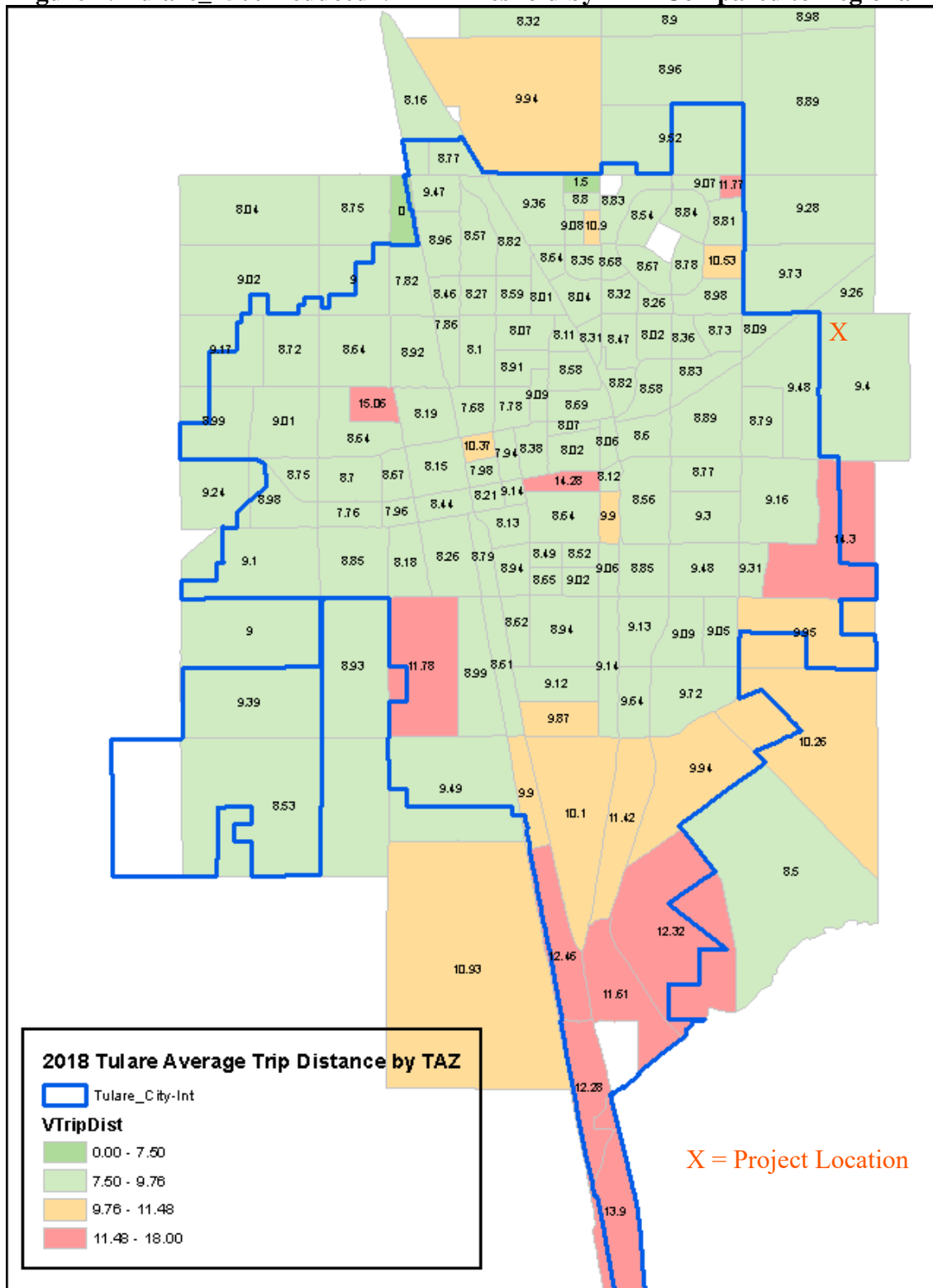
Location ID: 2  
 North/South: Mooney Boulevard (SR 63)  
 East/West: Seminole Avenue

Date: 02/01/24  
 City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	0	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	1	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	1	0	0	0	0	0
17:00	0	0	0	0	0	1	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

**Figure 1: Tulare\_15% Reduced VMT Threshold by TAZ Compared to Regional Average**



Source: Tulare County Association of Governments, 2020.



# 2020 Quality/ Level of Service Handbook



June 2020

## State of Florida Department of Transportation

Systems Implementation Office  
605 Suwannee St. MS 19  
Tallahassee, FL 32399

[www.fdot.gov/planning](http://www.fdot.gov/planning)

# Table of Contents

<b>1</b>	<b>Executive Summary .....</b>	<b>1</b>
<b>2</b>	<b>Q/LOS Handbook Purpose and Scope .....</b>	<b>2</b>
	2.1. Levels of Analysis.....	2
	2.1.1. Generalized Planning .....	3
	2.2 Travel Modes.....	3
	2.2.1 Automobile .....	3
	2.2.2 Pedestrian .....	4
	2.2.3 Bicycle .....	4
	2.2.4 Transit .....	4
	2.3 What's New in This Version of the Q/LOS Handbook? .....	5
<b>3</b>	<b>Q/LOS Principles .....</b>	<b>6</b>
	3.1 Common Q/LOS Misconceptions .....	6
	3.2. Highway Capacity Manual .....	8
	3.2.1 Traffic Flow and Capacity Concepts .....	8
	3.2.2. Bicycle LOS (BLOS).....	9
	3.2.3. Pedestrian LOS (PLOS).....	9
	3.3. Transit Capacity and QOS.....	9
	3.4. Simplifying Assumptions.....	10
	3.4.1. Averages.....	10
	3.4.2. Turning Movements.....	10
	3.4.3. Queue Spillback.....	11
	3.4.4. Capacity.....	11
	3.4.5. Bus Frequency.....	11
	3.5. Arterial Analyses.....	11
	3.5.1 Pedestrian and Bus Analyses .....	12
<b>4</b>	<b>Roadway Variables .....</b>	<b>14</b>
	4.1. Roadway Type .....	14
	4.1.1. Freeways .....	14
	4.1.2. Highways .....	14
	4.1.3. Arterials.....	14
	4.2. Area Type.....	15
	4.2.1. Core Urbanized and Urbanized Areas .....	16
	4.2.2. Transitioning Areas .....	16
	4.2.3. Urban Areas .....	17
	4.2.4. Rural Areas.....	17
	4.3. Number of Through Lanes .....	17
	4.3.1. Arterials.....	18
	4.3.2. Highways .....	19
	4.4. Speed .....	20
	4.4.1. Posted Speed .....	20
	4.4.2. Free-Flow Speed .....	20

4.5. Median Type.....	20
4.5.1. Arterials.....	20
4.6. Exclusive Turn Lanes.....	21
4.6.1. Arterials.....	21
4.7. Roadway Lengths.....	21
4.7.1. Arterials.....	22
<b>5 Traffic Variables.....</b>	<b>23</b>
5.1. Volume and Demand.....	23
5.2. Annual Average Daily Traffic (AADT).....	24
5.3. Planning Analysis Hour Factor (K).....	24
5.3.1 Multimodal Transportation Districts (MMTD).....	26
5.4. Directional Distribution Factor (D).....	26
5.5. Peak Hour Factor (PHF).....	26
5.6. Base Saturation Flow Rate.....	27
5.7. Heavy Vehicle Percent.....	27
5.8. Speed and Capacity Adjustment Factors.....	27
5.9. Percent Turns from Exclusive Turn Lanes.....	28
<b>6 Control Variables.....</b>	<b>30</b>
6.1. Number of Signals.....	31
6.2. Arrival Type.....	32
6.3. Signal Type.....	33
6.3.1. Actuated.....	33
6.3.2. Actuated-Coordinated.....	33
6.3.3. Pretimed.....	33
6.4. Cycle Length (C).....	34
6.5. Effective Green Ratio (g/C).....	34
<b>7 Multimodal Variables.....</b>	<b>36</b>
7.1. Paved Shoulder/Bicycle Lane.....	37
7.2. Outside Lane Width.....	37
7.3. Pavement Condition.....	38
7.4. Sidewalk.....	38
7.5. Sidewalk Protective Barrier.....	39
7.6. Bus Frequency.....	39
7.7. Bus Stop Amenities.....	40
7.8. Bus Stop Type.....	40
7.9. Passenger Loads.....	40

<b>8</b>	<b>Future Year Analyses .....</b>	<b>41</b>
	8.1. <i>Change in Traffic Variables</i> .....	41
	8.1.1. AADT .....	41
	8.1.2. Planning Analysis Hour Factor (K) .....	41
	8.1.3. Directional Distribution Factor (D) .....	41
	8.2. <i>Change in Control Variables</i> .....	42
	8.2.1 g/C.....	42
	8.2.2 Signal Density .....	42
<b>9</b>	<b>Maximum Capacity Volumes.....</b>	<b>44</b>
	9.1. <i>Arterials</i> .....	44
	9.2. <i>Freeways</i> .....	44
	9.3. <i>Highways</i> .....	45
<b>10</b>	<b>Florida’s LOS Policy .....</b>	<b>46</b>
<b>11</b>	<b>Generalized Planning Analysis.....</b>	<b>47</b>
	11.1. <i>Introduction</i> .....	47
	11.2. <i>Special Cases</i> .....	49
	11.2.1. Mid-Block Considerations .....	49
	11.2.2. Non-State Signalized Roadways Adjustment .....	50
	11.2.3. Variations in Levels of Service.....	50
	11.2.4. Median and Turn Lane Adjustment (Divided/Undivided Roadways).....	50
	11.2.5. One-Way Facility Adjustments.....	51
	11.2.6. Auxiliary Lane Adjustment .....	51
	11.2.7. Ramp Metering Adjustment .....	51
	11.2.8. Bicycle LOS (BLOS).....	51
	11.2.9. Pedestrian LOS (PLOS).....	52
	11.2.10. Bus LOS .....	52
	11.3. <i>Service Volume Calculation Process</i> .....	53
	11.3.1. Arterial LOS .....	53
	11.3.2. Freeway Facilities LOS.....	54
	11.3.3. Highways LOS .....	54
	<b>Glossary .....</b>	<b>55</b>
	<b>2020 FDOT QUALITY/LEVEL OF SERVICE HANDBOOK TABLES.....</b>	<b>67</b>

## List of Figures

Figure 2-1: Traffic Analysis Tools .....	3
Figure 3-1: Examples of LOS by Mode for Arterials .....	7
Figure 4-1: Area Types .....	15
Figure 4-2: Usable Length .....	19
Figure 4-3: Example of Six-Lane Roadway .....	19
Figure 5-1: Predominant Turning Movement .....	29
Figure 5-2: Through Movement at a T Intersection with Exclusive Lanes .....	29
Figure 5-3: Through Movement at a T Intersection with Shared Lanes .....	29
Figure 6-1: Total Number of Signals .....	32
Figure 7-1: Outside Lane Width .....	38
Figure 7-2: Sidewalk/Roadway Separation .....	39

## List of Tables

Table 3-1: Service Frequency LOS Thresholds .....	10
Table 3-2: PLOS Adjustment Factors on Bus LOS .....	12
Table 5-1: Calculation of Percent Turns from Exclusive Turn Lanes .....	28
Table 6-1: Control Variable Input Requirements .....	30
Table 6-2: Sensitivity of Control Variables on Service Volumes .....	31
Table 7-1: Multimodal Variable Input Requirements .....	36
Table 7-2: Sensitivity of Multimodal Variables on Service Volumes .....	37
Table 7-3: Bus Stop Amenity Factors .....	40
Table 7-4: Passenger Load Factor .....	40



# 1 Executive Summary

This Quality Level of Service (Q/LOS) Handbook is intended to be used by engineers, planners, and decision-makers in the development and review of roadway capacity and roadway users' Q/LOS at generalized planning levels. This Q/LOS Handbook provides tools to quantify multimodal transportation service inside the roadway environment (essentially inside the right of way).

This edition of the Q/LOS Handbook is updated and reorganized, still providing a foundation for high-quality, consistent capacity, and level of service (LOS) analyses and review in the State of Florida. It includes new analytical techniques from the Transportation Research Board's Highway Capacity Manual (HCM), Sixth Edition, and updated Generalized Service Volume Tables. With these professionally accepted techniques, analysts can easily evaluate roadways from a multimodal perspective, which results in better multimodal decisions for projects in generalized planning phases.

The focus of generalized planning is the extensive use of default values and is intended for broad applications such as regional analyses, initial problem identification, and future year analyses. Florida's Generalized Service Volume Tables at the end of this Q/LOS Handbook are the primary tools for conducting this type of planning analysis. At this time, only Freeways and Uninterrupted Flow Highways Generalized Service Volume Tables have been updated to be consistent with the HCM methodology. The State Signalized Arterials Generalized Service Volume Tables remained the same as the 2013 Q/LOS Handbook. There are future plans to update the State Signalized Arterials Generalized Service Volume Tables to be consistent with the HCM methodology.

Florida Department of Transportation (FDOT) welcomes questions and comments on the content and concepts of this Q/LOS Handbook. FDOT will provide technical assistance and training as needed for usage of the Q/LOS process. For additional resources, see the FDOT's Systems Implementation Office (SIO) website at <https://www.fdot.gov/planning/systems/>. **Initial contacts should be made with FDOT District and Florida's Turnpike Enterprise personnel.**

## 2 Q/LOS Handbook Purpose and Scope

This Q/LOS Handbook is a tool that can be utilized to analyze and review a roadway's capacity at a generalized planning level.

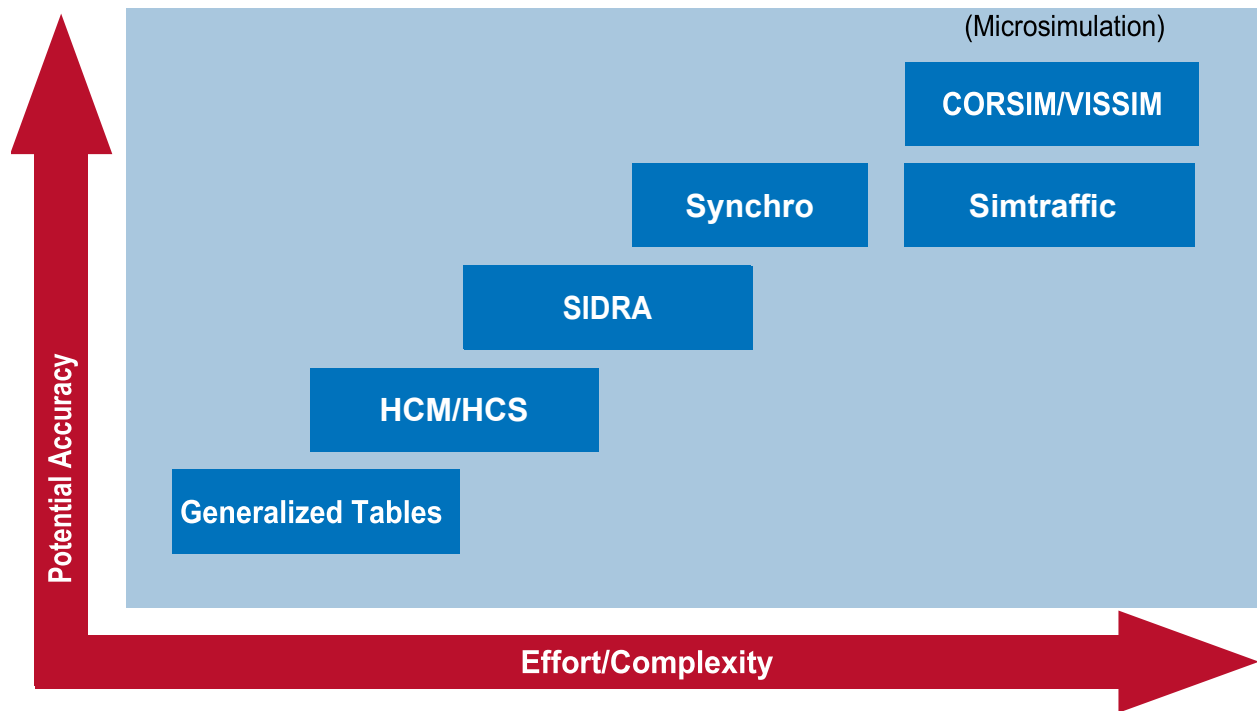
**The quality of service (QOS) is a traveler-based perception of how well a transportation service or facility operates. The LOS is a quantitative stratification of the QOS into six letter grades.** The LOS provides a measure that assesses multimodal service inside the roadway environment (essentially inside the right of way). **Capacity conceptually relates to the maximum number of vehicles that can pass a point on a roadway in a given amount of time under normal conditions.** The Q/LOS Handbook provides Generalized Service Volume Tables and background regarding statewide default values used in their development. The Generalized Service Volume Tables, found at the end of the Q/LOS Handbook, present maximum service volumes, or the highest numbers of vehicles for a given LOS.

Directions found within the Q/LOS Handbook provide assistance in selecting the most appropriate tools for Q/LOS analysis. This handbook offers specific instructions on how to use the Generalized Service Volume Tables.

### 2.1. Levels of Analysis

There are many methods for computing capacity and the LOS, which form a hierarchy ranging from Generalized Service Volume Tables (the simplest to use but potentially least accurate) to complex operational analysis tools (very precise, but time-intensive and costly). **Figure 2-1** provides a list of some traffic analysis tools measured by accuracy and complexity. In selecting the appropriate tools, tradeoffs among study purposes (e.g., generalized planning application, signal timing application), accuracy and precision of results (e.g., variability in data for current year analyses, variability in future year analyses), and data preparation effort (e.g., use of existing statewide traffic data, use of direct field measurements) should be considered. Please refer to the [FDOT Traffic Analysis Handbook](#) for additional tools and guidance in selecting the appropriate analysis tool.



**Figure 2-1: Traffic Analysis Tools**

### **2.1.1. Generalized Planning**

Generalized planning covered in this handbook makes extensive use of default values and is intended for broad applications, such as initial problem identification (e.g., deficiency and needs analyses, geographic influence areas), statewide analyses (e.g., statewide calculation of delay), and future year analyses (e.g., 10-year planning horizon).

Florida's Generalized Service Volume Tables provided at the end of this handbook are the primary tools for conducting Generalized planning analysis. The updated tables have been developed using guidance provided in the HCM.

## **2.2 Travel Modes**

The HCM defines four major travel modes: automobile, pedestrian, bicycle, and transit. Each mode includes a unique set of characteristics that define a traveler's experience during a trip, and it is important to consider each perspective when analyzing a multimodal facility.

### **2.2.1 Automobile**

The three major elements that affect the operation of a vehicle are: roadway characteristics, traffic characteristics, and control characteristics.

Vehicles include passenger cars, trucks, vans, buses, recreational vehicles, and motorcycles. Each vehicle type has a unique set of operational characteristics, and the percentage makeup of each vehicle type within a traffic stream affects the capacity of a facility because of these differences. For example, trucks, buses, and recreational

vehicles have lower acceleration and deceleration rates than standard passenger cars. Factors, such as pavement type and condition, time of day, and weather, affect the operational characteristics of vehicles as well as driver behavior. Other factors, such as fatigue, health, and driving under the influence of drugs and alcohol, also affect driver behavior. **This handbook assumes base conditions that include typical drivers on dry pavement during daylight hours.**

### **2.2.2 Pedestrian**

Many trips include at least one part where the traveler is a pedestrian. This is particularly important for transit trips, where the pedestrian section of the trip may have an impact on future mode choice.

Analyzing the pedestrian experience can be summarized by two primary types of analysis: individual delay and facility attributes. Delay at intersections can be easily quantified and analyzed. The factors that describe a facility and, therefore, contribute to the overall walking experience are less easily quantified, including safety, security, lighting, grades, surface conditions, and even street activity levels. Automobile and heavy vehicle traffic volume, and the extent to which pedestrians are separated from vehicular traffic, also influence pedestrians' perception of QOS while using a sidewalk. **This handbook accounts for the user's perception and facility attributes when determining Pedestrian LOS (PLOS).**

### **2.2.3 Bicycle**

Bicycles are used to make a variety of trips, including trips for recreation, commuting, and errands. Bicycles can help extend the market area of transit service as bicycle travel is typically five times faster than travel on foot.

Similar to the pedestrian experience, Bicycle LOS (BLOS) can be summarized by delays encountered at intersections as well as the attributes of the facility itself. As with the pedestrian analysis, the Q/LOS Handbook focuses on facility attributes when determining BLOS. These attributes include the volume and speed of adjacent vehicles, heavy vehicle presence, the presence of on-street parking and pavement conditions. Because of the severe deterioration of perceived QOS at flow levels well below the theoretical capacity of a bike path, the concept of capacity has little utility in the design and analysis of bicycle paths.

### **2.2.4 Transit**

Transit riders can be grouped into two primary categories: choice and captive riders. Choice transit riders typically have other means of transportation readily available, but choose transit to avoid congestion, save money on fuel and parking, use their travel time productively for other activities, and/or reduce their impact on the environment. Captive riders, however, are unable to drive because of age, physical, mental, or financial reasons, and depend on transit or other modes for their daily transportation needs.

**Unlike other modes, transit is primarily focused on service levels rather than facility characteristics.** Infrastructure for driving, biking, or walking is available at all times, once constructed; transit service is only available during certain times along designated routes. Additionally, transit passengers are not in direct control of their travel time, service frequency and reliability, therefore, these are important factors that affect the quality and utility of transit service.

When bus service frequencies reach a high enough level of demand (headway of approximately 10 minutes or less),

bus passengers do not feel the need to consult bus schedules. This allows transit users the freedom to treat the system as they would treat other modes. Service frequencies that require passengers to plan their trips around a limited transit schedule offer much less utility, and deter choice riders.

**Because transit passengers typically must walk to and from transit stops on either end of their trip, the quality of the walking experience at the beginning or end of a trip may be just as important to the transit passenger as the actual transit experience.**

## 2.3 What's New in This Version of the Q/LOS Handbook?

This edition of the Q/LOS Handbook primarily reflects an update to the 2013 edition and incorporates updates included in the sixth edition of the HCM. The Q/LOS Handbook has been revised to focus on generalized planning for freeways and highways. No changes have been made in this version of the handbook to the arterial methodology and arterial Generalized Service Volume Tables from the 2013 Q/LOS Handbook.

The Generalized Service Volume Tables are the primary tools supported by FDOT for generalized planning. The freeway and highway automobile mode portions of the tables have been updated using the Highway Capacity Software 7 (HCS7), which incorporates the latest procedures provided in the HCM, Sixth Edition. The updated tables also include revised inputs and parameters that coincide with the current methodology in the HCM and default values. The updated tables can be found at the end of this handbook. A summary of the methodology changes is provided below:

- The Generalized Service Volume Tables
  - The 2020 freeway and highway Generalized Service Volume Tables were developed using HCS7, which is based on the HCM, Sixth Edition.
  - There are **no changes** for arterial service volumes between the 2012 and 2020 Generalized Service Volume Tables.
- The freeway service volumes are now based on freeway facilities procedures, incorporating basic segments and interchanges rather than just basic segments.
- The inputs are generally consistent between the 2012 and 2020 versions of the tables, but there have been some updates to maintain internal consistency in the 2020 set of tables.
- New inputs such as Speed Adjustment Factor (SAF) and Capacity Adjustment Factor (CAF) have been introduced into the development of the tables because the input requirements for HCS7 are more extensive than those for Level of Service Planning (LOSPLAN).
- FDOT **no longer** supports the LOSPLAN program and it has not been included in this version of the handbook.

## 3 Q/LOS Principles

Providing safety and mobility for people and goods remains transportation's most essential function and part of FDOT's mission. There are four dimensions of mobility:

- Quality of travel: traveler satisfaction with a facility or service.
- Quantity of travel: magnitude of use of a facility or service.
- Accessibility: ease in which travelers can engage in desired activities.
- Capacity utilization: quantity of operations relative to capacity.

This Q/LOS Handbook focuses primarily on quality, followed by capacity utilization. The quantity of travel and accessibility dimensions are not addressed in this Q/LOS Handbook.

The QOS is based on a user's perception of how well a transportation service or facility operates. In other words, it's how travelers perceive the overall QOS.

The LOS is a quantitative stratification of the QOS. The HCM divides highways QOS into six letter grades, A through F, with A being the best and F being the worst. With this scheme, traffic engineers more easily explained operating and proposed design concepts to the general public and elected officials.

**Despite its widespread use as an independent measurement, it is important to note that the LOS is simply a quantitative breakdown from transportation users' perspectives of transportation QOS. The LOS reflects the QOS, as measured by a scale of user satisfaction, and is applicable to each of the following modes that use roadways: automobiles, trucks, bicycles, pedestrians, and buses.**

Because this handbook deals with the overall quality of user satisfaction and its quantitative breakdown, it is labeled as the Q/LOS Handbook. The measurement techniques, however, are simply referred to as LOS analysis. This Q/LOS Handbook deals with the QOS and the LOS that roadways provide to users (i.e., motorists, bicyclists, pedestrians, and transit passengers) and provides planning tools to assist transportation planners and engineers. The overall quality of the entire trip experience, which depends on a variety of factors, including aesthetics, safety, and other social measures are not covered in this handbook.

### 3.1 Common Q/LOS Misconceptions

Common misconceptions about Q/LOS that often arise:

- The QOS is directly related to all other dimensions of mobility.

This misconception is related to the relationship between quality and other dimensions of mobility. *The QOS is frequently related to the other dimensions of mobility, but not in all cases.* Q/LOS for automobile drivers is usually closely linked to how many other vehicles are on the road. However, the relationship is not always perfect.

For example, arterial speeds are more closely tied to signalization conditions than the number of other vehicles on the roadway. A higher Q/LOS grade may exist on a four-lane arterial with twice the volume of another arterial due to efficient signal progression. For transit users, pedestrians, and bicyclists, there is often an even weaker relationship between total demand and Q/LOS. **In most situations in Florida, the total number of bicyclists and pedestrians on a facility has very little, if any, impact on Q/LOS. Similarly, in most of Florida, bus**

frequency is typically much more important to transit users than how many people are actually on a bus.

In some cases, particularly for the non-automobile modes, an analysis of total potential demand is a more important component of the decision-making process than the QOS. This handbook only addresses Q/LOS, not the methods of determining overall demand or mode splits. Other tools, such as logit models, are more appropriate for these types of analyses.

- The LOS is applicable only to automobile analysis, while the QOS is related to the non-automobile modes.

This misconception is that LOS applies only to automobiles, and QOS applies to the non-automobile modes. It is often assumed that while automobile analyses are highly quantitative, the bicycle, pedestrian, and transit analyses are more qualitative. *However, the bicycle, pedestrian, and transit techniques are as quantitative and rigorously developed and tested as those for automobiles.* An example of LOS by mode for arterials is illustrated in **Figure 3-1**.

**Figure 3-1: Examples of LOS by Mode for Arterials**



- The LOS A–F grades are comparable to American school letter grades.

The most common misconception about LOS A–F grades is that they are comparable to school letter grades. Although they share some basic similarities, there are some important distinctions to make at a planning level. *Unlike school grades, LOS A is not necessarily a desirable goal, and the meaning of A–F is not entirely consistent across modes. Although it is true that LOS A is best and LOS F is worst, this is strictly from a traveler experience and perspective. LOS A is not necessarily a desirable goal to achieve from an overall transportation or societal perspective.* LOS A in a peak travel hour could be an indicator of an inefficient use of limited funding. It is simply not cost-effective to design the state's roadways to operate at LOS A during the peak hour. FDOT's LOS targets in **Chapter 10** should be considered a desirable condition during the peak hour, with significant variance from those targets in either direction an undesirable condition. The LOS targets are an FDOT Policy ([000-525-006](https://www.fdot.com/000-525-006)) and discussed in **Chapter 10**.

Although LOS F represents a failing condition, there are more factors to consider when the LOS reaches F. Essentially, LOS F either means travel demand exceeds capacity and the roadway is operating in oversaturated conditions, or another undesirable condition exists.

Although each of the methodologies for automobiles, bicycles, pedestrians, and buses make use of the LOS A–F

scales, **the meaning of A–F is not entirely consistent across the modes.**

Transportation professionals widely consider LOS D for the automobile mode an acceptable condition, and this threshold is often used as a design condition in urbanized areas. The bus and automobile LOS scales were developed by transportation professionals, with the objective of classifying various levels of congestion in undersaturated conditions. Members of the general public, however, determined the derivation of the bicycle and PLOS thresholds, thus incorporating a general perception of LOS D as a largely undesirable condition. Because of this, LOS D likely represents a worse condition from the user perspective for the bicycle and pedestrian modes than the automobile and bus modes. FDOT and its research team evaluated and considered various methods to make the LOS thresholds more consistent across modes, but found no scientific basis to adjust the scales. Users should therefore simply be cautious about comparing the same LOS letter grade across modes.

## 3.2. Highway Capacity Manual

For capacity and automobile, pedestrian, and bicycle Q/LOS analysis, the HCM is the foremost recognized and accepted analysis tool. HCM defines capacity as the maximum sustainable flow rate, which persons or vehicles can reasonably be expected to traverse a point or a uniform segment of a lane or a roadway during a given time period under prevailing roadway, environmental, traffic, and control conditions.

### 3.2.1 Traffic Flow and Capacity Concepts

The HCM defines two primary facility types: uninterrupted and interrupted flow facilities. The terms refer to the type of facility and, therefore, the analysis type, not the quality of traffic flow at any given time.

**Uninterrupted flow facilities have no fixed causes of delay or interruption external to the traffic stream, such as signals or stop signs.** Non-tolled freeways represent the purest form of uninterrupted flow, because there are no fixed interruptions to traffic flow, and access to the facilities are limited to ramp locations. Multilane and two-lane highways operate under uninterrupted flow in long segments between points of fixed interruption (e.g., traffic signals), but it is often necessary to examine the points of fixed interruption using interrupted flow methodologies.

**Interrupted flow facilities have fixed causes of periodic delay or interruption to the traffic stream, such as traffic signals or stop signs, with average spacing less than or equal to 2 miles.** Traffic flow patterns on interrupted flow facilities are the result not only of vehicle interactions and the facility's geometric characteristics, but also of the traffic control used at intersections and the frequency of access points to the facility. Traffic signals, for example, allow designated movements to occur only during portions of the signal cycle, and therefore affect flow and capacity, because the facility is not available for continuous use. Traffic signals also create platoons of vehicles that travel along the facility as a group. By contrast, intersections controlled by all-way stops and roundabouts discharge vehicles more randomly, creating periodic but sometimes small gaps in traffic at downstream locations.

Capacity on uninterrupted and interrupted flow facilities can be defined in terms of, passenger cars per hour (pcph), or vehicles per hour (vph), depending on the type of analysis or system element.

Reasonable expectancy is the basis for defining capacity. Capacity is, therefore, not the absolute maximum flow rate observed at a facility, but rather a flow rate that can be achieved repeatedly for peak periods of sufficient



demand.

**Prevailing roadway, traffic, and control conditions define capacity.** These conditions should be relatively uniform for any segment of a facility that is analyzed. Base conditions, by comparison, assume optimum conditions, including good weather, dry pavement conditions, users who are familiar with the system, and no impediments to traffic flow. In most cases, prevailing conditions differ from base conditions (e.g., there are trucks in the traffic stream, rolling terrain). As a result, the computations of capacity, service flow rate, and LOS include an adjustment to capacity under base conditions.

### 3.2.2. Bicycle LOS (BLOS)

**BLOS is based on bicyclists' perceptions of the roadway environment.** BLOS is based on five variables, with relative importance ordered in the following list:

- Average effective width of the outside through lane
- Vehicle volumes
- Vehicle speeds
- Heavy vehicle (truck) volumes
- Pavement condition

Average effective width is largely determined by the width of the outside travel lane and striping for bicyclists but includes other factors, such as the effects of street parking and drainage grates. Each of the variables is weighted by coefficients derived by stepwise regression modeling importance. A numerical LOS score, generally ranging from 0.5 to 6.5, is determined and stratified to an LOS letter grade. Thus, unlike the determination of automobile LOS, in which there is typically only one service measure (e.g., average travel speed), BLOS is determined by multiple factors.

### 3.2.3. Pedestrian LOS (PLOS)

Like BLOS, **PLOS is based on the pedestrians' perceptions of the roadway or nearby roadside environment.** PLOS is based on four variables with relative importance ordered in the following list:

- Existence of a sidewalk
- Lateral separation of pedestrians from vehicles
- Vehicle volumes
- Vehicle speeds

The PLOS model applies to the roadway facilities within the right of way. Therefore, estimating PLOS for facilities outside the right of way at significantly greater distance, may exceed the validated range of the model and is not recommended.

## 3.3. Transit Capacity and QOS

The Transportation Research Board (TRB) [Transit Capacity and Quality of Service Manual \(TCQSM\)](#) is the nation's leading document for transit and Q/LOS analysis. As used in this Q/LOS Handbook, transit or bus is limited to scheduled, fixed-route bus transit.



One significant exhibit in the TCQSM is a table for urban scheduled transit service based on service frequency. **Table 3-1** replicates this TCQSM table, but includes Florida-specific modifications to the adjusted service frequency.

**Table 3-1: Service Frequency LOS Thresholds**

Level of Service	Adjusted Service Frequency (Vehicles/hour)	Headway (minutes)	Comments
A	>6	<10	Passengers don't need schedules
B	>4	<15	Frequent service, passengers consult schedules
C	≥3	≤20	Maximum desirable time to wait if transit vehicle missed
D	≥2	≤30	Service unattractive to choice riders
E	≥1	≤60	Service available during hour
F	<1	>60	Service unattractive to all riders

## 3.4. Simplifying Assumptions

Planning-level analyses make extensive use of default values and simplifying assumptions to the operational models on which they are based. As such, there are multiple simplifying assumptions used in this Q/LOS Handbook.

### 3.4.1. Averages

This Q/LOS Handbook makes extensive use of averages. **For generalized planning (Generalized Service Volume Tables), most of the default input variables represent statewide averages. Similarly, for generalized planning, simple averages are recommended.** For example, if an arterial facility has daily volumes of 20,000, 25,000, and 24,000, it would be reasonable to use the average (23,000) of the three. However, users should be cautious of outlying values and use some judgment when applying simple averages. In the above example, if the first value were 10,000, the user may want to disregard that value or use the median value (i.e., 24,000).

### 3.4.2. Turning Movements

One of the most significant planning assumptions is that the mainline turning movements are adequately accommodated. Within this Q/LOS Handbook, the through movement is defined as the traffic stream with the greatest number of vehicles passing directly through a point. While this movement is typically the Straight Ahead movement, occasionally the right or left turn could qualify as the through movement. When the turning movement has the greatest number of vehicles (more than the Straight Ahead), it is recommended to consider the turning movement as the controlling movement. See **Section 5.9** for additional details.

Most analyses of through movements in the HCM are relatively straightforward. Complications arise with the treatment of turning or merging movements, especially for signalized intersections and arterials. By handling turning arterial movements (i.e., turns from the arterial, side-street movements) in a general way, Q/LOS and capacity analyses are greatly simplified. This is also true for some two-lane uninterrupted flow highways in which

mid-block turning movements may affect capacity. Off- and on-ramp movements along freeways are also handled in a general way and are assumed to be adequately accommodated. Most importantly, it is assumed that movements at off-ramps do not back up into the through lanes of the freeway.

When turning movements are not adequately accommodated in the available storage, the techniques to determine the LOS for an arterial found in this handbook are not appropriate. Although, the arterial analysis in this handbook includes all vehicles on the arterial, the focus is on the vehicles making through movements rather than turning movements. For example, only the green time for the through movement is included, and penalties are assigned if there are no left-turn lanes at signalized intersections and no medians exist mid-block.

### **3.4.3. Queue Spillback**

Another major assumption is that turning movements do not back up into adjacent through lanes. Essentially, adequate storage is assumed to be available for turning vehicles on arterials and for vehicles exiting freeways. Therefore, where mainline turning movements are not adequately accommodated, the planning techniques found in the Q/LOS Handbook are not appropriate. If this is the case, higher level analysis is recommended.

### **3.4.4. Capacity**

For the HCM analyses of uninterrupted flow facilities, capacity is set in terms of passenger cars per hour per lane (pcphpl). **Free-flow speed is estimated based on other variables, such as percent heavy vehicles, CAFs and SAFs, median type, and lateral clearance.**

For the HCM analyses of interrupted flow facilities, capacity represents the maximum number of vehicles that can pass a point during a specified time period under prevailing roadway, traffic, and control conditions.

The Q/LOS Handbook primarily relies on and reports capacity values based on the interrupted flow concept of capacity, with free-flow speed considered a roadway variable input. **For planning purposes, the assumed free-flow speed is 5 mph over the posted speed limit.**

### **3.4.5. Bus Frequency**

For transit analysis purposes, the most significant assumption is that bus frequency is the single most important factor in determining the Q/LOS to transit users along a transit route segment or roadway facility. FDOT, in cooperation with the TCQSM authors and others, has incorporated that concept. Certainly, the LOS varies for individual transit users along a facility, but **in the determination of bus LOS along a transit route segment or roadway facility, the availability of buses is usually the more relevant performance measure.**

## **3.5. Arterial Analyses**

### **ADJUSTED SATURATION FLOW RATE**

Variables such as area type, speed limit, number of lanes, percent right turn lanes, percent heavy vehicles, median type, left turn lanes and population size have effects on adjusted saturation flow rates. Furthermore, as traffic queues get longer, traffic pressure affects capacity. These effects are included in FDOT's Generalized Service Volume Tables.

## ADD-ON/DROP-OFF LANES

The add-on/drop-off lane (or expanded intersection) will contribute to intersection capacity, but not likely to the extent of a full through lane. The add-on/drop-off lane contains up to half the capacity of a full through lane. For any capacity benefit to be considered, two conditions should be met:

- the add lane and drop lane each must be at least 800 feet in length
- the add-on/drop-off pair combined must be at least 1,760 feet in length

For additional discussion, see [Section 4.3.1](#).

## ONE-WAY STREETS

The Generalized Service Volume Tables include a factor that has been approved for the evaluation of one-way streets. Essentially, one-way pairs are assumed to have a 20 percent higher service volumes than corresponding two-way roadways with the same number of lanes.

## LOS CRITERIA

The maximum control delay at a signalized intersection for LOS D is 55 seconds. While that value may be reasonable based on user perception in an urbanized area, in a small town or at an isolated intersection on a rural highway, that delay would be considered LOS F. To overcome this difference in user perception, FDOT has adopted different control delay criteria in rural undeveloped and rural developed areas. The criteria are one-half, rounded up, of the urbanized area criteria. For arterials in rural developed areas, arterial Class I LOS thresholds apply. These LOS criteria are embedded in FDOT's rural undeveloped and rural developed Generalized Service Volume Tables. The LOS criteria appear on the back of each table.

### 3.5.1 Pedestrian and Bus Analyses

#### PEDESTRIAN LOS

PLOS is determined by the methodology contained in this handbook. **The methodology is consistent and unchanged from the 2013 Q/LOS Handbook.** The pedestrian LOS adjustment factors as they relate to bus LOS are shown in [Table 3-2](#).

**Table 3-2: PLOS Adjustment Factors on Bus LOS**

Pedestrian Level of Service	Adjustment Factor
Pedestrian LOS A	1.15
Pedestrian LOS B	1.10
Pedestrian LOS C	1.05
Pedestrian LOS D	1.00
Pedestrian LOS E	0.80
Pedestrian LOS F	0.55

## ROADWAY CROSSING DIFFICULTY

When catching a bus, transit users frequently have to cross a road. **Crossing difficulty is typically influenced by three broad factors: traffic signal density, crossing length, and vehicle volume.** It is more difficult to cross roadways with low signal densities than roadways with closely spaced, signalized intersections. Mid-block crossing difficulty increases with road width and lack of pedestrian refuges (i.e. restrictive or raised medians). Mid-block crossing difficulty also increases as the number of vehicles increase, which results in fewer gaps. These three broad factors and other major factors, such as vehicle speed, are interrelated. To account for crossing difficulty in a general way, FDOT's approach includes a set of roadway crossing adjustment factors which capture the crossing difficulty. **Roadway crossing adjustment factors are used to determine the adjusted bus frequency by applying a factor that captures crossing difficulty.**

## PASSENGER LOAD FACTOR

Bus crowding plays a role in the user's perception of QOS, particularly on overcrowded buses when no seating is available. FDOT's approach includes a set of passenger load factors, which are applied to help determine the adjusted bus frequency value. **Passenger load factors are used to determine the adjusted bus frequency value by applying a factor commensurate to the level of passenger crowding.** These factors can be found in **Chapter 7** of this Q/LOS Handbook.

## BUS STOP AMENITIES

Passenger comfort and safety within the passenger waiting areas play a role in user perception of the QOS and desirability of a transit system. FDOT's approach includes a set of bus stop amenity factors, which are used to help determine the adjusted bus frequency value. The factors can also be found in **Chapter 7** of this Q/LOS Handbook.

## BUS STOP TYPE

Delay time at bus stops plays a role in travel times along routes, and thus impacts overall average travel speed. **FDOT includes a bus stop type adjustment factor, which is used to add 15 to 35 seconds of delay per route for typical and major bus stops, respectively.**

## BUS FACILITY ANALYSIS

The TCQSM structure for Q/LOS analysis consists of points (e.g., bus stops), route segments, and systems. It does not include a facility analysis. Nevertheless, to maintain consistency, a method of aggregating segment-level bus frequency to facility-level was needed. At the generalized level, a simple average is acceptable. For example, if on a 3-mile facility, four buses serve the first 2 miles and two buses serve the last mile, then using a value of three buses  $[(4 + 2)/2]$  is acceptable for a generalized level analysis.

## 4 Roadway Variables

Florida's Generalized Service Volume Tables are based on the HCM, TCQSM, and Florida roadway, traffic, control (signalization), and multimodal data. **The resulting tables are valid in Florida, and FDOT encourages the use of the generalized planning level approach.** Recognizing varying characteristics with the state and differing roadway, traffic, control, and multimodal characteristics, the Generalized Service Volume Tables are not adequate for all analysis needs. **Chapters 4 through 7** provide a description of input variables used in the development of the Generalized Service Volume Tables. Roadway variables describe the geometric and functional characteristics of a facility.

### 4.1. Roadway Type

Compatible with the terminology of the HCM, this Q/LOS Handbook is based on three major roadway types:

- Freeways
- Uninterrupted flow highways
- Interrupted flow roadways

Note: when using the Generalized Service Volume Tables, the number of lanes for arterials and other interrupted flow facilities should be determined at major intersections, rather than mid-block.

#### 4.1.1. Freeways

**Freeways are multilane, divided highways with at least two lanes for exclusive use of traffic in each direction and full control of ingress and egress.**

#### 4.1.2. Highways

**Uninterrupted flow highways are roadways with a combination of roadway segments, which have average signalized intersection spacing greater than 2 miles and are not freeways.** Because of the significantly different operating characteristics, these types of roadways are frequently also distinguished as two-lane highways and multilane highways.

#### 4.1.3. Arterials

**Interrupted flow roadways or arterials are characterized by signals with average signalized intersection spacing less than or equal to 2 miles.** In this Q/LOS Handbook, signalized arterials are the predominant type of interrupted flow roadway. They primarily are operated by the state and serve through traffic. Also included in this category are signalized Non-State roadways, but not local streets. As used here, signalized intersections refer to all fixed causes of interruption to the traffic stream and may occasionally include stop signs or other control types.

Arterials are further classified based on posted speed. There are two arterial classes:

- Class I: Arterials with a posted speed of 40 mph or greater
- Class II: Arterials with a posted speed of 35 mph or less



## 4.2. Area Type

Four broad area type groupings are used in this Q/LOS Handbook, as shown in **Figure 4-1**:

- Core Urbanized areas (areas with a population of 1,000,000+) and Urbanized areas (other urbanized areas with a population of 50,000+)
- Transitioning areas (transitioning into urbanized areas)
- Urban areas (areas with a population of more than 5,000 not in urbanized areas)
- Rural areas (rural undeveloped areas or developed areas with less than 5,000 population)

**Figure 4-1: Area Types**



The area types in the Generalized Service Volume Tables correspond well with FDOT's LOS targets; however, there are a few special cases. **FDOT District LOS Coordinators should be consulted for applicable boundaries within their districts.**

There may be small lengths of roadways (e.g., approximately 6 miles for freeways, 3 miles for nonfreeways) between area types or adjacent to an area type that, from a logical and analytical sense, should be combined into one area type or another.

These situations typically occur with adjacent interchanges or in transitioning areas, but may also occur elsewhere. FDOT districts have the flexibility to adjust the area type boundaries or designate a roadway with a certain area

type under these circumstances.

**As Florida’s population grows, area types may change for a specific location or roadway in future years.** FDOT’s district offices (contact information available at <http://www.fdot.gov/info/moreDOT/districts/district.shtm>) should be consulted if analysts believe different area types are appropriate for a future study period.

### 4.2.1. Core Urbanized and Urbanized Areas

Core urbanized and urbanized areas are defined as approved boundary, which encompasses the entire Census Urbanized Area, as well as the surrounding geographic area likely to become urbanized within the next 20 years, as agreed on by FDOT, Federal Highway Administration (FHWA), and the Metropolitan/Transportation Planning Organization (MPO/TPO). **Core urbanized area types are distinguished by whether the area’s population is more or less than 1 million.** Currently, the grouping of more than 1 million applies to the MPO areas that include central cities: Fort Lauderdale, Jacksonville, Miami, Orlando, St. Petersburg, Tampa, and West Palm Beach. These are referred to as “core urbanized.” **The minimum population for an urbanized area is 50,000.**

Previously, core urbanized thresholds were developed by applying a different K factor to the urbanized design hourly volume (DHV) thresholds, but after careful consideration, it was noted that additional factors could be applied in the analysis process for a core urbanized area, such as speed and ramp density, and these should be considered. As a result, new DHV, directional design hourly volume (DDHV), and annual average daily traffic (AADT) thresholds were developed for core urbanized areas based on separate analysis from the urbanized thresholds. **The urbanized areas with less than 1 million population are referred to as “other urbanized.”**

### 4.2.2. Transitioning Areas

**Transitioning areas are fringe areas that exhibit characteristics between rural and urbanized/urban. Transitioning areas are intended to include areas that, based on their growth characteristics, are anticipated to become urbanized or urban in the next 20 years.**

Frequently, the Metropolitan Planning Area is used for the transitioning area adjacent to an FHWA Urbanized Area (Adjusted Census Urbanized Area Boundary). The definition of Metropolitan Planning Area mentions the “contiguous area expected to become urbanized with the 20-year forecast period.” It is the contiguous area that should be considered the transitioning area. However, in practice, most MPOs have not delineated those contiguous or transitioning areas, and many of the Metropolitan Planning Areas extend to remote rural areas of counties. When the MPO does not identify these transitioning areas, or areas adjacent to urban (but not urbanized) areas, FDOT districts, in cooperation with local governments, may delineate transitioning areas for LOS purposes.

Keeping the boundaries relatively consistent over time is desirable to achieve understanding by all potential parties. The transitioning boundary should be reviewed and adjusted as a part of the census cycle update, consistent with the setting of the FHWA Urbanized Area boundaries. It is appropriate to review the transitioning boundary in conjunction with a Long-Range Transportation Plan update. The FDOT District LOS Coordinators should be consulted for transitioning boundaries within their districts. It is recommended that boundaries for transitioning areas be based on the location of major roadways or at interchanges. This avoids portions of a freeway changing from transitioning to urbanized or rural between interchanges. It is desirable for an urban street to have the same designation between major roadways and not change mid-block when aligning the boundary with major roads is impractical.



### 4.2.3. Urban Areas

**An urban area has a population between 5,000 and 50,000 and is not within an urbanized area.** The boundaries for cities with populations over 5,000 and not within urbanized areas are primarily set by existing city limits and must be agreed upon by FDOT, the local government, and FHWA. However, the 5,000 population threshold is primarily a surrogate for areas that exhibit urban traffic characteristics. When a city has a population of less than 5,000 but the surrounding area has a population of more than 5,000 and the city has an urban character, then it is reasonable to classify it with a population of more than 5,000 in the Generalized Service Volume corresponding to a population of over 5,000. These are Generalized Service Threshold Volume Tables 2, 5 and 8 at the end of this handbook following the Glossary.

Other situations exist in which an area has a population of over 5,000 and yet, the area is more characteristic of a rural developed area. In this situation, it is reasonable to use the “developed areas less than 5,000 population” sections of Generalized Service Threshold Volume Tables 3, 6, and 9 included at the end of this handbook following the Glossary. In both of these situations, FDOT District Planning Offices, after consultation with the Central Office Systems Implementation Office, should determine the appropriate designation to use.

### 4.2.4. Rural Areas

Rural areas consist of two types:

- Rural undeveloped: areas in which there is no or minimal population or development
- Rural developed: areas consisting of cities and other populated areas with populations of less than 5,000 or along coastal roadways

Generally, the portion for cities or developed areas in Generalized Service Threshold Volume Tables 3, 6, and 9 should be applied to areas with a population between 500 and 5,000 and not immediately adjacent to urbanized, urban, or transitioning areas. This portion of the tables also should be generally applied to coastal roads not in urbanized, urban, or transitioning areas.

## 4.3. Number of Through Lanes

The number of through lanes is one of the most important variables to analyze a roadway’s capacity and LOS. Emphasis is placed on through lanes, or lanes that directly accommodate through traffic. The number includes shared lanes (e.g., through/right), but does not include exclusive turn lanes or two-way left-turn lanes on arterials, auxiliary lanes on freeways, or passing lanes on two-lane highways. Arterials are often described as having an odd number of lanes when two-way left-turn lanes are present. However, for highway capacity and LOS analyses, that is not appropriate. The two-way left-turn lane does not accommodate through vehicles, and the facility is more appropriately characterized as having an even number of lanes with a non-restrictive median.

Usually the total number of through lanes in both directions is used to describe roadways. However, this Q/LOS Handbook bases analyses upon a single peak direction. As an example, an LOS analysis for a six-lane freeway is based on three lanes, using the higher directional traffic volume. Similarly, an LOS analysis for a four-lane urban street would be based on two directional lanes.

A common question when using the Generalized Service Volume Tables is how do we handle odd number lanes along the facility. The Generalized Service Volume Tables contain adjustment factors based on certain

characteristics of the facility (i.e., turn lanes, medians, etc.). Any applicable adjustment factors are first applied and then the average service volumes are averaged.

For example, a rural undivided 5-lane arterial facility with exclusive left-turn lanes and without exclusive right-turn lanes will have an adjusted LOS C threshold of 35,388. This is calculated using the Generalized Service Volume Table 3. The LOS C thresholds for an undivided 4 and 6-lane arterial in a rural area is 29,300 and 45,200, respectively. To calculate the 5-lane LOS C threshold, first account for any applicable adjustment factors. For this example, the LOS thresholds must be adjusted by -5% for multilane arterials that have exclusive left-turn lanes and no exclusive right-turn lanes. After this adjustment is applied, the new 4 and 6-lane LOS C thresholds are 27,835 and 42,940, respectively. To obtain the final 5-lane LOS C threshold, the newly adjusted 4 and 6-lane LOS C thresholds, 27,835 and 42,940, are averaged to obtain the 5-lane LOS C threshold of 35,388 to be used in the analysis.

### 4.3.1. Arterials

An important aspect of this Q/LOS Handbook is the methodology for determining an arterial's number of through lanes. The ultimate result of the LOS analysis is a facility estimation of the LOS, and **it is widely recognized that signalized intersections are the arterial's primary capacity constraint; therefore, it is appropriate to place more emphasis on the intersections' characteristics than the mid-block characteristics.** Generally, mid-block segments have capacities far exceeding those of major intersections, and it is rare for significant delays to occur mid-block. By weighting the effects of intersections more heavily, a more accurate aggregate estimation is possible.

Site-specific characteristics (e.g., intensity and type of land use, driver behavior, speed, etc.) can dramatically affect the viability of add-on/drop-off pairs as through lanes; therefore, each approach should be examined on a case-by-case basis. Analysts are strongly cautioned to review all pertinent characteristics prior to adjusting the number of through lanes used. The reviews should be conducted during peak travel conditions. Analysts are encouraged to consult with their FDOT District LOS Coordinators prior to applying this concept. The following guidelines are offered as a capacity estimating tool only. This process should never be used for the design or redesign of an expanded intersection.

For any capacity estimation to be considered, two conditions should be met:

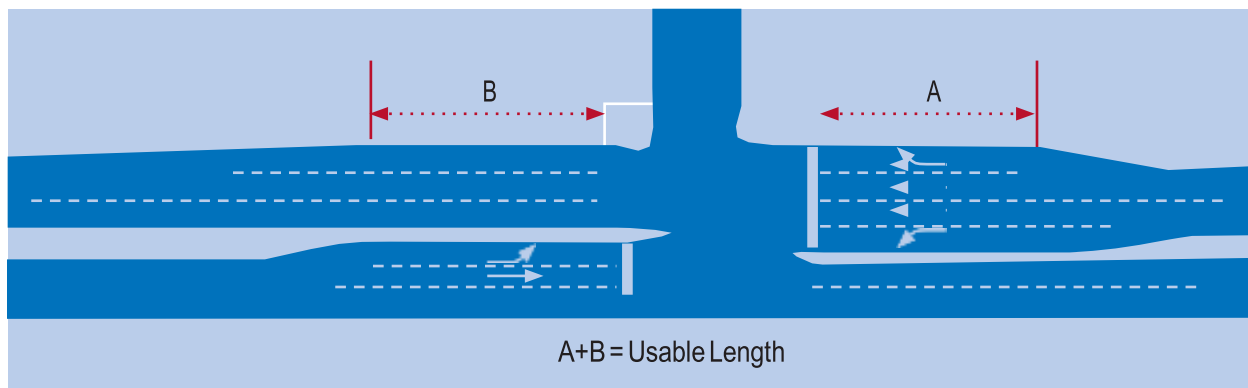
- The add and drop lanes must each be at least 800 feet in length
- The add-on/drop-off pair combined must be at least 1,760 feet in length

If either of these conditions is not met, then no additional capacity is assumed.

If the add-on/drop-off pair is at least one-third of a mile in length (roughly divided equally between approach and departure and exclusive of tapers and cross-street width, as represented by A+B in [Figure 4-2](#)), it may be reasonable to consider an additional one-half lane for capacity purposes. For example, in the accompanying diagram, if A = 1,000 feet and B = 1,000 feet, then it would be reasonable to consider that the intersection approach has 2.5 effective through lanes.

With a length of at least one-half mile (roughly divided equally between the add and drop lanes), it may be reasonable to consider the add-on/drop-off pair as adding up to one full through lane.

Figure 4-2: Usable Length

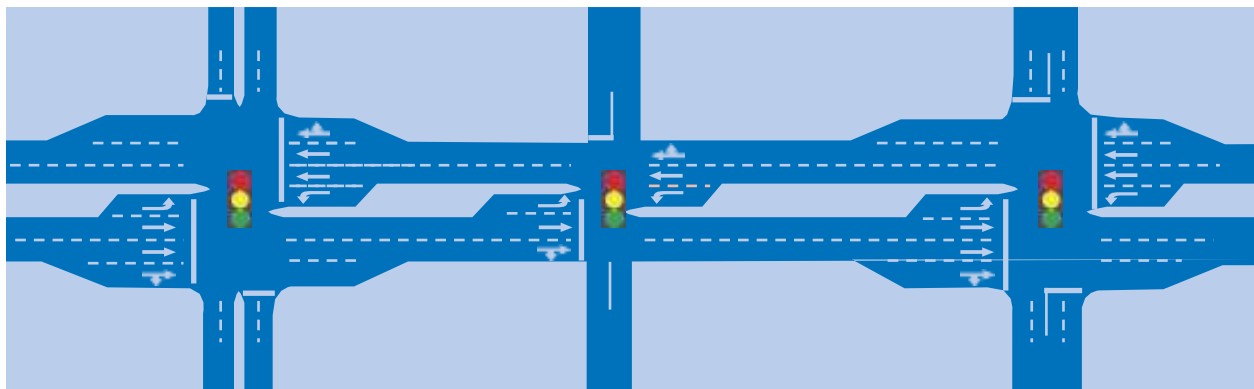


When using the Generalized Service Volume Tables, the number of through lanes on a facility is typically determined by the through and shared through/right lanes at major intersections rather than mid-block.

**Figure 4-3** shows the mid-block segments with four lanes, with two lanes in each direction. The major intersections each have six lanes, with two through and one shared through/right add-on/drop-off lane with tapers adequate for safe merging.

In this illustration, as in many cases, minor signalized intersections have green times so heavily weighted to the major urban street that they do not cause significant delays to through traffic. When this is the case, it is sometimes acceptable to disregard the number of lanes at these minor intersections; instead, the determination should be based on the lanes at major intersections. So in terms of the LOS, this particular facility has six lanes.

Figure 4-3: Example of Six-Lane Roadway



### 4.3.2. Highways

For uninterrupted flow highway facilities, the number of lanes is the basic segment or mid-block laneage. For example, a two-lane highway, which is widened to four lanes at major intersections, should be considered a two-lane highway.

## 4.4. Speed

### 4.4.1. Posted Speed

The maximum speed at which vehicles are legally allowed to travel over a roadway segment.

### 4.4.2. Free-Flow Speed

Free-flow speed is the average speed of vehicles not operating under the influence of speed reduction conditions. In general, free-flow is the average speed under low-flow conditions and not influenced by control conditions, such as signalized intersections. The assumption used in this handbook is that the free-flow speed is 5 mph above the posted speed. As an example, if an arterial has a posted speed of 40 mph, the default free-flow speed used is 45 mph; however, if a more accurate free-flow speed is available, it should be used.

## 4.5. Median Type

### 4.5.1. Arterials

As used in this document, medians may be classified in one of three ways:

- restrictive median (r)
- non-restrictive median (nr)
- no median (n)

**A restrictive median is a raised or grassed area normally at least 10 feet in width separating opposing mid-block traffic lanes and includes left-turn lanes.**

**A non-restrictive median is a painted at-grade area normally at least 10 feet in width separating opposing mid-block traffic lanes, and for arterials, accommodates mid-block left-turning vehicles to exit from through lanes.** Continuous two-way left-turn lanes are considered a non-restrictive median under this definition. Situations in which restrictive or non-restrictive medians are less than 10 feet wide are considered as having no median.

FDOT included the median factor to account for lowering mid-block average travel speeds when no median is present. From the aspect of getting left-turning vehicles out of the traffic stream, the difference between a restrictive and a non-restrictive median is relatively inconsequential. Thus, in determining automobile LOS, restrictive and non-restrictive medians are treated the same.

From a pedestrian point of view, there is a significant difference between non-restrictive medians and restrictive medians. Restrictive medians give pedestrians a much safer mid-block crossing. Thus, this type of median is a consideration in determining the pedestrian crossing factor that enters the bus LOS analysis. **A non-restrictive median provides no pedestrian refuge.**

**A pedestrian refuge is an area at least 5 feet but less than 10 feet in width (not a full, raised median) separating opposing mid-block traffic lanes and allowing pedestrians to cross the roadway more safely and comfortably.** From a pedestrian point of view, a pedestrian refuge has nearly the same benefit as a restrictive

median. In terms of pedestrian crossing difficulty, the difference between a restrictive median and pedestrian refuge is relatively small; therefore, in determining pedestrian crossing difficulty, the two may be treated the same.

Pedestrian refuges are not included as a distinct category. If an analyst needs to evaluate the effects of a pedestrian refuge, it should be treated as a restricted median for transit analysis, but as no median for automobile analysis.

## 4.6. Exclusive Turn Lanes

### 4.6.1. Arterials

#### EXCLUSIVE LEFT-TURN LANES

The exclusive left-turn lanes are reserved for the exclusive use of left-turning vehicles. The length of these lanes must accommodate turning demand such that left-turn traffic (1) is able to enter the turn lanes behind through queues or (2) can be stored in the turn lane to ensure the through lane traffic is not blocked. When left-turn lanes are not present, a shared lane exists which is included in the number of through lanes.

When analyzing arterials without left-turn lanes, the use of the Generalized Service Volume Tables is discouraged in all but the most basic analyses. If used, the Generalized Service Volume Tables include adjustment factors for the absence of left turn-lanes. To account for the absence of left-turn lanes, adjustment factors provided in the Generalized Service Volume Tables must be manually applied to the service volumes. However, the user is cautioned that research indicates that the true value of the reduction is highly dependent on the distribution of traffic volumes among all the various movements, and a constant reduction factor, as used in the tables is not accurate.

**Storage length refers to the total amount of storage available for left-turning vehicles, measured in feet.** The default value is 235 feet. For new turn lanes, FDOT Design Standards must be consulted (found at <https://www.fdot.gov/design/standardplans/DS.shtm>).

#### EXCLUSIVE RIGHT-TURN LANES

**Exclusive right-turn lanes are storage areas designated to exclusively accommodate right-turning vehicles.**

The length of these lanes must be able to accommodate turning demand to allow for the free flow of the through movement. The number of pedestrians crossing at these locations should also be considered and accommodated.

## 4.7. Roadway Lengths

To properly apply the Generalized Service Volume Tables, it is necessary to partition roadways into appropriate lengths for analysis. Setting lengths too short may not adequately capture traffic flow characteristics. Vehicles will not achieve the same average running speed on a segment as over a longer facility length. Short lengths would also be subject to bias caused by signal control delay.

Furthermore, analysis results would not conform to the concept of LOS that is based on the driver perception of the operation of roadways and may not show where the most significant impact of proposed development traffic will occur. Conversely, setting lengths too long may dilute the impact of hot spots by averaging them into other portions that operate better.

**FDOT District LOS Coordinators have primary responsibility for the segmentation of the State Highway System (SHS) for LOS purposes.** FDOT Central Office may combine smaller segmentation lengths of a facility for statewide reporting and other purposes.

In general, the partitioning of roadways for facility analyses should be based on the following considerations, ranked in order:

- Highway system structure (including facility type, number of lanes, etc.)
- Area type boundaries
- Lengths
- AADTs

At the local level, government agencies frequently make highway capacity and LOS termini at their own jurisdictional boundaries, regardless of the appropriate facility length and termini considerations described above. Jurisdictional boundaries by themselves are usually not appropriate termini for capacity and LOS analyses. Local governments are encouraged to consult with FDOT District LOS Coordinators for applicable segmentation within their jurisdictional boundaries.

#### **4.7.1. Arterials**

For an arterial facility analysis, the general recommendation is that the facility be at least two (2) miles in length to use the service measure of average travel speed. Major intersecting arterials frequently serve as logical breaks in segmenting the arterial facility. In downtown areas, the general recommended length is at least one (1) mile.

When evaluating arterial section or facility LOS for planning, the roadway should begin and end at a signalized intersection. The following guidance is provided for some special cases:

- (1) Interchanges along an arterial: At a generalized planning level, it is typically appropriate to make a break at an interchange (highway system structure criterion) that does not include a signalized intersection.
- (2) Boundaries, especially urbanized area boundaries: When a signalized intersection lies just outside the boundary, it is proper to extend an analysis to the next signalized intersection if within 2 miles of a boundary for a conceptual planning analysis. For example, if a signalized intersection lies 1 mile beyond the existing urbanized boundary in a transitioning area, it is appropriate to include that signalized intersection and the 1 mile of transitioning area as part of an urbanized area analysis.

## 5 Traffic Variables

This chapter provides an overview of key traffic variables used in the development and use of the Generalized Service Volume Tables.

### 5.1. Volume and Demand

**Traffic volume is the most basic of all traffic parameters and is generally defined as the number of vehicles passing a point on a transportation facility during a specified time period.** Traffic volumes typically are developed separately from capacity/LOS analyses and provide input to those analyses. Various sources that determine traffic data include:

- FDOT's Florida Traffic Online (FTO) Web Application
- Extrapolation of historical growth trends
- FDOT's travel demand forecasting models
- Institute of Transportation Engineers (ITE) Trip Generation Manual

The sources listed below provide guidance on traffic forecasting and analysis:

- [FDOT's Project Traffic Forecasting \(PTF\) Handbook](#)
- HCM, Sixth Edition
- FDOT's Traffic Analysis Handbook

Volume is the parameter most often used to quantify traffic demand. **Traffic demand is the number of vehicles with drivers who desire to traverse a particular highway during a specified time period. While traffic demand expresses a desire, volume typically represents actual measurement.**

Misuse of measured volumes often occurs in capacity/LOS analyses causing traffic studies to report the observation and measurement of conditions as they presently exist. Current observations do not reflect constraints in the existing highway system that may prevent vehicles from accessing a desired segment of the system at any given point in time. Observed volumes on congested facilities are more a reflection of capacity constraints than of true demand.

Measured traffic volume cannot theoretically exceed roadway capacity, but traffic demand volume can exceed capacity. An example of a common misinterpretation of these two distinct terms typically occurs while collecting traffic data at an oversaturated intersection. The traffic volume that can physically be processed through a traffic signal is a measure of the capacity (or supply). When traffic volumes approach roadway capacity, the transportation system may experience abnormally long vehicle queues and excess vehicular delay. The length of the vehicle queue upstream of a traffic signal is a more accurate measure of the traffic demand that cannot be processed in the one-hour analysis period.

The impact of bottlenecks, alternative routes, latent demand, and future growth further complicates the relationship between measured traffic volume and traffic demand. **If questions arise as to the appropriateness of using measured volumes or demand volumes for capacity and LOS analyses, it is clear demand volumes should be used.**



## 5.2. Annual Average Daily Traffic (AADT)

**AADT is the total volume of vehicle traffic on a highway or roadway segment for one year divided by the number of days in the year.** Most planning applications require AADT volumes. Determining AADT values is a separate process and distinct from capacity/LOS analyses. FDOT routinely provides AADT values for state roads.

AADT values are easy to confuse with two other traffic count numbers that are used to estimate AADT. **The average daily traffic (ADT) is the total traffic volume during a given time period, more than a day and less than a year, divided by the number of days in that time period.** ADT is generated from a short-term traffic count and can be used to estimate AADT. Ensuring ADT counts are reflective of the normal average traffic is an important consideration when using them to estimate AADT on the roadways. Traffic taken during a four-day holiday, long weekend, or Saturday night when 50,000 or more football fans gather is not a normal occurrence.

**Peak season weekday average daily traffic (PSWADT) is the average weekday traffic during the peak season.** PSWADT numbers are normally generated by travel demand forecasting planning models, such as Florida Standard Urban Transportation Model Structure (FSUTMS). Like ADT, they can be converted to AADT by an adjustment factor.

FDOT operates two types of traffic monitoring programs: 1) continuous monitoring at selected locations using permanently installed equipment and 2) coverage counts at many temporary or short term sites using portable equipment. Further information about the traffic monitoring programs can be found in the FDOT PTF Handbook.

There are two count adjustment factors used to calculate AADT. The first, **axle correction factors are used to compensate for an axle counter's tendency to count more vehicles than are actually present.** For example, an axle counter would show a count of two when a four-axle truck runs over the sensor, even though only one vehicle is present. The second, **seasonal adjustment factors have been developed to adjust for the variation in traffic over the course of a year.** The peak season is the 13 consecutive weeks with the highest volumes. The weekly seasonal factors for those weeks will be the lowest, and the factors will be the highest for the weeks with the lowest volumes. The seasonal factor is used as follows:

$$\text{AADT} = (\text{short-term traffic count}) \times (\text{seasonal factor}) \times (\text{axle correction factor})$$

Although, for planning purposes AADT is usually used, actual capacity and LOS analyses are conducted on an hourly or sub-hourly directional basis. All of FDOT's Generalized Service Volume Tables are based on peak hour directional roadway, traffic, control, and multimodal characteristics. FDOT's hourly directional tables may be viewed as the most fundamental of the tables, because the daily tables are created by dividing the peak hour directional values by the directional distribution factor (D) and the planning analysis hour factor (K). Although the determination of AADT is outside the capacity/LOS analyses, the determination of K and D is a fundamental part of capacity/LOS analyses in planning stages because of the need to convert AADT to peak hour directional volumes.

## 5.3. Planning Analysis Hour Factor (K)

**The K factor is the ratio of the traffic volume in the study hour to AADT.** Historically, FDOT has used a variety of study hours and K factors depending on the application. Frequently used K factors included the 30th highest volume hour of the year (K30), 100th highest volume hour of the year (K100), highest hourly volume to daily volume (Kp/d), 5–6 p.m. weekday volume to AADT (K5-6pm), average p.m. weekday peak volume to AADT (Kpm), average a.m. peak weekday volume to AADT (Kam), and noon weekday volume to AADT (Knoon). In general, K factors

are used for peak hour traffic analyses, but analyses can also be based on low-volume conditions, such as the analysis of truck travel in early morning hours. Roadway, traffic, and control conditions vary considerably during the day, potentially affecting capacity values and service volume thresholds.

**Standard K is the primary planning analysis hour factor used in Florida, and the value is set based on the area type and facility type.** The use of Standard K represents a design approach in which the K factor for a roadway is established from the planning phase through the design phase of the project development process. Rather than being a variable, Standard K values are a fixed, cost-effective parameter, much like the use of 12-foot through lanes on major, high-speed roadways. Unless otherwise noted, all references in this Q/LOS Handbook that refer to a study hour or K factor refer to Standard K.

The Standard K factor is used to convert a peak hour volume to an AADT and vice versa. The Standard K factors used in the Generalized Service Volume Tables were obtained through a methodical process to obtain representative Standard K factors. On the freeways in the seven largest urbanized areas in Florida (Fort Lauderdale, Jacksonville, Miami, Orlando, St. Petersburg, Tampa, and West Palm Beach), Standard K represents a peak study period. For all other facilities, Standard K represents a peak hour not within the peak season. Standard K Factors for planning and design analysis are not directly applicable to the Turnpike, other toll roads, and managed lanes. For more information on the K Factors, refer to FDOT's PTF Handbook.

**The K factor generally drops as an area becomes more urbanized and high traffic volumes are spread out over longer time periods.** If adequate documentation is provided, FDOT would consider deviations from the Standard K table for special facility types.

The recommended Standard K factors can be found in the FDOT PTF Handbook and the analyst must refer to the PTF Handbook for use of appropriate K factors in projects. The K values used in development of the Generalized Service Volume Tables included in this handbook are consistent with the PTF Handbook. They are listed below:

- Urbanized (Core urbanized/Core freeways)
  - Freeways: 0.09 (0.085)
  - Highways: 0.090
  - Arterials: 0.090
- Transitioning
  - Freeways: 0.098 (average of Transitioning to Urbanized Areas and Urban)
  - Highways and arterials: 0.090
- Rural developed and rural undeveloped
  - Freeways: 0.105
  - Highways and arterials: 0.095

Standard K values on freeways in large urbanized areas range from 8.0 to 9.0 percent, while Standard K values on these “core freeways” in large urbanized areas are typically lower in this range. The lower K values signify a peak period, as opposed to a peak hour. The urban core freeway K values in large urbanized areas are available on [FDOT FTO Web Application](#) managed by FDOT's Transportation Data and Analytics (TDA) Office.

### 5.3.1 Multimodal Transportation Districts (MMTD)

The purpose of MMTDs is to encourage desirable transportation environments for all users, including transit passengers, pedestrians, cyclists, and motorists. The designation of such districts recognizes the inherent, integral relationship between transportation, land use, and urban design and the degree to which each of these elements affect the others. Local governments opting to designate an MMTD assign secondary priority to vehicle mobility and primary priority to assuring a safe, comfortable, and attractive pedestrian environment, with convenient connections to transit. FDOT supports local governments that are committed to such efforts. Implementing MMTDs should help foster the use of multiple modes of transportation, leading to a reduction in automobile use while maintaining high mobility characteristics in the area.

The primary way FDOT supports these designated areas is through its LOS targets. FDOT promotes lower acceptable automobile travel speeds for longer durations in the planning, design, and operations of its facilities.

## 5.4. Directional Distribution Factor (D)

**The peak hour D factor is the proportion of an hour's total volume occurring in the higher volume direction.**

The preferred approach to obtain D factor data is from the FTO Web Application, which provides a D factor for all state roads. The FTO Web Application reports the average of measured D values around the 200<sup>th</sup> highest hour from nearby and comparable roadway sites. The statewide minimum acceptable D factor is 0.51 ( this is not the default value and should only be used in an LOS analysis if adequate justification is provided for the specific roadway). The D factor of 0.55 was used in the Generalized Service Volume Tables for all facility and area types. Using such an approach provides statewide consistency and reasonable accuracy in the values indicated and at a minimum cost. Additional guidance and the recommended range of D factors can be found in the FDOT PTF Handbook.

## 5.5. Peak Hour Factor (PHF)

**The peak hour factor (PHF) is the hourly volume divided by the peak 15-minute rate of flow within the peak hour, specifically:**

$$PHF = \frac{(Hourly\ Volume)}{4(Peak\ 15 - minute)}$$

The planning-level approach for addressing volume variations within the study hour has been adopted within this handbook. PHF based on area type were used to develop the vehicular service volumes in this Q/LOS Handbook. The PHF associated with each area type is:

- Urbanized areas: 0.95
- Transitioning/urban areas: 0.92
- Rural areas: 0.88

The PHF associated with the area type is consistent with the sixth edition of the HCM. For more information on the PHF, refer to FDOT's PTF Handbook.

## 5.6. Base Saturation Flow Rate

The HCM uses the term “base saturation flow rate” for interrupted flow roadways and capacity, or base capacity, for uninterrupted flow roadways to describe the maximum steady flow. **Base saturation flow rate is the maximum steady flow rate, expressed in pcphpl, at which passenger cars can cross a point on interrupted flow roadways.** These are not the same as capacity, as normally used to define how many vehicles a roadway can reasonably accommodate. The base saturation flow rates/capacities for Florida’s roadway facilities are:

- Arterials and other interrupted flow facilities: 1,950 pcphpl (assuming 100 percent green time)
- Basic freeway segment (70 mph free flow speed): 2,400 pcphpl
- Uninterrupted flow multilane highway segments (60 mph free flow speed): 2,200 pcphpl
- Uninterrupted flow two-lane highway segments: 1,700 pcphpl

## 5.7. Heavy Vehicle Percent

The FHWA has a vehicle classification scheme in which vehicles larger than a pickup truck are considered heavy vehicles. This includes vehicles with more than four wheels or a classification group of four or higher. **The percentage of these heavy vehicles in a given hour is frequently referred to as a truck factor (T).** However, to be more consistent with HCM terminology and to overcome some definitional problems with the common understanding of the meaning of a truck, this Q/LOS Handbook uses the term “heavy vehicle” and makes use of the percent of heavy vehicles in a given hour.

The heavy vehicle percentage varies dramatically by the time of day, day of week, roadway type, and adjacent land uses. Operational characteristics of heavy vehicles also vary dramatically by type of heavy vehicle (e.g., a relatively small delivery truck compared to a fully loaded 18-wheel semi-truck) and whether they are operating on an uncongested freeway or on signalized roadways. The blast effect of heavy vehicles on bicyclists also varies significantly based on the type and speed of heavy vehicles.

## 5.8. Speed and Capacity Adjustment Factors

**The HCM 6<sup>th</sup> Edition has replaced the local adjustment factor (LAF) with the SAF and CAF. The LAF previously provided an adjustment to capacity to account for driver aggression, hurriedness, and familiarity with the facility.**

The SAF is used to adjust the speed of a facility based on a combination of sources, including weather and construction work zone effects. The SAF may also be used to calibrate the estimated free-flow speed for local conditions or other effects that contribute to a reduction in free-flow speed.

The CAF is used to adjust the capacity of a facility for reduced-capacity situations or to match field measurements. The capacity can be reduced to represent situations such as construction and maintenance activities, adverse weather, traffic incidents, and vehicle breakdowns.

The SAF and CAF can be used to adjust for driver familiarity (or unfamiliarity) with the facility. Additionally, these adjustment factors are used to calibrate a roadway to existing conditions. For the Generalized Service Volume Tables analysis, an SAF of 0.975 and a CAF of 0.968 was assumed for all analyses and area types. These values are derived from the HCM 6<sup>th</sup> Edition.

## 5.9. Percent Turns from Exclusive Turn Lanes

Percent turns from exclusive turn lanes is the percent of vehicles approaching an intersection served by an exclusive turn lane or lanes. More specifically, the percent left turns is the percentage of vehicles performing a left-turning movement at a signalized intersection, and the percent right turns is the percentage of vehicles performing a right-turning movement at a signalized intersection. Typically, the percent turns from an exclusive lane is the percent of traffic using an exclusive left-turn lane, with traffic predominantly moving straight ahead.

Some of the most complicated calculations within the HCM chapter on signalized intersections deal with accommodating left-turn movements. **The Generalized Service Volume Tables assume that left-turn lanes adequately serve left-turning vehicles.** In other words, the base condition assumes there is no queue spillback from the left-turn lane into the adjacent through lanes. If this assumption cannot be made, results obtained from the planning analysis tools are possibly inaccurate. For these reasons and more, the tables should not be used for intersection design or detailed traffic operations analysis.

The automobile LOS methodology described in this Q/LOS Handbook applies the HCM procedures to through traffic at each signalized intersection. Turning movement adjustments are made internally, based on the user-specified value of percent turns from exclusive lanes. Turning volumes are added to the through volumes to determine the overall service volumes shown in the Generalized Service Volume Tables.

**The accuracy of LOS calculations is highly dependent on the percent turns from exclusive turn lanes.** Although it is typically of moderate importance, at some key intersections, it may be one of the most significant variables. While FDOT does not routinely suggest acquiring percent turns from exclusive turn lanes, data collection should be considered at key intersections. Furthermore, some FDOT districts may require specific counts. If the percent turns at key intersections are obtained in the field, a value of 10 percent may be assumed for the other intersections, assuming an exclusive left-turn lane and no exclusive right-turn lane. If the percentage of turns from exclusive turn lanes is acquired, the turning movement count should be conducted during the peak hour, as illustrated in **Table 5-1**.

**Table 5-1: Calculation of Percent Turns from Exclusive Turn Lanes**

Measured Day	Peak Hour	Signalized Intersection	Total Peak Hour Predominant Approach Volume	Exclusive Lane Volume	% Turns from Exclusive Turn Lanes	
					A	B
22-Jan	4-5 PM	A	884	130	14.7%	16.7%
		B	900	150		
23-Jan	5-6 PM	A	1,152	150	13.0%	13.0%
		B	1,150	150		
24-Jan	5-6 PM	A	1,102	150	13.6%	14.7%
		B	1,090	160		
Totals	—	A	3,138	430	13.7%	14.6%
		B	3,140	460		

## SPECIAL TURNING MOVEMENT CASES

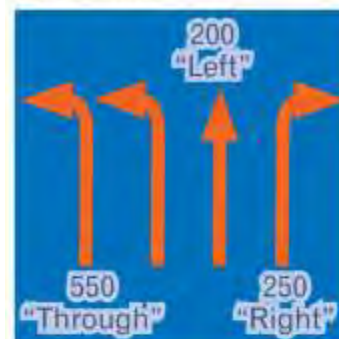
There are two special cases when dealing with turns from exclusive lanes. The first is when the predominant movement is a turn movement instead of the straight-ahead movement. The second involves T intersections.

In **Figure 5-1**, the predominant movement is the left-turning movement, and the 550 vehicles turning left should be considered the through movement. The 200 vehicles going straight ahead should be treated as left-turning vehicles with 20 percent left turns  $[(200/(550 + 200 + 250))]$  from an exclusive left-turn lane. The 250 vehicles turning right should be treated normally, with 25 percent right turns  $[(250/(550 + 200 + 250))]$  from an exclusive right-turn lane.

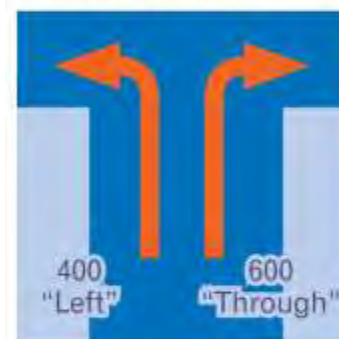
In **Figure 5-2**, all vehicles are turning from exclusive turn lanes at a T intersection. The 600 vehicles turning right is the predominant movement and should be considered through vehicles. The 400 vehicles turning left should be treated normally, which is to say there are 40 percent left-turns  $[400/(400 + 600)]$  from an exclusive left-turn lane.

In **Figure 5-3**, another T intersection is shown, featuring a shared left/through lane in addition to the predominant movement served by the exclusive right lane. Normally, a shared left/through lane does not have the same capacity as a through lane because of the effect of opposing vehicles blocking permitted left turns for the main movement. However, in this case, there is no opposing movement, and the capacity of this shared lane is virtually the same as a typical through lane. In this situation, an analyst should assume one through lane and one shared through lane with 20 percent left turns  $[(200/(200 + 200 + 600))]$ .

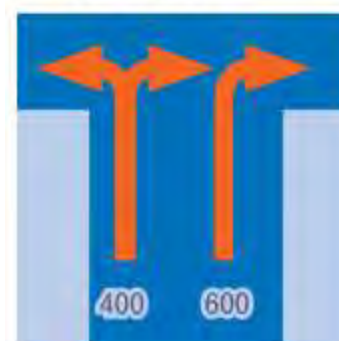
**Figure 5-1:**  
Predominant Turning Movement



**Figure 5-2:**  
Through Movement at a T Intersection with Exclusive Lanes



**Figure 5-3:**  
Through Movement at a T Intersection with Shared Lanes





## 6 Control Variables

This chapter provides an overview of each control variable used to generate the Generalized Service Volume Tables.

**Control variables refer to roadway or area traffic controls and regulations in effect for a roadway point or segment, including the type, phasing, and timing of traffic signals, stop signs, lane use and turn controls, and other similar measures.** In this Q/LOS Handbook, control variables refer to those regularly occurring at signalized intersections, unless otherwise noted. For uninterrupted flow facilities, such as freeways and highways, the LOS can readily be derived from the volume of vehicles and roadway capacity, and control variables are not applicable. For signalized roadways (interrupted flow), however,  $v/c$  is not sufficient to determine the LOS, and control variables must be considered. These include:

- Number of signals
- Arrival type
- Cycle length
- Effective green ratio (g/C)

The Generalized Service Volume Tables use default control variables that are representative of typical conditions on Florida roadways. The default control variables (or characteristics) — along with the roadway, traffic, and multimodal variables assumed in the creation of each table — are provided on the back of the Generalized Service Volume Tables.

**Table 6-1** provides an overview of the control variable input requirements within the Generalized Service Volume Tables.

**Table 6-1: Control Variable Input Requirements**

	Input Variable	Generalized Service Volume Tables
CONTROL	Number of Signals	D
	Arrival Type	D
	Signal Type	D
	Cycle Length (C)	D
	Through Effective Green Ratio (g/C)	D
	Exclusive Left Effective Green Ratio	D

Legend: D Default variables that cannot be altered

The effects that individual variables have on the computational process vary. **Table 6-2** indicates the sensitivity of the control variables on capacity and LOS.



**Table 6-2: Sensitivity of Control Variables on Service Volumes**

Control Variable	Sensitivity on Service Volumes
Number of Signals	high
Arrival Type	medium
Signal Type	low
Cycle Length (C)	medium
Through Effective Green Ratio (g/C)	high
Exclusive Left Effective Green Ratio	medium

Traffic variables, including AADT, Standard K, and D data, should be obtained from FDOT's FTO, PTF Handbook and field counts. Although turning movement counts at key intersections may be necessary, as discussed previously, FDOT does not recommend the use of travel time studies for LOS planning applications.

Field visits should be conducted to collect traffic and other items needed for analyses. Up-to-date aerial or satellite imagery may be sufficient for most of the data entry items. Signalization information is often available from the applicable traffic operations agency's signal timing plans. The applicable transit agency should be contacted for transit data.

## 6.1. Number of Signals

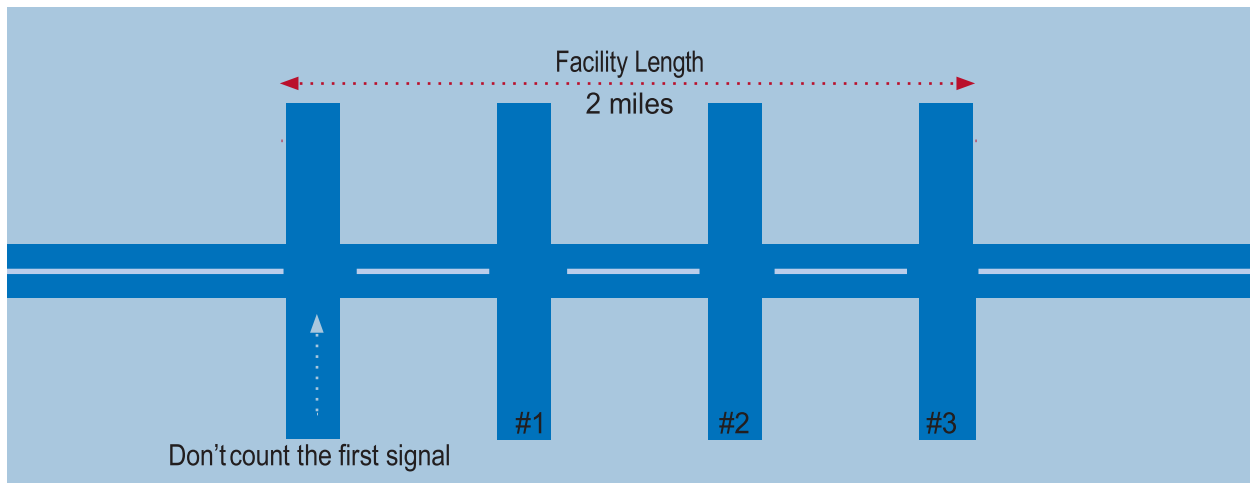
The cumulative effect of numerous traffic signals, lack of green time, and lack of effective signal progression often have a detrimental effect on the LOS of arterials. An important feature of FDOT's Generalized Service Volume Tables is the inclusion of the number of signals on the determination of the LOS.

The distance between signalized intersections is required to determine specific service volumes for a roadway. FDOT's Generalized Service Volume Tables use signalized intersections per mile as an input and assume uniform spacing. While this approach may be acceptable for an areawide analysis, precise distances between signalized intersections should be determined when an individual roadway is analyzed at the conceptual planning level.

**For analysis purposes, 100 feet between signalized intersections is considered the minimum distance.** When the actual distance is less than 100 feet (e.g., side streets with wide medians), it is reasonable to consider these together as one signalized intersection.

Roadway and traffic characteristics often change over time. The number of signals per mile is frequently the most significant change. As development takes place and an area becomes more urbanized, the number of signals per mile is likely to increase. The LOS analysis of future conditions should, therefore, take into account changes in roadway and signalization characteristics.

To avoid double counting when determining the number of signals, only one intersection at the ends of the facility should be counted, as shown in **Figure 6-1**. In general, FDOT recommends including the last intersection within the analysis and ignoring the first, or entry, intersection. This allows the analysis to include the effects of delay, backup, and the LOS from the last intersection for the facility under study.

**Figure 6-1: Total Number of Signals**

For example, in southeast Florida, principal arterials are often spaced 1 mile apart, with other signalized intersections in between. In this situation, only one of the signalized intersections at the ends of the roadway, plus the signals in between, should be counted when determining the number of signals per mile. In general, the last signalized intersection in the peak flow direction would be counted, ignoring the first signalized intersection.

As discussed previously, the arterial should begin and end at a signalized intersection. In unusual situations when this assumption is not applicable (e.g., lane drops, ramp junctions, etc.), the following guidance is provided:

- For the Generalized Service Volume Tables, do not count the unsignalized terminus as a signalized intersection.

**In general, only fixed, periodic interruptions should be considered in determining the number of signals.**

Only one intersection at the ends of the facility should be counted. Draw bridges, at-grade railroad crossings, school zones, pedestrian crossings, and median openings should not be counted. Depending on the site-specific conditions or analysis desired, there may be exceptions to this general guidance.

When using the Generalized Service Volume Tables, an intersection with a stop sign for the through movement is considered a signalized intersection for a state-signalized arterial. When analyzing a Non-State signalized roadway, the roadway must have at least one signalized intersection.

## 6.2. Arrival Type

**Arrival type is a general categorization of the quality of signal progression.** The HCM defines six arrival types, with Type 1 representing the worst progression quality and Type 6 representing the best. Uncoordinated operation, or random arrivals, is represented by Type 3 and is appropriate for actuated signals. Arrival Type 4 is FDOT's default for coordinated signal systems. A more favorable progression (Types 5 or 6) may be appropriate when progression design strongly favors the peak direction of travel, and all signals are coordinated for the length of the facility. One-way facilities tend to have better quality progression than two-way facilities. A higher level of progression may also be appropriate around freeway interchanges, where signals are typically highly coordinated. The arrival type may vary significantly from one signal to the next, even in coordinated signal systems. Actuated-coordinated signals have varying green times, with breaks between groups of coordinated signals.

The assumption of very good progression in one direction does not imply efficient progression in the other direction. Even with less traffic volume, off-peak direction speeds could be lower, if favorable progression has been established for the peak direction only.

## 6.3. Signal Type

The signal type indicates the degree to which a traffic signal's cycle length, phase plan, and phase times are preset or actuated. The three main types are:

- Actuated
- Actuated-coordinated
- Pretimed

It should be noted that modern traffic signals can handle multiple settings and can vary by time of day. Consequently, a traffic signal's operation (actuated, coordinated-actuated, or pretimed) can change by the time of day to best meet traffic demands.

### 6.3.1. Actuated

**Actuated, or fully actuated signals, use vehicle detection for all signal phases on the main and side street approaches.** Each phase is subject to a minimum and maximum green time, and some phases may be skipped if there is no demand for the phase. The length of the green time observed in the field generally depends on the amount of vehicular demand for the phase. If there is little demand, then a relatively short green time will be allocated to the phase. If there is significant demand, a relatively long green time will be allocated, subject to the maximum green time for that phase. The minimum and maximum green times for each phase can be easily changed by entering new values into the traffic signal controller.

Because phases can be skipped, and the amount of green time for each phase generally depends on demand, the cycle length will often vary substantially from cycle to cycle. The exception occurs during periods of heavy vehicular demand, when all phases consistently reach their maximum values, making it seem as if the cycle length is fixed. Actuated signal operations are most frequently used when the signalized intersection is isolated, or when there is a desire to minimize delay without concern for progression.

### 6.3.2. Actuated-Coordinated

A subset of actuated control is referred to as actuated-coordinated control. **In this type of signal operation, the cycle length is typically fixed, while the amount of green time for the main street through phase varies.** It consists of a minimum amount of green time plus any unused time from the minor phases. Holding the main street green in this manner at all of the signals along a facility allows platoons of vehicles to move relatively unimpeded along the main street with decent progression. Actuated-coordinated signal operations are typically used in Florida's developed areas, especially during peak travel times. This type of operation typically offers the best balance of capacity and progression for the main street through movement.

### 6.3.3. Pretimed

**Pretimed signals use a preset sequence of phase times in a repetitive order and make no use of vehicle detection.** Each phase is green for a fixed period of time, irrespective of vehicular demand, and none of

**the phases can be skipped. Thus, the cycle length is fixed.** This type of signal operation is most frequently used in downtown areas with high signal density, or when the desire is to maximize progression without extensive concern about maximizing capacity for the through movement.

## 6.4. Cycle Length (C)

**Cycle length (C) is the total time for a signal to complete a sequence of signal indications for all traffic movements.** The cycle lengths used in the development of the arterial service volume tables were based on representative cycle lengths for different functional classifications of arterials and for different area types. Cycle lengths are typically highest on principal arterials in urbanized areas, where the primary purpose of the facility is to provide a high level of mobility to through movements on the mainline and where roadways are typically at or near capacity during peak periods. Lower cycle lengths are typically used for the less saturated conditions typical of rural areas to provide better access and service to all directions. The cycle lengths used to develop the Generalized Service Volume Tables are provided on the back of each table.

## 6.5. Effective Green Ratio (g/C)

**One of the most significant variables used in calculating the highway capacity and LOS on a signalized roadway is the through movement's effective green time (g) to signal cycle length ratio (g/C).** It is the amount of time allocated for the through movement (typically calculated as the green plus yellow plus all-red indication times less the lost time) divided by C. Along with the number of through lanes, it is usually one of the two most important factors for determining the capacity of a roadway's through movement at any given intersection and for the roadway as a whole. Despite this, for generalized analyses, g/C is often ignored, because:

- g/C ratio typically varies from intersection to intersection along an arterial
- g/C ratio typically varies by time of day

Ignoring g/C undermines any arterial LOS analysis at a generalized planning level. This Handbook includes guidance to provide default g/Cs for generalized planning arterial analyses.

A major simplifying assumption that is essential to the development of the Generalized Service Volume Tables is the selection of one g/C for all intersections on an arterial. The g/C ratio of 0.44 was used for arterial analysis for all area types. FDOT has determined that for generalized planning analyses, the weighted average g/C ratio yields the closest results to actual conditions. **The weighted g/C ratio of an arterial is the average of the critical intersection through movement g/C ratio and the average of all the other intersections through movement g/C ratios for urban streets.** For example, if there are four signals with a through g/C ratio of 0.50 and one signal with a through g/C ratio of 0.40, then the weighted average g/C ratio for urban street is 0.45 (Refer to HCM for additional information). Essentially, the worst intersection is given equal weight to all the other intersections combined.

As an example, for the through movement phase, G is the green displayed time, Y the yellow displayed time (typically 3 or 4 seconds), R the all-red indication (typically 1 or 2 seconds), and C the cycle length. The most representative situation in Florida is for cycles to consist of four phases and 12 indications: one phase each to accommodate the main road through movement, the side road left movement, the side road through movement, and the main road left movement, with G, Y, and R indications for each of the four phases. The effective green time, which includes the effects of vehicular startup and clearance lost times is g.

FDOT's preferred approach for g/C determination for current year analyses is to use the actual signal timing plan from the traffic operations agency for the p.m. peak hour (typically 5–6 p.m.) for each signalized intersection. This is a consistent and cost-effective approach that provides reasonable accuracy. If the signal is actuated,  $(G + 4)/C$  should be used for the through movement. This assumes the typical  $Y + R$  time of 4 seconds as additional time allocated to the through movement as a result of unused time from the other movements. If the signal is pretimed, the g/C for the through movement should be used.

For consistency and ease of review, FDOT recommends using signal timing plans from the applicable traffic operations agency.

Analysts should be aware that signal timing plans come in a variety of forms, use many notations, and are not designed to directly address the determination of g/C. It may be necessary to coordinate with the operating agency directly to interpret the output values.

Analysts should calculate and input g/C for the through movement at all intersections. The g/C for left turning movements need only be collected at major intersections. A 10 percent value can be assumed as the left g/C for other intersections.

In previous FDOT guidance, FDOT offered two other methods for determining g/C:

- actual signal timings from the traffic operations agency
- field studies

Both approaches have some merit; however, after FDOT analyzed and tested both approaches, the preferred approach of using signal timing plans in general offers the best combination of consistency, accuracy, and cost-effectiveness. The use of field studies for g/C is discouraged, unless an early agreement by the affected parties is reached. The maximum acceptable facility through movement g/C ratios during the peak hour typically should not exceed:

- State principal arterials
  - Current year: 0.50
  - Long term ( $\geq 10$  years out): 0.47
- Other roadways: 0.44

Under most circumstances, arterial facilities are 1.5–5.0 miles in length and include principal arterials as terminus points. The g/C value of 0.50 approximates FDOT's maximum allowable arterial capacity volumes of 1,000 vehicles per hour per lane (vphpl) and 950 vphpl in large urbanized areas and other urbanized areas, respectively.

## 7 Multimodal Variables

This chapter provides an overview of each multimodal variable used within Generalized Service Volume Tables to allow the user to recognize these variations and analyze multimodal LOS on specific roadways. Where applicable, generally acceptable ranges are provided. Multimodal variables describe the various geometric and demand characteristics that are needed to determine pedestrian, bicycle, and bus LOS. As with the control variables, multimodal variables are only applicable for arterial analyses:

- Paved shoulder/bicycle lane
- Outside lane width
- Pavement condition
- Sidewalk
- Sidewalk/roadway separation
- Sidewalk protective barrier
- Bus frequency
- Bus stop amenities
- Bus stop type
- Passenger loads

**Table 7-1** provides an overview of the multimodal variable input requirements within the Generalized Service Volume Tables.

**Table 7-1: Multimodal Variable Input Requirements**

Input Variable	Generalized Service Volume Tables
Paved Shoulder/Bicycle Lane	R
Outside Lane Width	D
Pavement Condition	D
Sidewalk	R
Sidewalk/Roadway Separation	D
Sidewalk/Roadway Protective Barrier	D
Bus Frequency	R
Bus Stop Amenities	D
Bus Stop Type	D
Passenger Loads	D

Legend: R Required table input  
D Default cannot be altered

The effects that individual variables have on the computational process vary. **Table 7-2** indicates the sensitivity of the multimodal variables on the capacity and LOS.

**Table 7-2: Sensitivity of Multimodal Variables on Service Volumes**

Control Variable	Sensitivity on Service Volumes
Paved Shoulder/Bicycle Lane	high
Outside Lane Width	low
Pavement Condition	low
Sidewalk	high
Sidewalk/Roadway Separation	medium
Sidewalk/Roadway Protective Barrier	medium
Bus Frequency	high
Bus Stop Amenities	low
Bus Stop Type	low
Passenger Loads	low

## 7.1. Paved Shoulder/Bicycle Lane

Within this Q/LOS Handbook, a bicycle lane is a designated or undesignated (paved shoulder) portion of a roadway for bicycles adjacent to vehicle lanes. Painted lines separate paved shoulders/bicycle lanes from vehicle lanes.

**For planning purposes, a designated bicycle lane is usually 4 to 5 feet in width and has a bicycle logo. An undesignated bicycle lane is usually 4 feet in width and does not have a bicycle logo.** To be considered a paved shoulder/bicycle lane, at least 3 feet of paved shoulder must exist outside the painted line. Facilities with striped shoulders between 1 and 3 feet should be considered as having wide outside lane widths.

## 7.2. Outside Lane Width

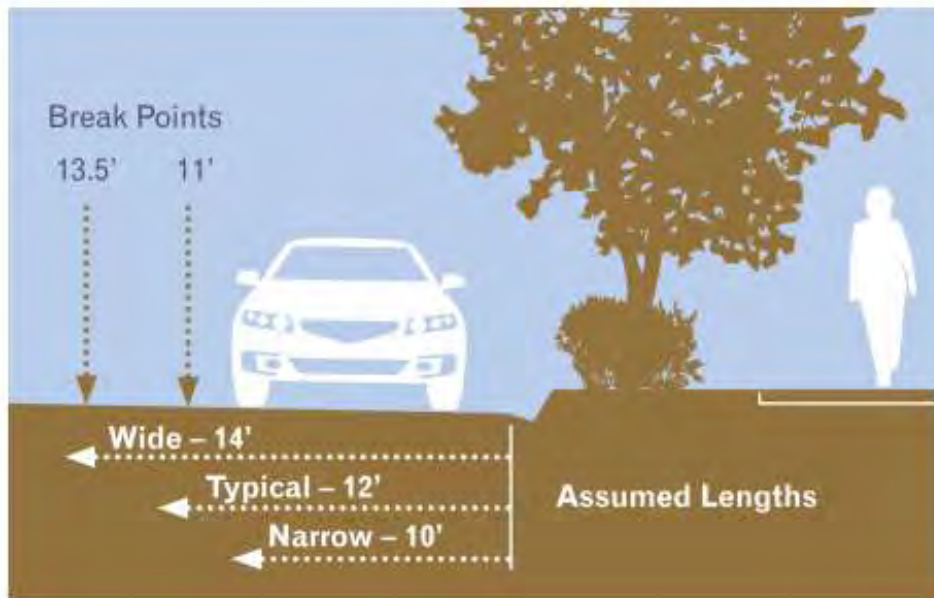
Within this Q/LOS Handbook, **the outside lane width is the width, in feet, of a roadway's outside vehicle through lane, not including the gutter.** This factor is usually important in the determination of a roadway's BLOS. The majority of the SHS lane widths are 12 feet. Many local roads and some state highways have 14-foot outside lanes; these are sometimes referred to as wide curb lanes. Many other local roads and some state facilities have outside lane widths less than 12 feet.

These dimensions as shown in **Figure 7-1**, are for planning analyses only:

- Wide: greater than or equal to 13.5 feet.
- Typical: greater than or equal to 11 feet and less than 13.5 feet.
- Narrow: less than 11 feet.



Figure 7-1: Outside Lane Width



### 7.3. Pavement Condition

**Pavement condition for BLOS analysis is a general classification of the roadway surface where bicycling usually occurs, not necessarily that drivers of vehicles experience.** Three general classifications are used: desirable, typical, and undesirable. These general classifications are used in lieu of detailed pavement surface grades found in the operational model on which this planning technique is based.

- Desirable pavement condition is new or recently resurfaced pavement. The pavement still maintains a dark black color, is free of cracks, and rides smoothly.
- Typical pavement condition is the most common type of pavement condition of Florida's roadways and is used in the Generalized Service Volume Tables. Generally, the pavement has a light gray color, the surface appears worn, and may have some cracks; however, the ride for the bicyclist is smooth.
- Undesirable pavement condition consists of pavement with noticeable cracks, broken pavement, or ruts. There may be existing or partially filled potholes, or drainage grates hazardous to bicycles. When the bicycle riding surface contains loose dirt, gravel, or debris, even if the roadway surface is typical or desirable, then it would be considered undesirable.

In general, FDOT recommends the use of a typical pavement condition for most analyses, especially those involving future years.

For analysts familiar with FHWA's PAVECON factors, "desirable" would equate to a 4.5 or 5.0 rating, "typical" would equate to a 3.0 to 4.0 rating, and "undesirable" would equate to 2.5 or less.

### 7.4. Sidewalk

Within this Q/LOS Handbook, a sidewalk is a paved walkway for pedestrians at the side of a roadway, typically 5 feet in width. Paved roadway shoulders are not considered sidewalks. Because LOS analyses are directional, the existence of a sidewalk is based on the directional side of the arterial being analyzed.

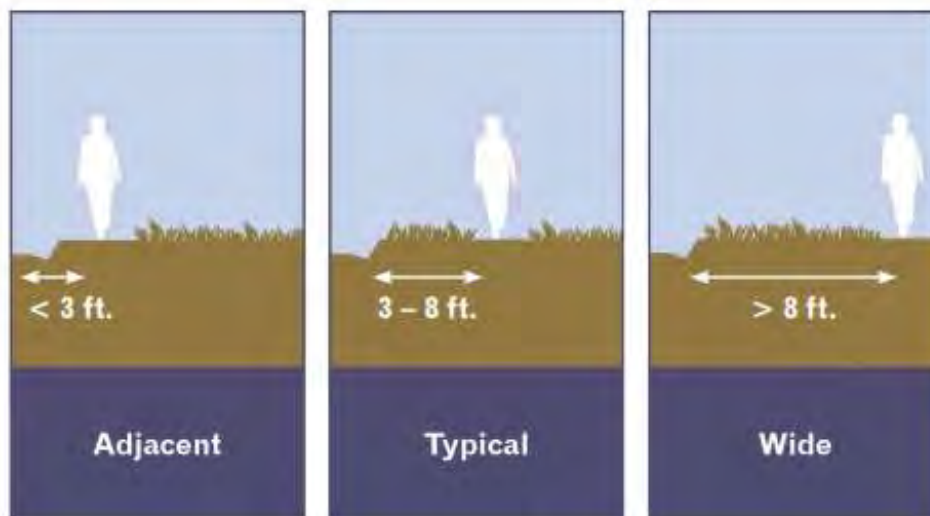
## SIDEWALK/ROADWAY SEPARATION

Sidewalk/roadway separation is the lateral distance in feet from the outside edge of pavement to the inside edge of the sidewalk. Within this Q/LOS Handbook, sidewalk/roadway separation is classified in three ways, as shown in **Figure 7-2**:

- Adjacent: less than or equal to 3.0 feet
- Typical: greater than 3.0 feet and less than or equal to 8.0 feet
- Wide: greater than 8.0 feet

In general, pedestrians tend to walk toward the outer half of sidewalks, away from traffic.

**Figure 7-2: Sidewalk/Roadway Separation**



In downtown environments, sidewalks frequently extend at least 10-12 feet from the curb. When there are no tree plantings or other sidewalk/roadway protective barriers, sidewalks should be classified as adjacent. When there are tree plantings or some other barrier between where people walk and the outside edge of the travel lane, sidewalks are assumed to have typical separation.

**When on-street parking and sidewalks both exist, the sidewalk/roadway separation should be considered wide, regardless of how close the sidewalk is to the edge of the pavement.** Essentially, on-street parking adds approximately 8 additional feet between pedestrians and vehicles.

### 7.5. Sidewalk Protective Barrier

In addition to sidewalk width, this Q/LOS Handbook adds an overall sidewalk protective barrier factor to include the added benefits of trees, on-street parking, or other barriers.

### 7.6. Bus Frequency

**Bus frequency, also known as headway, refers to the number of scheduled, fixed-route buses that have a potential to stop on a given roadway segment in one direction of flow in a one-hour time period.** Express buses with no potential of stopping along a roadway are not included.

## 7.7. Bus Stop Amenities

The bus stop is often the first component of any transit system a passenger will encounter, and available amenities for comfort or safety can greatly influence the perceived QOS along a route. Rather than quantify all potential bus stop components, this Q/LOS Handbook creates four categories of bus stop amenities: excellent, good, fair, and poor. Having shelter from the weather and a place to sit is the most desirable condition at any bus stop, regardless of type, and is considered an excellent condition. A shelter without a bench represents a good condition, because rain, wind, and sun could otherwise deter choice riders. A stop with only a bench is less desirable than a stop with only a shelter and is considered a fair condition. A stop with no bench and no shelter is considered a poor condition. Because excellent bus stops may improve a user's perception of the system, the bus stop amenity factor is used to increase the adjusted bus frequency value. Bus stops with no amenities are uninviting and discourage use, and the variable is, therefore, used to decrease the adjusted bus frequency value, as shown in **Table 7-3**.

**Table 7-3: Bus Stop Amenity Factors**

Bus Stop Amenities	Adjustment Factor
Excellent	1.1
Good	1.0
Fair	1.0
Poor	0.9

## 7.8. Bus Stop Type

Bus travel speed depends not only on distances and congestion along the route, but also the number of stops and the dwell time at each stop. Typical bus stops delay a bus for around 15 seconds, while major stations with numerous boardings and alightings can add around 35 seconds of delay.

## 7.9. Passenger Loads

Just as traffic congestion contributes to the degradation of the LOS, crowding on buses can affect the QOS. Because overcrowded buses may reduce the overall desirability of a route, a passenger load factor is used to modify the adjusted bus frequency value, as shown in **Table 7-4**.

**Table 7-4: Passenger Load Factor**

Passenger Load Factor	Adjustment Factor
< 30%	1.05
< 70%	1.00
≤ 100%	0.95
> 100%	0.85

## 8 Future Year Analyses

Traffic and development conditions change on roadways over time. This raises questions about what input values, analysis tools, and LOS targets should be used for capacity and LOS analyses in future years. Analysis years and planning horizons vary appreciably in transportation planning. To help with understanding and for simplification in this text, **“long term” means 10 or more years from the current year, and “short term” means less than 10 years from the current year.** However, for a specific application, FDOT district LOS coordinators should be consulted for more detailed guidance.

For future year analyses, it is important to consider changes in the appropriate roadway, traffic volumes, land use, signal control, and multimodal characteristics. For example, under existing conditions in a transitioning area, signalization may be very infrequent; however, as development occurs, more signalized intersections can be anticipated and should be accounted for in future year capacity and LOS analyses. The traffic and control variables relevant to this handbook are discussed in the following sections. Refer to the FDOT PTF Handbook and the Traffic Analysis Handbook for further guidance on future year traffic development and analyses.

### 8.1. Change in Traffic Variables

#### 8.1.1. AADT

Historical growth trends and the state’s travel demand forecasting models are typically used for long-term traffic projections. Analysts and reviewers of capacity and LOS analyses need to agree on what future AADT values to use. Additional information can be found in the PTF Handbook.

For site impact analyses, volumes are frequently presented in terms of trips generated by the site rather than roadway-specific AADT, K, and D values. Institute of Transportation Engineer’s (ITE’s) Trip Generation Handbook is typically used for trip generation for site impact analyses; however, FDOT should be consulted about supplemental material. In all cases, care should be given to ensure final values are compatible with statewide Standard K and D factors.

#### 8.1.2. Planning Analysis Hour Factor (K)

As areas become more developed, measured K values often drop, primarily for two reasons. The first is that more urban situations typically are not subject to highly volatile volumes, such as holiday traffic in rural areas. Generally, more developed areas are subject to frequent recurring volumes, such as weekday commuter traffic. The second is that as congestion develops, the spreading of the peak travel hour traffic also occurs. Refer to FDOT PTF Handbook for Standard K values used by facility type.

For future year generalized planning analyses, the Standard K values for the assumed area and facility types on the backs of FDOT’s Generalized Service Volume Tables are appropriate. In the longer term, it may be necessary to determine if the area is projected to transition into a different area type over the analysis period.

#### 8.1.3. Directional Distribution Factor (D)

For future year generalized planning analyses performed in this handbook, the D factor value for all area

**and facility types is 0.55.** If a site-specific analysis is conducted in the short term, FDOT's preferred approach is to use the FDOT's 200<sup>th</sup> Highest Hour Traffic Count Report from the FTO Web Application. In the longer term, some lowering of the factor may be appropriate. The analyst should refer to the D factors and their acceptable range in FDOT PTF Handbook.

## 8.2. Change in Control Variables

Making traffic and roadway projections into the future is a well-accepted practice for generalized planning analysis. For reasonable generalized planning analysis of signalized roadways, control variables must be addressed in the short and long terms. **Typically, the two most important control variables are the through movement g/C and signal density.**

### 8.2.1 g/C

Determining current and future g/Cs for a roadway is complicated, and judgments must be made. In the short and long terms:

- For Class II arterials, using the existing g/Cs is appropriate
- For Class I arterials not subject to significant development pressure, using the existing g/Cs is appropriate
- For Class I arterials incurring significant new development pressure, it is appropriate to lower through movement g/Cs
- For new individual signals, through movement g/Cs will vary greatly; however, for planning purposes, none should be assumed to be higher than 0.55

Within the HCS, an acceptable method to estimate future g/C ratios is by conducting intersection capacity analyses. The HCS will determine the required g/C ratios to progress through traffic movements on the major street, while simultaneously minimizing the delay to the minor street approaches.

### 8.2.2 Signal Density

As areas grow in population, additional traffic signals are frequently installed. Usually, these new signals do not significantly affect the capacity of roadways, unless they are in a previously undeveloped area or are so closely spaced that queue spillback occurs. They can play a major role in the determination of the LOS if stops occur more frequently and average travel speeds drop.

In short- and long-term analyses, it is appropriate to consider the probability of new traffic signals, especially based on proposed new developments. In the absence of specific development plans or intersecting traffic volume cross-product signalization criteria, general guidance should be used in developed areas.

In the short term:

- For Class II arterials, using the existing signalized intersection locations is appropriate
- For Class I arterials not subject to significant development pressure, using the existing signalized intersection locations is appropriate
- For Class I arterials incurring significant new development pressure, one additional signalized intersection per mile may be assumed

In the long term:

- For Class II arterials, one additional signalized intersection per mile may be assumed
- For Class I in small towns, one additional signalized intersection per mile may be assumed

Because of the wide variety of circumstances along generally uninterrupted flow highways in rural areas, no specific guidance can be given on future signal locations. However, for capacity and LOS purposes, the possibility of new signalized intersections should be considered. Because of the importance of signal density on the LOS on state roadways, for site impact applications, the number of new signals should be reviewed and approved by the FDOT district prior to use in an analysis.

Typically, other roadway, traffic, control, and multimodal variables do not have as large of an effect on the capacity and LOS as the ones addressed above. If some of these other inputs (e.g., turning movement percentages) were determined in a current year analysis, they can usually be applied to future year analysis. If these other variables were not determined for a current year analysis, the statewide default values on the backs of the Generalized Service Volume Tables may be assumed.

## 9 Maximum Capacity Volumes

The use of highway capacity and LOS analysis, whether applied appropriately or not, has resulted in projected traffic volumes beyond normal capacity ranges found on Florida facilities. There are multiple reasons for this, but to aid analysts and reviewers on what capacity values will normally be acceptable, FDOT has adopted a set of general guidelines. The values provided below are based on site-specific freeway studies and counts, as well as arterial maximum acceptable g/C ratios.

### 9.1. Arterials

For arterials, the maximum generally acceptable per-lane approach volumes are:

- Large urbanized: 1,000 vehicles per hour per lane (vphpl)
- Other urbanized: 950 vphpl
- Transitioning: 920 vphpl
- Urban: 920 vphpl
- Rural: 850 vphpl

The Maximum volumes may vary due to widely varying g/C, turning movements at intersections, and the segmentation of roadways. The maximum volumes represent a weighted g/C of approximately 0.50, which is the average of the critical g/C and the average of all other g/Cs along an urban street facility. Typically, there will be at least one principal arterial intersecting an urban street being analyzed. Such intersections are usually the critical intersections (hot spots) for an arterial analysis, and g/C ratios for the through movements are in the range of about 0.40. Although these intersections are frequently flared out to achieve greater capacity, the through movement g/C ratios cannot increase appreciably if all intersection movements are included. Therefore, the use of a 0.50 g/C ratio for determining the capacity of an urban street should represent the upper bounds of what can be reasonably expected.

Arterial facility analyses typically involve intersecting principal arterials, but section analyses may not have intersecting principal arterials. Under these circumstances, urban street through movements during peak travel hours may feature g/C ratios in the 0.50 to 0.60 range. Such values may be appropriate for segment or section analyses; however, the use of such high g/C ratios is not normally acceptable for a facility analysis and may represent an inappropriate segmentation of roadways.

Another situation in which g/C ratios may be above 0.50 is in the outlying parts of urbanized areas or in transitioning areas for both arterials and generally uninterrupted flow highways. In these areas, signals have typically been recently installed, and side traffic has not yet reached the high levels that it will in future years. Therefore, although current maximum volumes per lane may be higher than those shown above, in the future, such values will likely not be sustained and should be avoided in the arterial analysis.

### 9.2. Freeways

For freeway facilities and sections, the maximum volumes at 70 mph free flow speed are 2,400 pcphpl as per HCM.

Freeway operational measures such as ramp metering may result in higher volumes.



In general, the implementation of ramp metering could have a 5 percent or less improvement on capacity.

### 9.3. Highways

For highway segments (generally uninterrupted flow highways), the maximum per-lane approach volumes as per HCM are:

- Two-lane
  - Developed: 1,700 pcphpl
  - Undeveloped: 1,700 pcphpl
- Multilane
  - Developed (55 mph free flow speed): 2,100 pcphpl
  - Undeveloped (60 mph free flow speed): 2,200 pcphpl

## 10 Florida's LOS Policy

### REQUIREMENTS FOR LOS TARGETS FOR THE STATE HIGHWAY SYSTEM

It is FDOT's intent to plan, design, and operate the SHS at an acceptable LOS for the traveling public. The LOS targets are consistent with FDOT's Policy on Level of Service Targets for the SHS, [Topic No. 000-525-006](#). The policy outlines the automobile mode LOS target for urbanized areas and outside urbanized areas. The automobile mode LOS targets for the SHS during peak travel hours are D in urbanized areas and C outside urbanized areas. FDOT shall work with local governments to establish appropriate LOS targets for multimodal mobility and system design. The targets shall be responsive to all users, for context, roadway function, network design, and user safety.

# 11 Generalized Planning Analysis

## 11.1. Introduction

FDOT's Generalized Service Volume Tables found at the end of this Q/LOS Handbook are the primary analysis tool in conducting this type of planning analysis. **Although considered a good generalized planning tool, the Generalized Service Volume Tables are not detailed enough for project development and environment (PD&E) traffic analysis, final design, or operational analysis work, and should not be used for those purposes.** In addition, the Generalized Service Volume Tables cannot be relied upon when approaching LOS E and LOS F thresholds, because of operational fluctuations at the thresholds. More detailed analysis should be performed in these situations.

Specific applications of the Generalized Service Volume Tables include:

- Generalized comprehensive plan amendment analyses
- Statewide highway system deficiencies and needs
- Statewide mobility performance measure reporting
- Areawide baseline capacity (e.g., MPO boundaries) and service volume values for travel demand forecasting models
- Areawide influence areas (e.g., impact areas) for major developments
- Future year analyses (e.g., SIS Needs Plans, MPO LRTPs which have a 10 to 25-year planning horizon)
- Baseline capacity and service volumes for concurrency management systems

Generalized Service Volume Tables must be appropriately applied using the right area type and facility type designations and interpreted selecting the right values from the tables. The adjustment factors must be applied, as applicable.

It is quite possible that no single roadway has the exact values for all the roadway, traffic volumes, land use, signal control, and multimodal variables used in the Generalized Service Volume Tables. The tables must be applied with care to roadway facilities and in the determination of the LOS grade.

The automobile, bicycle, and pedestrian parts of the Generalized Service Volume Tables were developed based on the definitions and methodology of the HCM. Nationally the TCQSM is the comparable document to the HCM for bus analyses.

FDOT's Generalized Service Volume Tables consist of five area types grouped into three tables:

- Urbanized areas
- Areas transitioning into urbanized/urban areas, or cities with population of more than 5,000 not in urbanized areas
- Rural undeveloped areas, or cities and developed areas with population of less than 5,000

Most planning applications begin with AADT volumes given as an input, or end with AADT as a calculated output. Therefore, the generalized daily service volumes shown in Tables 1 through 3 depict the AADT based on a standard peak hour. Some local and regional entities have adopted two-direction peak hour standards.

Tables 4 through 6 provide generalized peak hour two-way service volumes. Generalized peak hour directional volumes (Tables 7 through 9) are provided, because traffic engineering analyses are conducted on an hourly directional basis. These hourly directional tables may be viewed as the most fundamental of the tables, because the two-way tables are simply the peak hour directional values divided by D, and the daily tables are simply the peak hour directional values divided by the D and K factors.

All three sets of tables are internally consistent. All of the volumes within the tables are based on the Standard K factors. The urban/transitioning freeways are based on the average of urbanized and rural Standard K factors. The PHFs of 0.95, 0.92, and 0.88 were used in the creation of the urbanized, transitioning/urban, and rural tables, respectively. The 200th highest hour for the directional distribution variable is approximately equivalent to the typical peak hour of a day during a peak season in a developed area. Again, it is stressed that the daily, peak hour two-way, and peak hour directional tables are internally consistent and based on the same time period and directional flow of traffic.

The input values used to generate the Generalized Service Volume Tables can be found on the backs of Tables 1 through 9 and yield the results on the fronts of the Tables.

The Generalized Service Volume Tables present maximum service volumes, or the highest numbers of vehicles, for a given LOS. Any number greater than the value shown for a roadway with a given number of lanes would drop the LOS to the next letter grade.

**The Generalized Service Volume Tables should not be referred to as capacity tables.** In general, the values shown are the maximum service volumes for a given LOS based on roadway, traffic, control, and multimodal conditions during the peak hour in the peak travel direction. Whereas the maximum service volume deals with the highest number of vehicles for a given LOS, capacity deals with the maximum number of vehicles or persons that can pass a point during a specified time period under prevailing roadway, traffic, and control conditions. Many of the LOS E service volumes in the hourly directional tables also represent the capacity of the roadway, but in general, most of the values do not reflect a roadway's capacity.

A clear case of not representing capacity values is the daily tables. Roadway capacities for the day far exceed the volumes shown in the daily tables. All roadways are underutilized in the early morning hours and many heavily congested roads will have volumes higher than the highest volumes shown in the daily tables, because traffic is backed up for more than a one-hour time period.

Another case of not representing capacity is the arterial LOS E service volumes. **The primary criterion for the LOS on arterials is the average travel speed, not the capacity of the roadway.** The average travel speed along arterials is made of many control variables (e.g., progression, cycle length), not just the capacity (i.e., v/c ratios) of signalized intersections. Only in the special case of when the capacity of signalized intersections controls how many vehicles can pass through the intersections does capacity essentially dictate the lowest acceptable average travel speeds along arterials.

FDOT's Generalized Service Volume Tables are:

- Annual Average Daily Service Volume Tables
  - Table 1: urbanized areas
  - Table 2: transitioning into urbanized areas or urban areas

- Table 3: rural undeveloped or rural developed areas
- Peak hour two-way service volume
  - Table 4: urbanized areas
  - Table 5: transitioning into urbanized areas or urban areas
  - Table 6: rural undeveloped or rural developed areas
- Peak hour directional service volume tables
  - Table 7: urbanized areas
  - Table 8: transitioning into urbanized areas or urban areas
  - Table 9: rural undeveloped or rural developed areas

## 11.2. Special Cases

The volumes in the Generalized Service Volume Tables should be considered as average volumes over the facility under analysis.

For example: If a 4-mile facility has AADT counts of:

- Segment 1 - 23,000
- Segment 2 - 22,000
- Segment 3 - 25,000
- Segment 4 - 23,000 and
- Segment 5 - 27,000

FDOT recommends the use of the average value 24,000 for comparison to the tables to determine the LOS.

The use of the average volume works reasonably well, unless there is one segment that has a widely disparate value, in which case a median value may be more appropriate.

### 11.2.1. Mid-Block Considerations

In general, Q/LOS analyses for interrupted flow facilities primarily focus on signalized intersections. The majority of motorist aggravation is generally attributable to delay, which primarily occurs at signalized intersections on arterials. Therefore, when using the Generalized Service Volume Tables, the number of lanes for arterials and other interrupted flow facilities should be determined at major intersections rather than mid-block.

Travelers place a greater emphasis on mid-block considerations while traveling on uninterrupted flow facilities and non-automobile modes. **For example, on two-lane highways in rural undeveloped areas, the LOS is largely determined by the ability to pass other vehicles.** For freeways, most travelers are concerned about the operation of the whole facility and not the operation of particular interchanges. For bicycle and pedestrian movements, the BLOS and PLOS models are calibrated for mid-block conditions. For bus LOS, the emphasis is on the ability to travel by bus over the length of facility, with less importance placed on individual intersections. Therefore, in general, the number of lanes for these situations reflect mid-block considerations.

### 11.2.2. Non-State Signalized Roadways Adjustment

The primary purpose of this Q/LOS Handbook is to compute the LOS for state facilities. However, the Generalized Service Volume Tables are structured and are reasonably well-suited to local governments that desire to use them to evaluate roads under local jurisdiction. A feature of the urbanized and transitioning/urban Generalized Service Volume Tables is that Non-State roadways are addressed. The only types of roadways not addressed in the tables are unsignalized local streets and unpaved roads.

The mere fact that roadways are operated and maintained by different governmental entities has no effect on the capacity or LOS of the roadways. **However, in general, Non-State roadways have lower capacities and service volumes than state facilities, because they have lower green times at signalized intersections.** The Generalized Service Volume Tables contain a 10 percent adjustment factor for Non-State roadways.

The HCM LOS criteria address arterials rather than collectors or local streets. FDOT considers it appropriate for local governments to decide how to analyze collectors.

Uninterrupted flow facilities are analyzed the same, regardless of whether they are state facilities or not.

### 11.2.3. Variations in Levels of Service

Higher Q/LOS for the automobile, bicycle, and pedestrian modes may not be achieved, even with extremely low traffic volumes, given the default values used in the Generalized Service Volume Tables. In the case of automobiles, the higher Q/LOS cannot be achieved primarily because the control characteristics simply will not allow vehicles to attain relatively high average travel speeds. In the case of bicycles and pedestrians, it is primarily caused by the lack of facilities serving those modes. The tables have adequate footnotes to reflect this unachievable concept.

Lower Q/LOS for the automobile, bicycle, and pedestrian modes may not be applicable, even with extremely high traffic volumes, given the default values used in the Generalized Service Volume Tables. In the case of automobiles, the lower Q/LOS are not applicable, primarily because the control characteristics do not allow enough vehicles to pass through an intersection in an hour. If vehicles could get through the intersection, they could obtain the applicable LOS speed threshold, but there is not enough capacity at the intersection to let them pass through.

In the case of bicycles and pedestrians, it is primarily caused by the existence of facilities adequately serving those modes. For example, if a sidewalk exists, it is very difficult to establish a set of conditions in which the LOS to the pedestrian is F.

Essentially, once the maximum service volume is reached, the next LOS grade is F. For example, in Service Volume Table 1 for multilane Class I arterials, if demand volumes are greater than the LOS D threshold, then the LOS is F, and if the volume is at the LOS D threshold, the LOS is D; essentially, LOS E does not exist.

### 11.2.4. Median and Turn Lane Adjustment (Divided/Undivided Roadways)

For simplicity, the Generalized Service Volume Tables have factors to adjust for the effects of mid-block medians and exclusive turn lanes at intersections. The cumulative effects of medians and exclusive turn lanes from common

occurrences are shown in the Generalized Service Volume Tables.

**A median has the effect of changing the adjusted saturation flow rate or service volume by 5 percent.** In Florida, most two-lane roadways do not have a median (e.g., a two-way left turn lane), so the tables assume no median for those facilities. However, if there is a median, appropriate service volumes should be increased 5 percent. Most multilane arterials and highways in Florida have medians, so the tables are set up to assume medians for those facilities. However, if there is no median, appropriate service volumes should be decreased 5 percent.

Most major roadways in Florida have exclusive left-turn lanes at intersections, except those with very low volumes. **If a roadway does not have left-turn lanes at major intersections, its service volume drops 20 to 25 percent, depending on the number of lanes, as indicated in the table.** The common design practice in Florida is to use shared through/right-turn lanes to accommodate right-turning vehicles. However, exclusive right-turn lanes have large capacity and service volume impacts for vehicles at major intersections.

### 11.2.5. One-Way Facility Adjustments

For simplicity, the urbanized and transitioning/urban area Generalized Service Volume Tables have an intuitive factor for the effects of one-way streets on vehicles. **Essentially, one-way pairs are assumed to have a 20 percent higher service volumes than corresponding two-way roadways with the same number of lanes.**

However, the Generalized Service Volume Tables treat each facility of a one-way pair separately. To account for that, the volumes in the daily and hourly two-way Tables 1 through 6 should be multiplied by 0.6, while the volumes in the hourly directional Tables 7 through 9 should be multiplied by 1.2, to obtain the correct volume and LOS.

For example, the AADT LOS D threshold for a 2-lane Class I arterial one-way facility in a transitioning area would be 9,720. This example is calculated using the Generalized Service Volume Table 2. The AADT LOS D threshold for a 2-lane Class I arterial in a transitioning area is 16,200. To calculate the LOS D threshold for a one-way facility, multiply 16,200 by the one-way facility adjustment, 0.6, to calculate the one-way facility LOS D threshold of 9,720.

### 11.2.6. Auxiliary Lane Adjustment

Freeway auxiliary lanes (lanes connecting on- and off-ramps) usually have significant capacity and LOS benefits. The values contained in the tables indicate their importance in a general way. To apply the values, simply add the volume shown in the freeway adjustment to the maximum service volume shown in the table.

### 11.2.7. Ramp Metering Adjustment

Freeway ramp metering has the benefit of smoothing out traffic demand entering a freeway during peak travel times. This benefit is reflected by increasing the service volumes shown on the tables by 5 percent.

### 11.2.8. Bicycle LOS (BLOS)

The bicycle portions of the Generalized Service Volume Tables make primary use of the two most important factors in determining the LOS for bicyclists: the existence of paved shoulders/bicycle lanes and vehicle volumes. **It is important to note that the volumes shown in the tables are not the number of bicyclists; rather, they are the number of vehicles in the outside lane.** Unlike automobile LOS, which is highly dependent on the number



of other vehicles on the roadway, **BLOS is not determined by how many other bicyclists are on road; rather, it is primarily determined by the bicycle accommodations on the roadway and volume of vehicles.**

The other factor used in the Generalized Service Volume Tables is the volume of vehicles in the outside lane. For analysis purposes, vehicle volumes are assumed to be equally spread across the number of directional roadway lanes. Unlike the automobile entries in the table, in which the number of lanes is an entry into the tables, a step of multiplying the volume by the number of lanes is needed to use the volume (hourly directional, hourly two-way, or daily) of vehicles. For example, in Table 7, the LOS C threshold for zero percent bicycle lane coverage is 150 vehicles for the outside lane. If the roadway has four lanes, then the 150 vehicles would be multiplied by 2 (number of directional lanes) to determine the maximum volume of vehicles for BLOS C in one direction of flow. The additional step was included to simplify the appearance of the tables and save space.

### **11.2.9. Pedestrian LOS (PLOS)**

**The pedestrian portions of the Generalized Service Volume Tables make primary use of the two most important factors in determining the LOS for pedestrians: the existence of a sidewalk and vehicle volumes. It is important to note that the volumes shown in the tables are not the number of pedestrians; rather, they are the number of vehicles in the outside lane.** Unlike automobile LOS, which is highly dependent on the number of other vehicles on the roadway, PLOS is not determined by how many other pedestrians use the facility; rather, it is primarily determined by the presence of sidewalks and the volume of vehicles.

The other factor used in these tables is the volume of vehicles in the outside lane. For analysis purposes, vehicle volumes are assumed to be equally spread across the number of directional roadway lanes. Unlike the automobile entries in the table, in which the number of lanes is an entry into the tables, a step of multiplying the vehicle volume by the number of lanes is needed to use the volume (hourly directional, hourly nondirectional, or daily) of vehicles. For example, in Table 7, the LOS C threshold for 100 percent sidewalk coverage is 540 vehicles for the outside lane. If the roadway has four lanes, then the 540 vehicles would be multiplied by 2 (number of directional lanes) to determine the maximum volume of vehicles for PLOS C in one direction of flow. The additional step was included to simplify the appearance of the tables and save space.

All techniques in this Q/LOS Handbook are based on a directional analysis. For example, in the case of evaluating the automobile LOS on arterials, the LOS is for the peak directional flow, and the LOS for the off-peak direction could be higher, lower, or the same. This directional technique results in some unique perspectives when evaluating PLOS. Sidewalks, whether on one or both sides of a road, serve pedestrians in both directions, unlike facilities for the other modes. Furthermore, analysts should be especially careful when using the Generalized Service Volume Tables for determining PLOS when there is a sidewalk only on one side of the roadway. Because all the Generalized Service Volume Tables are based on peak hour directional analyses, PLOS based on the tables should be considered applicable only to the direction of the peak flow of traffic. When using the tables, there is typically a difference of two LOS grades if the sidewalk is, or is not, on the same side of roadway as the peak flow of traffic. Generally, having sidewalks on both sides of arterials in developed areas is considered desirable; yet, the Generalized Service Volume Tables do not adequately reflect that concept.

### **11.2.10. Bus LOS**

**The bus portions of the Generalized Service Volume Tables are primarily dependent on bus frequency,**

**which is the number of scheduled fixed-route buses that have a potential to stop in a given segment in the peak direction of flow in a one-hour time period.** That measure is supplemented by pedestrian accessibility. In the Generalized Service Volume Tables, pedestrian accessibility is represented by two broad ranges of sidewalk coverage.

There are two unique aspects of bus mode entries of the Generalized Service Volume Tables. First, it is important to note that the volumes shown in the tables are the number of buses per hour. Unlike automobile, bicycle, and PLOS thresholds, the bus mode LOS thresholds are not related to the number of vehicles on the roadway. Second, regardless of the table used, all numbers are shown in terms of buses per hour for the peak hour in the peak direction. Thus, even in the daily urbanized table (Table 1), the threshold values shown are still in terms of peak hour directional buses.

### 11.3. Service Volume Calculation Process

**All service volumes and resulting tables are first calculated for the peak hour in the peak direction.** The peak hour two-way values are obtained by dividing the peak hour peak direction service volumes by D. The daily volumes are obtained by dividing the peak hour two-way service volumes by K.

Peak hour directional and peak hour two-way service volumes are rounded to the nearest 10 vehicles. Daily service volumes are rounded to the nearest 100 vehicles.

#### 11.3.1. Arterial LOS

For the automobile mode, arterial analyses starts with a volume of 10 vph and then calculates the v/c ratio at each intersection. Then, the speed on each segment is calculated, which also accounts for the signal delay and the overall average speed for the facility. The average speed is checked against the average speed criterion for LOS A. If the speed is below the LOS A threshold, the volume is incremented by either 50 vph (if the difference in the actual speed and LOS threshold speed is large) or 10 vph (if the difference in actual speed and LOS threshold speed is small). This process is repeated until the average facility speed is approximately equal to the LOS A threshold. The volume level at which this occurs is the service volume for LOS A. The volume (i.e., LOS A service volume) is then incremented by 10 vph and incrementally increased until the average facility speed is approximately equal to the LOS B threshold speed. This process repeats for LOS C, D, and E. If at any point during this process the v/c ratio exceeds 1.0 for the full hour, the calculation is stopped. If that condition is met, this volume becomes the service volume for whichever LOS letter grade was being evaluated at the time, as well as for the lower Q/LOS grades.

For the bicycle and pedestrian modes, again the analyses is started with a volume of 10 vph and then BLOS and PLOS scores are calculated based on the BLOS and PLOS models. Then, that score is checked against the LOS A criterion. If the score is below the LOS A threshold value, the volume is incremented by 10 vph. This process is repeated until the facility score is approximately equal to the LOS A threshold. The volume level at which this occurs is then the service volume for LOS A. The volume (i.e., LOS A service volume) is then incremented by 10 vph and incrementally increased until the average facility score is approximately equal to the LOS B threshold volume. This process repeats for LOS C, D, and E. If at any point during this process the vehicle v/c ratio exceeds 1.0 for the full hour, the calculation is stopped. If that condition is met, this volume becomes the service volume for whichever LOS letter grade was being evaluated at the time as well as for the lower Q/LOS grades.

For the bus mode, the LOS service frequency criteria that appear in the TCQSM is used, modified by PLOS, relative auto speed, bus stop amenities, and passenger load factors.

### 11.3.2. Freeway Facilities LOS

For freeways, the HCS7 freeway facilities module was used to obtain the service volume thresholds. The automobile volume is incrementally increased until the demand flow rate to the mean speed of the traffic stream produces an average facility density that is approximately equal to the LOS A threshold. The volume level at which this occurs is the service volume for LOS A. The volume (i.e., LOS A service volume) is then incrementally increased by 10 vph and until the average facility density is approximately equal to the LOS B threshold speed. This process repeats for LOS C, D, and E. If at any point during this process the v/c ratio exceeds 1.0 for the full hour, the calculation stops. If that condition is met, this volume becomes the service volume for whichever LOS letter grade was being evaluated at the time, as well as for the lower Q/LOS grades. The traffic factors and other inputs such as CAF and SAF used in the analyses are discussed in the previous sections of this handbook and listed at the back of the Generalized Service Volume Tables.

### 11.3.3. Highways LOS

For multilane uninterrupted flow highways, HCS7's multilane highways procedure starts with a volume of 10 vph and then calculates density. If the density is below the LOS A threshold density, the volume is incremented by 10 vph. This process is repeated until the average density is approximately equal to the LOS A threshold. The volume level at which this occurs is then the service volume for LOS A. The volume (i.e., LOS A service volume) is then increased by 10 vph until the average facility density is approximately equal to the LOS B threshold density. This process repeats for LOS C, D, and E. If at any point during this process the v/c ratio exceeds 1.0 for the full hour, the calculation stops. If that condition is met, this volume becomes the service volume for whichever LOS letter grade was being evaluated at the time, as well as for the lower Q/LOS grades. The traffic factors and other inputs such as CAF and SAF used in the analyses are discussed in the previous sections of this handbook and listed at the back of the Generalized Service Volume Tables. A different free flow speed is used in the analyses for multilane uninterrupted flow highways passing through undeveloped areas and developed areas.

For two-lane uninterrupted flow highways, the computational process is similar to the process followed for multilane uninterrupted flow highways. The HCS7's two-lane highways module is dependent on the highway class (I, II, or III). The traffic factors and other inputs used in the analyses are discussed in the previous sections of this handbook and listed at the back of the Generalized Service Volume Tables. A different free flow speed is used in the analyses for two-lane uninterrupted flow highways passing through undeveloped areas and developed areas.

## Glossary

<b>Acceleration lane</b>	A freeway lane extending from the on-ramp gore to where its taper ends.
<b>Accessibility</b>	The dimension of mobility that addresses the ease in which travelers can engage in desired activities.
<b>Actuated control</b>	All approaches to the signalized intersection have vehicle detectors, with each phase subject to a minimum and maximum green time, and some phases may be skipped if no vehicle is detected. Same as <i>actuated</i> and <i>fully actuated control</i> .
<b>Actuated-Coordinated control</b>	The fixed-cycle signal control of an intersection in which the through movement on the designated main roadway gets the unused green time from side movements because of limited or no vehicle activation from side movements. Same as <i>coordinated-actuated</i> .
<b>Add-on/drop-off lanes</b>	The roadway lanes added before an intersection and dropped after the intersection. Same as <i>expanded intersections</i> .
<b>Adjusted saturation flow rate</b>	In this Q/LOS Handbook, the base saturation flow rate times the effect of many roadway variables and traffic variables.
<b>Adjustment factor</b>	In the Generalized Service Volume Tables: additive or multiplicative factors to adjust service volumes.
<b>All-way stop control</b>	An intersection with a stop sign at all approaches.
<b>Annual average daily traffic</b>	The volume passing a point or segment of a roadway in both directions for one year, divided by the number of days in the year.
<b>Areawide analysis</b>	An evaluation within a geographic boundary.
<b>Arrival type</b>	A general categorization of the quality of signal progression.
<b>Arterial</b>	A signalized roadway that primarily serves through traffic with average signalized intersection spacing of 2 miles or less; a type of roadway based on FDOT's functional classification.
<b>Auxiliary lane</b>	An additional lane on a freeway connecting an on-ramp of one interchange to the off-ramp of the downstream interchange.
<b>Average daily traffic</b>	The total traffic volume during a given time period (more than a day and less than a year) divided by the number of days in that time period.
<b>Average travel speed</b>	The facility length divided by the average travel time of all vehicles traversing the facility, including all stopped delay times.
<b>Axle correction factors</b>	The adjustment factors used to calculate the annual average daily traffic by compensating for an axle counter's tendency to count more vehicles than are present.
<b>Base conditions</b>	The best possible characteristic in terms of capacity for a given type of facility.

<b>Base saturation flow rate</b>	The maximum steady flow rate, expressed in passenger cars per hour per lane, at which passenger cars can cross a point on interrupted flow roadways.
<b>Basic segment</b>	In this Q/LOS Handbook, the length of a freeway in which operations are unaffected by interchanges. Same as <i>basic freeway segment</i> .
<b>Basic two-lane highway Segments</b>	A highway segment upstream of the intersection influence area and downstream of the affected downstream highway segment, and thus not affected by signalized intersections.
<b>Bicycle lane</b>	In this Q/LOS Handbook, a designated or undesignated portion of roadway for bicycles adjacent to vehicle lanes.
<b>Bicycle level of service score</b>	A numerical value calculated by the BLOS Model that corresponds to a BLOS.
<b>Bus frequency</b>	The number of buses per hour serving one direction of a roadway facility.
<b>Bus stop</b>	An area where bus passengers wait for, board, alight, and transfer.
<b>Bus stop amenities</b>	Enhancements for comfort or safety that can greatly influence the perceived QOS along a route. Four categories of bus stop amenities exist: excellent, good, fair, and poor.
<b>Bus stop amenity factors</b>	Factors used to determine the adjusted bus frequency value by applying a factor commensurate to the quality of bus stop amenities.
<b>Bus stop type adjustment factors</b>	Factors that adjust travel times along bus routes by adding 15 to 35 seconds of delay per route for typical and major bus stops, respectively.
<b>Capacity</b>	The maximum sustainable flow rate at which persons or vehicles reasonably can be expected to traverse a point or a uniform section of roadway during a given time period under prevailing conditions. As typically used in this Q/LOS Handbook, the maximum number of vehicles that can pass a point in one hour under prevailing roadway, traffic and control conditions.
<b>Capacity adjustment factor</b>	An adjustment factor used in the HCS7 freeways and multilane highways module to adjust the capacity of a facility for reduced capacity situations or to match field measurements. The capacity can be reduced to represent incident situations, such as construction and maintenance activities, adverse weather, traffic incidents, and vehicle breakdowns.
<b>Capacity constrained</b>	A condition in which traffic <i>demand</i> exceeds the capacity of a roadway.
<b>Capacity utilization</b>	The dimension of mobility that addresses the quantity of operations relative to capacity.
<b>Captive rider</b>	A transit rider who is limited by circumstances to use transit as a primary source of transportation.
<b>Choice rider</b>	A transit rider who chooses to take transit over other readily available transportation options.
<b>Class I arterial</b>	A roadway that has posted speeds of 40 mph or higher.

<b>Class II arterial</b>	A roadway that has posted speeds of 35 mph or less.
<b>Collector</b>	A roadway providing land access and traffic circulation with residential, commercial and industrial areas.
<b>Concurrency</b>	A systematic process utilized by local governments to ensure new development does not occur unless adequate infrastructure is in place to support growth.
<b>Context classification</b>	A classification assigned to a roadway that broadly identifies the various built environments in Florida, based on existing or future land use characteristics, development patterns, and the roadway connectivity of an area.
<b>Control delay</b>	The component of delay that results when a signal causes traffic to reduce speed or stop.
<b>Control variables</b>	The parameters associated with roadway controls.
<b>Core freeways</b>	The major, non-toll freeways going through the urbanized core areas of the largest metropolitan areas, such as Interstate 4 in Orlando. FDOT has adopted lower K values for these freeways to represent a peak period, as opposed to a peak hour analysis. The lower K values affect daily service volumes only in the Generalized Service Volume Tables.
<b>Critical signalized intersection</b>	The signalized intersection with the lowest volume-to-capacity ratio ( $v/c$ ), typically the one with the lowest effective green ratio ( $g/C$ ) for the through movement. Same as <i>critical signalized intersection</i> .
<b>Cycle length</b>	The time it takes a traffic signal to go through one complete sequence of signal indications.
<b>Deceleration lane</b>	A freeway lane extending from the taper to the off-ramp gore.
<b>Delay</b>	The additional travel time experienced by a traveler.
<b>Demand</b>	The number of persons or vehicles desiring service on a roadway. Same as <i>demand traffic</i> .
<b>Density</b>	The number of vehicles, averaged over time, occupying a given length of lane or roadway; usually expressed as vehicles per mile or vehicles per mile per lane.
<b>Developed areas</b>	All areas not rural undeveloped. Same as rural developed areas.
<b>Directional distribution factor</b>	The proportion of an hour's total volume occurring in the higher volume direction.
<b>Effective green ratio</b>	Typically in this Q/LOS Handbook, the ratio of the effective green time ( $g$ ) for the through movement at a signal intersection to its cycle length ( $C$ ).
<b>Effective green time</b>	The time allocated for the through movement to proceed; calculated as the through movement green plus yellow plus all-red indication times less the lost time.
<b>Exclusive left-turn storage length</b>	The total amount of storage length, in feet, for exclusive left-turn lanes.
<b>Exclusive right-turn lanes</b>	A storage area designated to only accommodate right-turning vehicles.



<b>Exclusive turn lane</b>	A storage area designated to only accommodate left- or right-turning vehicles; in this Q/LOS Handbook, the turn lane must be long enough to accommodate enough turning vehicles to allow the free flow of the through movement.
<b>Five-lane section</b>	A roadway with four through lanes, two in each direction, separated by a two-way left turn lane; in the Generalized Service Volume Tables, a five-lane section is treated as a roadway with four lanes and a median.
<b>Flow rate</b>	In this Q/LOS Handbook, the equivalent hourly rate at which vehicles pass a point on a roadway for a 15-minute period.
<b>Free flow speed</b>	In this Q/LOS Handbook, the average speed of vehicles under low-flow traffic conditions and not under the influence of signals, stop signs, or other fixed causes of interruption, generally assumed to be 5 mph over the posted speed limit.
<b>Freeway</b>	A multilane, divided highway with at least two lanes for the exclusive use of traffic in each direction and full control of ingress and egress.
<b>Freeway segment</b>	In this Q/LOS Handbook, a basic segment, interchange or toll plaza.
<b>FSUTMS</b>	Florida Standard Urban Transportation Model Structure; Florida's software that forecasts travel demand.
<b>Functional classification</b>	The assignment of roads into systems according to the character of service they provide in relation to the total road network.
<b>Generalized Service Volume Tables</b>	Maximum service volumes based on areawide roadway, traffic, and control variables and presented in tabular form.
<b>Generalized planning</b>	A broad type of planning application that includes statewide analyses, initial problem identification, and future year analyses. In this Q/LOS Handbook, typically performed by using the Generalized Service Volume Tables.
<b>Gore</b>	The point located immediately between the left edge of a ramp pavement and the right edge of the roadway pavement at a merge or diverge area.
<b>Headway</b>	The time, in seconds, between two successive vehicles as they pass a point on a roadway.
<b>Heavy vehicle</b>	An FHWA vehicle classification of 4 or higher; essentially, vehicles with more than 4 wheels touching the pavement during normal operation.
<b>Heavy vehicle factor</b>	The adjustment factor for heavy vehicles.
<b>Heavy vehicle percent</b>	The percentage of heavy vehicles in the traffic stream.
<b>Highway capacity analysis</b>	An examination of the maximum of vehicles or persons that can reasonably be expected to pass a point on a roadway during a specified time period under prevailing roadway, traffic, and control conditions. Same as <i>capacity analysis</i> .
<b>Highway Capacity Manual</b>	The Transportation Research Board's document on highway capacity and QOS.
<b>Highway Capacity Software 7</b>	Software that replicates the HCM, Sixth Edition.



<b>Interchange</b>	In this Q/LOS Handbook, the influence area associated with the off-ramp influence area, overpass/underpass, and on-ramp influence area of a connection to a freeway. Same as <i>freeway interchange influence area</i> .
<b>Interrupted flow</b>	A category of roadways characterized by signals, stop signs, or other fixed causes of periodic delay or interruption to the traffic stream, with average spacing less than or equal to 2.0 miles.
<b>Intersection influence area</b>	In this Q/LOS Handbook, a segment of an uninterrupted flow highway influenced by an isolated intersection.
<b>Interval</b>	A period of time in which all traffic signal indications remain constant.
<b>Isolated intersection</b>	An intersection occurring along an uninterrupted flow highway.
<b>Large urbanized area</b>	A Metropolitan Planning Organization urbanized area greater than 1 million in population; in Florida, these seven areas consist of the following central cities: Fort Lauderdale, Jacksonville, Miami, Orlando, St. Petersburg, Tampa, and West Palm Beach.
<b>Lateral clearance</b>	Clearance distance from edges of outside lanes to fixed obstructions.
<b>Level of service</b>	A quantitative stratification of the QOS to a typical traveler of a service or facility into six letter-grade levels, with A describing the highest quality and F describing the lowest quality; a discrete stratification of a QOS continuum.
<b>Level of service targets</b>	The same as the statewide minimum LOS targets for the State Highway System.
<b>Load factor</b>	The ratio of passengers actually carried to the total passenger capacity of a bus.
<b>Local adjustment factor</b>	In the 2013 Q/LOS Handbook, an adjustment factor FDOT used to adjust base saturation flow rates or base capacities to better match actual Florida traffic volumes; mostly consisted of a driver population factor and an area type factor.
<b>Maximum service volume</b>	The highest number of vehicles for a given LOS.
<b>Median</b>	In this Q/LOS Handbook, areas at least 10 feet wide that are restrictive or non-restrictive, which separate opposing-direction mid-block traffic lanes and, on arterials, contain turn lanes that allow left-turning vehicles to exit from the through traffic lanes.
<b>Median type</b>	A classification of roadway medians as restrictive, non-restrictive, or no median.
<b>Mid-block</b>	In this Q/LOS Handbook, the part of a roadway between two signalized intersections.
<b>Mobility</b>	The movement of people and goods.
<b>Mode</b>	A method of travel; in this Q/LOS Handbook, either automobile, bus, bicycle, or pedestrian.
<b>Motorized mode</b>	A method of travel by automobile or bus.

<b>MPO/TPO</b>	Metropolitan/Transportation Planning Organization.
<b>Multilane highway</b>	A nonfreeway roadway with two or more lanes in each direction and, although occasional interruptions to flow at signalized intersections may exist, is generally uninterrupted flow.
<b>Multimodal</b>	In this Q/LOS Handbook, more than one mode.
<b>Multimodal Transportation District</b>	An area in which secondary priority is given to vehicle mobility, and primary priority is given to ensuring a safe, comfortable, and attractive pedestrian environment, with convenient interconnection to transit (F.S. 163.3180[15]).
<b>No passing zone</b>	In this Q/LOS Handbook, a segment of a two-lane highway along which passing is prohibited in the analysis direction.
<b>Non-restrictive median</b>	A painted, at-grade area separating opposing mid-block traffic lanes.
<b>Non-State signalized roadway</b>	A signalized roadway not on the State Highway System.
<b>Number of effective lanes</b>	In terms of capacity, the equivalent number of through lanes. Typically, the number is expressed as a fraction (e.g., 2.7) to reflect the partial beneficial effects of freeway auxiliary lanes or arterial add-on/drop-off lanes.
<b>Number of through lanes</b>	<p>The number of lanes relevant to an analysis of a roadway's LOS.</p> <p><b>FOR ARTERIALS</b></p> <ul style="list-style-type: none"> <li>■ Usually at the signalized intersection, not mid-block</li> <li>■ Usually through and shared right-turn lanes</li> <li>■ Maybe a fractional number reflecting add-on/drop-off lanes or other special lane utilization considerations</li> <li>■ Using the Generalized Service Volume Tables, the number at major signalized intersections</li> </ul> <p><b>FOR FREEWAYS AND UNINTERRUPTED FLOW HIGHWAYS</b></p> <ul style="list-style-type: none"> <li>■ Does not include auxiliary lanes between two points</li> <li>■ Usually the predominant number of through lanes between two points</li> </ul>
<b>Off-ramp influence area</b>	The geographic limits affecting the capacity of a freeway associated with traffic exiting a freeway. Same as <i>diverge area</i> .
<b>On-ramp influence area</b>	The geographic limits affecting the capacity of a freeway associated with traffic entering a freeway. Same as <i>merge area</i> .
<b>One-way</b>	A type of roadway in which vehicles are allowed to move in only one direction.
<b>Operational analysis</b>	A detailed analysis of a roadway's present or future LOS, as opposed to a generalized planning.
<b>Other urbanized area</b>	A Metropolitan Planning Organization urbanized area with less than 1 million in population.
<b>Oversaturated</b>	A traffic condition in which demand exceeds capacity.
<b>Passenger load factors</b>	Factors used to determine the adjusted bus frequency value by applying a factor commensurate to the level of passenger crowding.

<b>Passing lane</b>	A lane added to provide passing opportunities in one direction of travel on a two-lane highway. Two-way left-turn lanes are not considered passing lanes.
<b>Paved shoulder/bicycle lane</b>	In this Q/LOS Handbook, pavement at least 3 feet in width separated by a solid pavement marking from the outside vehicle through lane to the edge of the pavement.
<b>Peak direction</b>	The course of the higher flow of traffic.
<b>Peak hour</b>	In this Q/LOS Handbook, a one-hour time period with high volume.
<b>Peak hour factor</b>	The ratio of the hourly volume to the peak 15-minute flow rate for that hour; specifically, hourly volume/(4 x peak 15-minute volume).
<b>Peak period</b>	A multi-hour analysis period with high volume; peak periods rather than peak hours are typically used for the analysis of core freeways or roadways within a Multimodal Transportation District.
<b>Peak season</b>	The 13 consecutive weeks with the highest daily volumes for an area.
<b>Peak season weekday average daily traffic</b>	The average daily traffic for Monday through Friday during the peak season.
<b>Pedestrian</b>	An individual traveling on foot and other non-motorized modes such as skateboards, scooters and both motorized and non-motorized wheelchairs.
<b>Pedestrian accessibility</b>	In this Q/LOS Handbook, the ease in which a pedestrian can reach a bus stop.
<b>Pedestrian LOS Model</b>	The operational methodology from which this Q/LOS Handbook's pedestrian Q/LOS analyses are based.
<b>Pedestrian level of service score</b>	A numerical value calculated by the PLOS Model that corresponds to a PLOS.
<b>Pedestrian/sidewalk/roadway separation</b>	The lateral distance, in feet, from the outer edge of the pavement to where a pedestrian walks on a sidewalk.
<b>Percent time spent following</b>	The average percent of total travel time that vehicles must travel in platoons behind slower vehicles because of the inability to pass on a two-lane highway.
<b>Performance measure</b>	A qualitative or quantitative factor used to evaluate a particular aspect of travel quality.
<b>Person flow</b>	The capacity on uninterrupted and interrupted flow facilities, defined in terms of persons per hour.
<b>Phase</b>	The part of a traffic signal's cycle allocated to any combination of traffic movements receiving the right of way simultaneously during one or more intervals.
<b>Planning analysis hour factor</b>	The ratio of the traffic volume in the study hour to the annual average daily traffic.
<b>Planning horizon</b>	A time period, typically 20 years, applicable to the analysis of a project, roadway or service.
<b>Platoon</b>	A group of vehicles traveling together as a group, either voluntarily or

involuntarily because of signal control, geometrics, or other factors.

<b>Point</b>	A boundary between links. In this Q/LOS Handbook, usually a signalized intersection, but maybe other places where modal users enter, leave, or cross a facility, or roadway characteristics change.
<b>Posted speed</b>	The maximum speed at which vehicles are legally allowed to travel over a roadway segment.
<b>Pretimed control</b>	Traffic signal control in which the cycle length, phase plan, and phase times are preset and repeated continuously, according to a preset plan.
<b>Prevailing conditions</b>	Existing circumstances that primarily include roadway, traffic, and control conditions, but may also include weather, construction, incidents, lighting, and area type.
<b>Principal arterial</b>	A signalized roadway that primarily serves through traffic between centers of metropolitan areas and provides a high degree of mobility. In this Q/LOS Handbook, principal arterials have approximately one signal every half mile and a posted speed limit of 50 mph.
<b>Quality of service</b>	A traveler-based perception of how well a service or facility is operating.
<b>Quality/level of service</b>	A combination of the broad QOS and more detailed LOS concepts.
<b>Queue spillback</b>	When a link's queue of vehicles extends to upstream links.
<b>Ramp overlap segment</b>	The length for which the upstream on-ramp influence area and the downstream off-ramp influence area overlap.
<b>Restrictive median</b>	A raised or grassed area that restricts crossing movements.
<b>Roadway</b>	A general categorization of an open way for persons and vehicles to traverse; in this Q/LOS Handbook, it encompasses streets, arterials, freeways, highways, and other facilities.
<b>Roadway class</b>	The categories of two-lane highways; two-lane highways are primarily grouped by area type. Same as <i>class</i> .
<b>Roadway variables</b>	The parameters associated with roadways. Also known as <i>roadway characteristics</i> .
<b>Rolling terrain</b>	A combination of horizontal and vertical alignments causing heavy vehicles to reduce their running speeds substantially below that of passenger cars, but not to operate at crawl speeds for a significant amount of time.
<b>Route</b>	As used in the TCQSM, a designated, specified path to which a bus is assigned.
<b>Route segment</b>	As used in the TCQSM, a portion of a bus route ranging from two stops to the entire length of the route.
<b>Running speed</b>	The distance a vehicle travels divided by the travel time the vehicle is in motion.
<b>Rural area</b>	In the Generalized Service Volume Tables, areas that are not

	urbanized areas, transitioning areas, or urban areas.
<b>Rural developed areas</b>	The portions of rural areas that are along coastal roadways or in generally populated areas with a population of less than 5,000.
<b>Rural undeveloped areas</b>	Portions of rural areas with no or minimal population or development.
<b>Scheduled fixed route</b>	In this Q/LOS Handbook, bus service provided on a repetitive, fixed-schedule basis along a specific route, with buses stopping to pick up and deliver passengers to specific locations.
<b>Seasonal adjustment factor</b>	A factor used to adjust for the variation in traffic over the course of a year.
<b>Section</b>	A group of consecutive segments that have similar roadway characteristics, traffic characteristics and, as appropriate, control characteristics for a mode of travel. A characteristic describing laneage (e.g., three-lane section, five-lane section, seven-lane section).
<b>Segment</b>	A portion of a facility defined by two boundary points; usually the length of roadway from one signalized intersection to the next signalized intersection.
<b>Service measure</b>	A specific performance measure used to assign a LOS to a set of operating conditions for a transportation facility or service.
<b>Service volume table</b>	Maximum service volumes based on roadway, traffic and control variables and presented in tabular form.
<b>Seven-lane section</b>	A roadway with six through lanes, three in each direction separated by a two-way left-turn lane; in the Generalized Service Volume Tables, a seven-lane section is treated as a roadway with six lanes and a median.
<b>Shared lane</b>	A roadway lane shared by two or three traffic movements; in Florida, a shared lane usually serves through and right-turning traffic movements.
<b>Sidewalk</b>	A paved walkway for pedestrians at the side of a roadway.
<b>Sidewalk/roadway protective barrier</b>	Physical barriers separating pedestrians on sidewalks and vehicles.
<b>Sidewalk/roadway separation</b>	The lateral distance in feet from the outside edge of the pavement to the inside edge of the sidewalk.
<b>Signal</b>	In this Q/LOS Handbook, a traffic control device regulating the flow of traffic with green, yellow, and red indications. A traffic control device that routinely stops vehicles during the study period; excluded from this definition are flashing yellow lights, railroad crossings, draw bridges, yield signs, and other control devices.
<b>Signal density</b>	The number of signals intersections per mile.
<b>Signal type</b>	The kind of traffic signal (actuated, pretimed or coordinated-actuated) with respect to the way its cycle length, phase plan, and phase times are operated.

<b>Signalized intersection</b>	A place where two roadways cross and have a signal controlling traffic movements.
<b>Signalized intersection spacing</b>	The distance between signalized intersections.
<b>Simple average</b>	An average that gives equal weight to each component.
<b>Speed</b>	In this Q/LOS Handbook, the same as average travel speed, unless specifically noted.
<b>Speed adjustment factor</b>	An adjustment factor in HCS 7's freeways and multilane highways module, used to adjust the speed of a facility to account for the effects of adverse weather and construction work zones. The SAF also may be used to calibrate estimates of free-flow speed for local conditions or other effects that contribute to a reduction in free-flow speed.
<b>Standard K</b>	FDOT's standard peak hour to annual average daily traffic ratio (K), based on a roadway's characteristics (facility type) and location (area type). Values of less than 9 percent essentially represent a multi-hour peak period rather than a peak hour.
<b>State Highway System</b>	All roadways that FDOT operates and maintains; the State Highway System consists of the Florida Intrastate Highway System and other state roads.
<b>Stochastic</b>	A description of a type of model that incorporates variability and uncertainty into analysis.
<b>Strategic Intermodal System</b>	Florida's system of transportation facilities and services of statewide and interregional significance.
<b>Termini</b>	In this Q/LOS Handbook, the beginning and endpoints of a facility.
<b>Three-lane section</b>	A roadway with two through lanes separated by a two-way left-turn lane. In the Generalized Service Volume Tables, a three-lane section is treated as a roadway with two lanes and a median. An exclusive passing lane on a two-lane highway is not considered a three-lane section.
<b>Threshold</b>	The breakpoints between LOS differentiations.
<b>Threshold delay</b>	The additional travel time represented by the difference between the time associated with a roadway's generally accepted speed (LOS D threshold in urbanized areas and LOS C threshold in nonurbanized areas) and average travel speed. Same as LOS threshold delay.
<b>Through movement</b>	In this Q/LOS Handbook, the traffic stream with the greatest number of vehicles passing directly through a point. Typically, this is the straight-ahead movement, but occasionally it may be a turning movement.
<b>Traffic demand</b>	The number of vehicles with drivers who desire to traverse a particular highway during a specified time period.
<b>Traffic volume</b>	The number of vehicles passing a point on a highway during a specified time period.
<b>Transit</b>	In this Q/LOS Handbook, the same as <i>bus</i> .

<b>Transit Capacity and Quality of Service Manual (TCQSM)</b>	The document and operational methodology from which this Q/LOS Handbook's bus Q/LOS analyses are based.
<b>Transitioning area</b>	An area adjacent to an urbanized area that exhibits characteristics between rural and urbanized/urban, and will be urbanized in the next 20 years.
<b>Transportation planning boundaries</b>	Precisely defined lines that delineate geographic areas. These boundaries are used throughout transportation planning in Florida. Their mapping is described in <a href="#">Urban Boundaries and Functional Classification of Roadways FDOT's Procedure Topic No. 525-020-311</a> .
<b>Travel time</b>	The average time spent by vehicles traversing a roadway.
<b>Two-lane highway</b>	A roadway with one lane in each direction on which passing maneuvers must be made in the opposing lane and, although occasional interruptions to flow at signalized intersections may exist, is generally uninterrupted flow.
<b>Two-way</b>	Movement allowed in either direction.
<b>Two-way left-turn lane</b>	A lane that simultaneously serves left-turning vehicles traveling in opposite directions. Same as continuous left-turn lane.
<b>Two-way stop control</b>	The type of traffic control at an intersection where drivers on the minor street, or a driver turning left from the major street, wait for a gap in major-street traffic to complete a maneuver.
<b>Undesignated bicycle lane</b>	A lane, usually 4 feet in width, that does not contain a bicycle logo.
<b>Undivided</b>	As used in the Generalized Service Volume Tables, a roadway with no median.
<b>Uninterrupted flow</b>	A category of roadway not characterized by signals, stop signs, or other fixed causes of periodic delay or interruption to traffic stream.
<b>Uninterrupted flow highway</b>	A nonfreeway roadway that generally has uninterrupted flow, with average signalized intersection spacing of greater than 2.0 miles; a two-lane highway or a multilane highway.
<b>Urban area</b>	A place with a population between 5,000 and 50,000 and not in an urbanized area. The applicable boundary includes the census' urban area and the surrounding geographical area agreed on by the FDOT, the local government, and the FHWA. The boundaries are commonly called FHWA Urban Area Boundaries and include areas expected to develop medium density before the next decennial census.



<b>Urbanized area</b>	An area within a Metropolitan Planning Organization's (MPO) designated urbanized area boundary. The minimum population for an urbanized area is 50,000 people. Based on the census, any area the U.S. Bureau of Census designates as urbanized, together with any surrounding geographical area agreed on by the FDOT, the relevant MPO, and the FHWA, commonly called the FHWA Urbanized Area Boundary.
<b>Volume-to-capacity ratio</b>	The ratio of demand flow rate to capacity of a signalized intersection, segment or facility.
<b>Weaving distance</b>	A length of freeway over which traffic streams across paths through lane-changing maneuvers. Same as <i>weaving segment</i> .
<b>Weighted effective green ratio</b>	In this Q/LOS Handbook, the average of the critical intersection's through effective green ratio and the average of all the other signalized intersections' through effective green ratios along the arterial facility.

TABLE 1

Generalized **Annual Average Daily** Volumes for Florida's  
Urbanized Areas

January 2020

INTERRUPTED FLOW FACILITIES						UNINTERRUPTED FLOW FACILITIES					
STATE SIGNALIZED ARTERIALS						FREEWAYS					
Class I (40 mph or higher posted speed limit)						Core Urbanized					
Lanes	Median	B	C	D	E	Lanes	B	C	D	E	
2	Undivided	*	16,800	17,700	**	4	47,600	66,400	83,200	87,300	
4	Divided	*	37,900	39,800	**	6	70,100	97,800	123,600	131,200	
6	Divided	*	58,400	59,900	**	8	92,200	128,900	164,200	174,700	
8	Divided	*	78,800	80,100	**	10	115,300	158,900	203,600	218,600	
						12	136,500	192,400	246,200	272,900	
Class II (35 mph or slower posted speed limit)						Urbanized					
Lanes	Median	B	C	D	E	Lanes	B	C	D	E	
2	Undivided	*	7,300	14,800	15,600	4	45,900	62,700	75,600	85,400	
4	Divided	*	14,500	32,400	33,800	6	68,900	93,900	113,600	128,100	
6	Divided	*	23,300	50,000	50,900	8	91,900	125,200	151,300	170,900	
8	Divided	*	32,000	67,300	68,100	10	115,000	156,800	189,300	213,600	
Non-State Signalized Roadway Adjustments						Freeway Adjustments					
(Alter corresponding state volumes by the indicated percent.)						Auxiliary Lanes Ramp					
Non-State Signalized Roadways - 10%						Present in Both Directions Metering					
						+ 20,000 + 5%					
Median & Turn Lane Adjustments						UNINTERRUPTED FLOW HIGHWAYS					
Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors		Lanes	Median	B	C	D	E
2	Divided	Yes	No	+5%		2	Undivided	11,700	18,000	24,200	32,600
2	Undivided	No	No	-20%		4	Divided	36,300	52,600	66,200	75,300
Multi	Undivided	Yes	No	-5%		6	Divided	54,600	78,800	99,400	113,100
Multi	Undivided	No	No	-25%							
—	—	—	Yes	+ 5%							
One-Way Facility Adjustment						Uninterrupted Flow Highway Adjustments					
Multiply the corresponding two-directional volumes in this table by 0.6						Lanes	Median	Exclusive left lanes	Adjustment factors		
						2	Divided	Yes	+5%		
						Multi	Undivided	Yes	-5%		
						Multi	Undivided	No	-25%		
BICYCLE MODE <sup>2</sup>						<sup>1</sup> Values shown are presented as two-way annual average daily volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.					
(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)											
Paved Shoulder/Bicycle											
Lane Coverage	B	C	D	E		<sup>2</sup> Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.					
0-49%	*	2,900	7,600	19,700							
50-84%	2,100	6,700	19,700	>19,700							
85-100%	9,300	19,700	>19,700	**		<sup>3</sup> Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.					
PEDESTRIAN MODE <sup>2</sup>											
(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)											
Sidewalk Coverage	B	C	D	E		* Cannot be achieved using table input value defaults.					
0-49%	*	*	2,800	9,500							
50-84%	*	1,600	8,700	15,800							
85-100%	3,800	10,700	17,400	>19,700		** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.					
BUS MODE (Scheduled Fixed Route) <sup>3</sup>											
(Buses in peak hour in peak direction)						Source: Florida Department of Transportation Systems Implementation Office <a href="https://www.fdot.gov/planning/systems/">https://www.fdot.gov/planning/systems/</a>					
Sidewalk Coverage	B	C	D	E							
0-84%	> 5	≥ 4	≥ 3	≥ 2							
85-100%	> 4	≥ 3	≥ 2	≥ 1							

**TABLE 1**  
(continued)

Generalized **Annual Average Daily** Volumes for Florida's  
Urbanized Areas

January 2020

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities				Interrupted Flow Facilities					
					State Arterials			Class I		
	Freeways	Core Freeways	Highways		Class I		Class II		Bicycle	Pedestrian
ROADWAY CHARACTERISTICS										
Area type (urban, rural)	urban	urban								
Number of through lanes (both dir.)	4-10	4-12	2	4-6	2	4-8	2	4-8	4	4
Posted speed (mph)	70	65	50	50	45	50	30	30	45	45
Free flow speed (mph)	75	70	55	55	50	55	35	35	50	50
Auxiliary Lanes (n,y)	n	n								
Median (d, twlt, n, nr, r)				d	n	r	n	r	r	r
Terrain (l,r)	l	l	l	l	l	l	l	l	l	l
% no passing zone			80							
Exclusive left turn lane impact (n, y)			[n]	y	y	y	y	y	y	y
Exclusive right turn lanes (n, y)					n	n	n	n	n	n
Facility length (mi)	3	3	5	5	2	2	1.9	1.8	2	2
TRAFFIC CHARACTERISTICS										
Planning analysis hour factor (K)	0.090	0.085	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
Directional distribution factor (D)	0.55	0.55	0.55	0.55	0.550	0.560	0.565	0.560	0.565	0.565
Peak hour factor (PHF)	0.95	0.95	0.95	0.95	1.000	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)	2,400	2,400	1,700	2,200	1,950	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	4.0	4.0	2.0	2.0	1.0	1.0	1.0	1.0	2.5	2.0
Speed Adjustment Factor (SAF)	0.975	0.975		0.975						
Capacity Adjustment Factor (CAF)	0.968	0.968		0.968						
% left turns					12	12	12	12	12	12
% right turns					12	12	12	12	12	12
CONTROL CHARACTERISTICS										
Number of signals					4	4	10	10	4	6
Arrival type (1-6)					3	3	4	4	4	4
Signal type (a, c, p)					c	c	c	c	c	c
Cycle length (C)					120	150	120	120	120	120
Effective green ratio (g/C)					0.44	0.45	0.44	0.44	0.44	0.44
MULTIMODAL CHARACTERISTICS										
Paved shoulder/bicycle lane (n, y)									n, 50%, y	n
Outside lane width (n, t, w)									t	t
Pavement condition (d, t, u)									t	
On-street parking (n, y)										
Sidewalk (n, y)										n, 50%, y
Sidewalk/roadway separation(a, t, w)										t
Sidewalk protective barrier (n, y)										n
LEVEL OF SERVICE THRESHOLDS										
Level of Service	Freeways	Highways		Arterials			Bicycle	Ped	Bus	
	Density	Two-Lane	Multilane	Class I		Class II	Score	Score	Buses/hr.	
		%ffs	Density	ats						
B	≤ 17	> 83.3	≤ 17	> 31 mph		> 22 mph	≤ 2.75	≤ 2.75	≤ 6	
C	≤ 24	> 75.0	≤ 24	> 23 mph		> 17 mph	≤ 3.50	≤ 3.50	≤ 4	
D	≤ 31	> 66.7	≤ 31	> 18 mph		> 13 mph	≤ 4.25	≤ 4.25	< 3	
E	≤ 39	> 58.3	≤ 35	> 15 mph		> 10 mph	≤ 5.00	≤ 5.00	< 2	

% ffs = Percent free flow speed ats = Average travel speed

TABLE 2

**Generalized Annual Average Daily Volumes for Florida's  
Transitioning Areas and  
Areas Over 5,000 Not In Urbanized Areas<sup>1</sup>**

January 2020

INTERRUPTED FLOW FACILITIES						UNINTERRUPTED FLOW FACILITIES					
STATE SIGNALIZED ARTERIALS						FREEWAYS					
Class I (40 mph or higher posted speed limit)						Lanes	B	C	D	E	
Lanes	Median	B	C	D	E	4	45,100	59,000	70,300	72,600	
2	Undivided	*	14,400	16,200	**	6	65,300	86,600	104,100	108,900	
4	Divided	*	34,000	35,500	**	8	85,900	114,500	138,100	145,300	
6	Divided	*	52,100	53,500	**	10	101,600	135,600	161,900	181,800	
Class II (35 mph or slower posted speed limit)						Freeway Adjustments					
Lanes	Median	B	C	D	E	Auxiliary Lanes				Ramp	
2	Undivided	*	6,500	13,300	14,200	Present in Both Directions				Metering	
4	Divided	*	9,900	28,800	31,600	+ 20,000				+ 5%	
6	Divided	*	16,000	44,900	47,600						
Non-State Signalized Roadway Adjustments											
(Alter corresponding state volumes by the indicated percent.)											
Non-State Signalized Roadways - 10%											
Median & Turn Lane Adjustments											
Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors							
2	Divided	Yes	No	+5%							
2	Undivided	No	No	-20%							
Multi	Undivided	Yes	No	-5%							
Multi	Undivided	No	No	-25%							
—	—	—	Yes	+ 5%							
One-Way Facility Adjustment											
Multiply the corresponding two-directional volumes in this table by 0.6											
BICYCLE MODE <sup>2</sup>											
(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)											
Paved Shoulder/Bicycle Lane Coverage						B	C	D	E		
0-49%						*	2,600	6,100	19,500		
50-84%						1,900	5,500	18,400	>19,500		
85-100%						7,500	19,500	>19,500	**		
PEDESTRIAN MODE <sup>2</sup>											
(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)											
Sidewalk Coverage						B	C	D	E		
0-49%						*	*	2,800	9,400		
50-84%						*	1,600	8,600	15,600		
85-100%						3,800	10,500	17,100	>19,500		
BUS MODE (Scheduled Fixed Route) <sup>3</sup>											
(Buses in peak hour in peak direction)											
Sidewalk Coverage						B	C	D	E		
0-84%						> 5	≥ 4	≥ 3	≥ 2		
85-100%						> 4	≥ 3	≥ 2	≥ 1		

UNINTERRUPTED FLOW HIGHWAYS					
Lanes	Median	B	C	D	E
2	Undivided	11,300	17,300	23,400	31,600
4	Divided	34,600	49,900	63,000	71,700
6	Divided	51,700	74,800	94,600	107,400
Uninterrupted Flow Highway Adjustments					
Lanes	Median	Exclusive left lanes	Adjustment factors		
2	Divided	Yes	+5%		
Multi	Undivided	Yes	-5%		
Multi	Undivided	No	-25%		

<sup>1</sup>Values shown are presented as two-way annual average daily volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.

<sup>2</sup> Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.

<sup>3</sup> Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.

\* Cannot be achieved using table input value defaults.

\*\* Not applicable le for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.

Source:  
Florida Department of Transportation  
Systems Implementation Office  
<https://www.fdot.gov/planning/systems/>

<sup>1</sup>Values shown are presented as two-way annual average daily volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.

<sup>2</sup>Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.

<sup>3</sup>Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.

\* Cannot be achieved using table input value defaults.

\*\* Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.

Source:  
Florida Department of Transportation  
Systems Implementation Office  
<https://www.fdot.gov/planning/systems/>

**TABLE 2**  
(continued)  
Generalized **Annual Average Daily** Volumes for Florida's  
Transitioning Areas and  
Areas Over 5,000 Not In Urbanized Areas

January 2020

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities			Interrupted Flow Facilities					
				State Arterials				Class I	
	Freeways	Highways		Class I		Class II		Bicycle	Pedestrian
ROADWAY CHARACTERISTICS									
Area type (urban, rural)	urban								
Number of through lanes (both dir.)	4-10	2	4-6	2	4-6	2	4-6	4	4
Posted speed (mph)	70	50	50	45	50	30	30	45	45
Free flow speed (mph)	75	55	55	50	55	35	35	50	50
Auxiliary lanes (n,y)	n								
Median (d, n, nr, r)			d	n	y	n	y	r	r
Terrain (l,r)	l	l	l	l	l	l	l	l	l
% no passing zone		60							
Exclusive left turn lane impact (n, y)		[n]	y	y	y	y	y	y	y
Exclusive right turn lanes (n, y)				n	n	n	n	n	n
Facility length (mi)	6	5	5	1.8	2	2	2	2	2
TRAFFIC CHARACTERISTICS									
Planning analysis hour factor (K)	0.098	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
Directional distribution factor (D)	0.55	0.55	0.55	0.550	0.570	0.570	0.565	0.570	0.570
Peak hour factor (PHF)	0.92	0.92	0.92	1.000	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)	2,400	1,700	2,200	1,950	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	9.0	4.0	4.0	2.0	3.0	2.0	3.0	3.0	3.0
Speed Adjustment Factor (SAF)	0.975		0.975						
Capacity Adjustment Factor (CAF)	0.968		0.968						
% left turns				12	12	12	12	12	12
% right turns				12	12	12	12	12	12
CONTROL CHARACTERISTICS									
Number of signals				5	4	10	10	4	6
Arrival type (1-6)				4	3	4	4	4	4
Signal type (a, c, p)				c	c	c	c	c	c
Cycle length (C)				120	150	120	150	120	120
Effective green ratio (g/C)				0.44	0.45	0.44	0.45	0.44	0.44
MULTIMODAL CHARACTERISTICS									
Paved shoulder/bicycle lane (n, y)								n, 50%, y	n
Outside lane width (n, t, w)								t	t
Pavement condition (d, t, u)								t	
On-street parking (n, y)								n	n
Sidewalk (n, y)									n, 50%, y
Sidewalk/roadway separation (a, t, w)									t
Sidewalk protective barrier (n, y)									n
LEVEL OF SERVICE THRESHOLDS									
Level of Service	Freeways	Highways		Arterials		Bicycle	Ped	Bus	
	Density	Two-Lane	Multilane	Class I	Class II	Score	Score	Buses/hr.	
		%ffs	Density	ats	ats				
B	≤ 17	> 83.3	≤ 17	> 31 mph	> 22 mph	≤ 2.75	≤ 2.75	≤ 6	
C	≤ 24	> 75.0	≤ 24	> 23 mph	> 17 mph	≤ 3.50	≤ 3.50	≤ 4	
D	≤ 31	> 66.7	≤ 31	> 18 mph	> 13 mph	≤ 4.25	≤ 4.25	< 3	
E	≤ 39	> 58.3	≤ 35	> 15 mph	> 10 mph	≤ 5.00	≤ 5.00	< 2	

% ffs = Percent free flow speed ats = Average travel speed

TABLE 3

**Generalized Annual Average Daily Volumes for Florida's**  
**Rural Undeveloped Areas and**  
**Developed Areas Less Than 5,000 Population<sup>1</sup>**

January 2020

INTERRUPTED FLOW FACILITIES						UNINTERRUPTED FLOW FACILITIES					
<b>STATE SIGNALIZED ARTERIALS</b>						<b>FREEWAYS</b>					
Lanes	Median	B	C	D	E	Lanes	B	C	D	E	
2	Undivided	*	12,900	14,200	**	4	34,800	48,000	56,700	63,200	
4	Divided	*	29,300	30,400	**	6	48,900	69,000	82,600	94,800	
6	Divided	*	45,200	45,800	**	8	62,900	90,400	108,400	126,400	
<b>Non-State Signalized Roadway Adjustments</b>						<b>Freeway Adjustments</b>					
(Alter corresponding state volumes by the indicated percent.)						Auxiliary Lanes					
Non-State Signalized Roadways						Present in Both Directions					
						+ 20,000					
<b>Median &amp; Turn Lane Adjustments</b>						<b>UNINTERRUPTED FLOW HIGHWAYS</b>					
Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors		<b>Rural Undeveloped</b>					
2	Divided	Yes	No	+5%		Lanes	Median	B	C	D	E
2	Undivided	No	No	-20%		2	Undivided	4,600	8,600	14,000	28,500
Multi	Undivided	Yes	No	-5%		4	Divided	31,200	44,900	55,700	62,700
Multi	Undivided	No	No	-25%		6	Divided	46,800	67,600	83,500	94,200
—	—	—	Yes	+ 5%		<b>Developed Areas</b>					
<b>One-Way Facility Adjustment</b>						Lanes	Median	B	C	D	E
Multiply the corresponding two-directional volumes in this table by 0.6						2	Undivided	10,300	15,700	21,300	28,500
						4	Divided	29,300	42,300	54,000	61,600
						6	Divided	44,000	63,600	81,200	92,400
<b>BICYCLE MODE<sup>2</sup></b>						<b>Passing Lane Adjustments</b>					
(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)						Alter LOS B-D volumes in proportion to the passing lane length to the highway segment length					
<b>Rural Undeveloped</b>						<b>Uninterrupted Flow Highway Adjustments</b>					
Paved Shoulder/Bicycle Lane Coverage	B	C	D	E		Lanes	Median	Exclusive left lanes	Adjustment factors		
0-49%	*	1,300	2,000	3,200		2	Divided	Yes	+5%		
50-84%	1,000	2,100	3,200	10,600		Multi	Undivided	Yes	-5%		
85-100%	2,600	3,900	18,500	>18,500		Multi	Undivided	No	-25%		
<b>Developed Areas</b>						<sup>1</sup> Values shown are presented as two-way annual average daily volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.					
Paved Shoulder/Bicycle Lane Coverage	B	C	D	E		<sup>2</sup> Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.					
0-49%	*	2,300	4,900	15,600		* Cannot be achieved using table input value defaults.					
50-84%	1,700	4,500	13,300	18,500		** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.					
85-100%	5,900	18,500	>18,500	**		<b>Source:</b> Florida Department of Transportation Systems Implementation Office <a href="https://www.fdot.gov/planning/systems/">https://www.fdot.gov/planning/systems/</a>					
<b>PEDESTRIAN MODE<sup>2</sup></b>											
(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)											
Sidewalk Coverage	B	C	D	E							
0-49%	*	*	2,700	9,200							
50-84%	*	1,500	8,400	14,900							
85-100%	3,600	10,200	16,700	>19,200							

TABLE 3  
(continued)

Generalized **Annual Average Daily** Volumes for Florida's  
Rural Undeveloped Areas and  
Developed Areas Less Than 5,000 Population

January 2020

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities					Interrupted Flow Facilities				
	Freeways	Highways				Arterials	Bicycle	Pedestrian		
		Undeveloped	Developed							
ROADWAY CHARACTERISTICS										
Area type (urban, rural)	rural									
Number of through lanes (both dir.)	4-8	2	4-6	2	4-6	2	4-6	4	4	2
Posted speed (mph)	70	55	55	50	50	45	45	55	45	45
Free flow speed (mph)	75	60	60	55	55	50	50	60	50	50
Auxiliary lanes (n,y)	n									
Median (d, n, nr, r)			d		d	n	r	r	r	n
Terrain (l,r)	1	1	1	1	1	1	1	1	1	1
% no passing zone		20		60						
Exclusive left turn lanes (n, y)		[n]	y	[n]	y	y	y	y	y	y
Exclusive right turn lanes (n, y)						n	n	n	n	n
Facility length (mi)	18	10	10	5	5	1.9	2.2	4	2	2
TRAFFIC CHARACTERISTICS										
Planning analysis hour factor (K)	0.105	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095
Directional distribution factor (D)	0.55	0.55	0.55	0.55	0.55	0.550	0.550	0.570	0.570	0.550
Peak hour factor (PHF)	0.88	0.88	0.88	0.88	0.88	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)	2,400	1,700	2,200	1,700	2,200	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	12.0	5.0	12.0	5.0	8.0	3.0	3.0	6.0	3.5	3.0
Speed Adjustment Factor (SAF)	0.975		0.975		0.975					
Capacity Adjustment Factor (CAF)	0.968		0.968		0.968					
% left turns						12	12		12	12
% right turns						12	12		12	12
CONTROL CHARACTERISTICS										
Number of signals						5	6	2	4	4
Arrival type (1-6)						3	3	3	3	3
Signal type (a, c, p)						c	c	a	a	a
Cycle length (C)						90	90	60	90	90
Effective green ratio (g/C)						0.44	0.44	0.37	0.44	0.44
MULTIMODAL CHARACTERISTICS										
Paved shoulder/bicycle lane (n, y)								n,50%,y	n,50%,y	n
Outside lane width (n, t, w)								t	t	t
Pavement condition (d, t, u)								t	t	
Sidewalk (n, y)										n,50%,y
Sidewalk/roadway separation(a, t,w)										t
Sidewalk protective barrier (n, y)										n
LEVEL OF SERVICE THRESHOLDS										
Level of Service	Freeways	Highways					Arterials	Bicycle	Pedestrian	
		Two-Lane ru		Two-Lane rd		Multilane ru				Multilane rd
	Density	%tsf	ats	%ffs	Density	Density				
B	≤ 14	≤ 50	≤ 55	> 83.3	≤ 14	≤ 14				
C	≤ 22	≤ 65	≤ 50	> 75.0	≤ 22	≤ 22				
D	≤ 29	≤ 80	≤ 45	> 66.7	≤ 29	≤ 29				
E	≤ 36	> 80	≤ 40	> 58.3	≤ 34	≤ 34				
Level of Service	Arterials			Bicycle		Pedestrian				
	Major City/Co.(ats)			Score		Score				
B	> 31 mph			≤ 2.75		≤ 2.75				
C	> 23 mph			≤ 3.50		≤ 3.50				
D	> 18 mph			≤ 4.25		≤ 4.25				
E	> 15 mph			< 5.00		< 5.00				

%tsf = Percent time spent following %ffs = Percent of free flow speed ats = Average travel speed ru = Rural undeveloped rd = Rural developed



TABLE 4

Generalized **Peak Hour Two-Way** Volumes for Florida's  
Urbanized Areas<sup>1</sup>

January 2020

INTERRUPTED FLOW FACILITIES						UNINTERRUPTED FLOW FACILITIES					
<b>STATE SIGNALIZED ARTERIALS</b>						<b>FREEWAYS</b>					
<b>Class I (40 mph or higher posted speed limit)</b>						<b>Core Urbanized</b>					
Lanes	Median	B	C	D	E	Lanes	B	C	D	E	
2	Undivided	*	1,510	1,600	**	4	4,050	5,640	6,800	7,420	
4	Divided	*	3,420	3,580	**	6	5,960	8,310	10,220	11,150	
6	Divided	*	5,250	5,390	**	8	7,840	10,960	13,620	14,850	
8	Divided	*	7,090	7,210	**	10	9,800	13,510	17,040	18,580	
						12	11,600	16,350	20,930	23,200	
<b>Class II (35 mph or slower posted speed limit)</b>						<b>Urbanized</b>					
Lanes	Median	B	C	D	E	Lanes	B	C	D	E	
2	Undivided	*	660	1,330	1,410	4	4,130	5,640	7,070	7,690	
4	Divided	*	1,310	2,920	3,040	6	6,200	8,450	10,510	11,530	
6	Divided	*	2,090	4,500	4,590	8	8,270	11,270	13,960	15,380	
8	Divided	*	2,880	6,060	6,130	10	10,350	14,110	17,310	19,220	
<b>Non-State Signalized Roadway Adjustments</b>						<b>Freeway Adjustments</b>					
(Alter corresponding state volumes by the indicated percent.)						Auxiliary Lanes					
Non-State Signalized Roadways - 10%						Present in Both Directions + 1,800					
<b>Median &amp; Turn Lane Adjustments</b>						Ramp Metering + 5%					
Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors		<b>UNINTERRUPTED FLOW HIGHWAYS</b>					
2	Divided	Yes	No	+5%		Lanes	Median	B	C	D	E
2	Undivided	No	No	-20%		2	Undivided	1,050	1,620	2,180	2,930
Multi	Undivided	Yes	No	-5%		4	Divided	3,270	4,730	5,960	6,780
Multi	Undivided	No	No	-25%		6	Divided	4,910	7,090	8,950	10,180
—	—	—	Yes	+ 5%		<b>Uninterrupted Flow Highway Adjustments</b>					
<b>One-Way Facility Adjustment</b>						Lanes	Median	Exclusive left lanes	Adjustment factors		
Multiply the corresponding two-directional volumes in this table by 0.6						2	Divided	Yes	+5%		
						Multi	Undivided	Yes	-5%		
						Multi	Undivided	No	-25%		
<b>BICYCLE MODE<sup>2</sup></b>						<sup>1</sup> Values shown are presented as peak hour directional volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.					
(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)						<sup>2</sup> Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.					
<b>Paved Shoulder/Bicycle</b>						<sup>3</sup> Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.					
Lane Coverage	B	C	D	E		* Cannot be achieved using table input value defaults.					
0-49%	*	260	680	1,770		** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.					
50-84%	190	600	1,770	>1,770		<b>Source:</b>					
85-100%	830	1,700	>1,770	**		Florida Department of Transportation					
<b>PEDESTRIAN MODE<sup>2</sup></b>						Systems Implementation Office					
(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)						<a href="https://www.fdot.gov/planning/systems/">https://www.fdot.gov/planning/systems/</a>					
Sidewalk Coverage	B	C	D	E							
0-49%	*	*	250	850							
50-84%	*	150	780	1,420							
85-100%	340	960	1,560	>1,770							
<b>BUS MODE (Scheduled Fixed Route)<sup>3</sup></b>											
(Buses in peak hour in peak direction)											
Sidewalk Coverage	B	C	D	E							
0-84%	> 5	≥ 4	≥ 3	≥ 2							
85-100%	> 4	≥ 3	≥ 2	≥ 1							

**TABLE 4**  
(continued)

Generalized **Peak Hour Two-Way** Volumes for Florida's  
Urbanized Areas

January 2020

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities				Interrupted Flow Facilities					
					State Arterials			Class I		
	Freeways	Core Freeways	Highways		Class I		Class II		Bicycle	Pedestrian
ROADWAY CHARACTERISTICS										
Area type (urban, rural)	urban	urban								
Number of through lanes (both dir.)	4-10	4-12	2	4-6	2	4-8	2	4-8	4	4
Posted speed (mph)	70	65	50	50	45	50	30	30	45	45
Free flow speed (mph)	75	70	55	55	50	55	35	35	50	50
Auxiliary Lanes (n,y)	n	n								
Median (d, twlt, n, nr, r)				d	n	r	n	r	r	r
Terrain (l,r)	l	l	l	l	l	l	l	l	l	l
% no passing zone			80							
Exclusive left turn lane impact (n, y)			[n]	y	y	y	y	y	y	y
Exclusive right turn lanes (n, y)					n	n	n	n	n	n
Facility length (mi)	3	3	5	5	2	2	1.9	1.8	2	2
TRAFFIC CHARACTERISTICS										
Planning analysis hour factor (K)	0.090	0.085	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
Directional distribution factor (D)	0.55	0.55	0.55	0.55	0.550	0.560	0.565	0.560	0.565	0.565
Peak hour factor (PHF)	0.95	0.95	0.95	0.95	1.000	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)	2,400	2,400	1,700	2,200	1,950	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	4.0	4.0	2.0	2.0	1.0	1.0	1.0	1.0	2.5	2.0
Speed Adjustment Factor (SAF)	0.975	0.975		0.975						
Capacity Adjustment Factor (CAF)	0.968	0.968		0.968						
% left turns					12	12	12	12	12	12
% right turns					12	12	12	12	12	12
CONTROL CHARACTERISTICS										
Number of signals					4	4	10	10	4	6
Arrival type (1-6)					3	3	4	4	4	4
Signal type (a, c, p)					c	c	c	c	c	c
Cycle length (C)					120	150	120	120	120	120
Effective green ratio (g/C)					0.44	0.45	0.44	0.44	0.44	0.44
MULTIMODAL CHARACTERISTICS										
Paved shoulder/bicycle lane (n, y)									n, 50%, y	n
Outside lane width (n, t, w)									t	t
Pavement condition (d, t, u)									t	
On-street parking (n, y)										
Sidewalk (n, y)										n, 50%, y
Sidewalk/roadway separation(a, t, w)										t
Sidewalk protective barrier (n, y)										n
LEVEL OF SERVICE THRESHOLDS										
Level of Service	Freeways	Highways		Arterials			Bicycle	Ped	Bus	
	Density	Two-Lane	Multilane	Class I ats	Class II ats		Score	Score	Buses/hr.	
		%ffs	Density							
B	≤ 17	> 83.3	≤ 17	> 31 mph	> 22 mph		≤ 2.75	≤ 2.75	≤ 6	
C	≤ 24	> 75.0	≤ 24	> 23 mph	> 17 mph		≤ 3.50	≤ 3.50	≤ 4	
D	≤ 31	> 66.7	≤ 31	> 18 mph	> 13 mph		≤ 4.25	≤ 4.25	< 3	
E	≤ 39	> 58.3	≤ 35	> 15 mph	> 10 mph		≤ 5.00	≤ 5.00	< 2	

% ffs = Percent free flow speed ats = Average travel speed

TABLE 5

**Generalized Peak Hour Two-Way Volumes for Florida's  
Transitioning Areas and  
Areas Over 5,000 Not In Urbanized Areas<sup>1</sup>**

January 2020

INTERRUPTED FLOW FACILITIES						UNINTERRUPTED FLOW FACILITIES					
STATE SIGNALIZED ARTERIALS						FREEWAYS					
Class I (40 mph or higher posted speed limit)						Lanes	B	C	D	E	
Lanes	Median	B	C	D	E	4	4,420	5,780	6,890	7,110	
2	Undivided	*	1,300	1,460	**	6	6,400	8,490	10,200	10,670	
4	Divided	*	3,060	3,200	**	8	8,420	11,220	13,530	14,240	
6	Divided	*	4,690	4,820	**	10	9,960	13,290	15,870	17,820	
Class II (35 mph or slower posted speed limit)						Freeway Adjustments					
Lanes	Median	B	C	D	E	Auxiliary Lanes				Ramp	
2	Undivided	*	580	1,200	1,280	Present in Both Directions				Metering	
4	Divided	*	890	2,590	2,850	+ 1,800				+ 5%	
6	Divided	*	1,440	4,040	4,280						
Non-State Signalized Roadway Adjustments											
(Alter corresponding state volumes by the indicated percent.)											
Non-State Signalized Roadways - 10%											
Median & Turn Lane Adjustments											
Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors							
2	Divided	Yes	No	+5%							
2	Undivided	No	No	-20%							
Multi	Undivided	Yes	No	-5%							
Multi	Undivided	No	No	-25%							
—	—	—	Yes	+ 5%							
One-Way Facility Adjustment											
Multiply the corresponding two-directional volumes in this table by 0.6											

UNINTERRUPTED FLOW HIGHWAYS					
Lanes	Median	B	C	D	E
2	Undivided	1,020	1,560	2,110	2,840
4	Divided	3,110	4,490	5,670	6,450
6	Divided	4,650	6,730	8,510	9,670
Uninterrupted Flow Highway Adjustments					
Lanes	Median	Exclusive left lanes		Adjustment factors	
2	Divided	Yes		+5%	
Multi	Undivided	Yes		-5%	
Multi	Undivided	No		-25%	

**BICYCLE MODE<sup>2</sup>**

(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Paved Shoulder/Bicycle Lane Coverage	B	C	D	E
0-49%	*	140	550	1,760
50-84%	170	500	1,650	>1,760
85-100%	670	1,760	>1,760	**

**PEDESTRIAN MODE<sup>2</sup>**

(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Sidewalk Coverage	B	C	D	E
0-49%	*	*	250	850
50-84%	*	150	780	1,410
85-100%	340	950	1,540	>1,760

**BUS MODE (Scheduled Fixed Route)<sup>3</sup>**

(Buses in peak hour in peak direction)

Sidewalk Coverage	B	C	D	E
0-84%	> 5	≥ 4	≥ 3	≥ 2
85-100%	> 4	> 3	> 2	> 1

<sup>1</sup>Values shown are presented as peak hour directional volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.

<sup>2</sup>Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.

<sup>3</sup>Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.

\* Cannot be achieved using table input value defaults.

\*\* Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.

Source:  
Florida Department of Transportation  
Systems Implementation Office  
<https://www.fdot.gov/planning/systems/>

<sup>1</sup>Values shown are presented as peak hour directional volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.

<sup>2</sup>Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.

<sup>3</sup>Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.

\* Cannot be achieved using table input value defaults.

\*\* Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.

Source:  
Florida Department of Transportation  
Systems Implementation Office  
<https://www.fdot.gov/planning/systems/>

**TABLE 5** Generalized **Peak Hour Two-Way** Volumes for Florida's  
(continued) Transitioning Areas and  
Areas Over 5,000 Not In Urbanized Areas

January 2020

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities			Interrupted Flow Facilities					
				State Arterials				Class I	
	Freeways	Highways		Class I		Class II		Bicycle	Pedestrian
ROADWAY CHARACTERISTICS									
Area type (urban, rural)	urban								
Number of through lanes (both dir.)	4-10	2	4-6	2	4-6	2	4-6	4	4
Posted speed (mph)	70	50	50	45	50	30	30	45	45
Free flow speed (mph)	75	55	55	50	55	35	35	50	50
Auxiliary lanes (n,y)	n								
Median (d, n, nr, r)			d	n	y	n	y	r	r
Terrain (l,r)	l	l	l	l	l	l	l	l	l
% no passing zone		60							
Exclusive left turn lane impact (n, y)		[n]	y	y	y	y	y	y	y
Exclusive right turn lanes (n, y)				n	n	n	n	n	n
Facility length (mi)	6	5	5	1.8	2	2	2	2	2
TRAFFIC CHARACTERISTICS									
Planning analysis hour factor (K)	0.098	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
Directional distribution factor (D)	0.55	0.55	0.55	0.550	0.570	0.570	0.565	0.570	0.570
Peak hour factor (PHF)	0.92	0.92	0.92	1.000	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)	2,400	1,700	2,200	1,950	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	9.0	4.0	4.0	2.0	3.0	2.0	3.0	3.0	3.0
Speed Adjustment Factor (SAF)	0.975		0.975						
Capacity Adjustment Factor (CAF)	0.968		0.968						
% left turns				12	12	12	12	12	12
% right turns				12	12	12	12	12	12
CONTROL CHARACTERISTICS									
Number of signals				5	4	10	10	4	6
Arrival type (1-6)				4	3	4	4	4	4
Signal type (a, c, p)				c	c	c	c	c	c
Cycle length (C)				120	150	120	150	120	120
Effective green ratio (g/C)				0.44	0.45	0.44	0.45	0.44	0.44
MULTIMODAL CHARACTERISTICS									
Paved shoulder/bicycle lane (n, y)								n, 50%, y	n
Outside lane width (n, t, w)								t	t
Pavement condition (d, t, u)								t	
On-street parking (n, y)								n	n
Sidewalk (n, y)									n, 50%, y
Sidewalk/roadway separation (a, t, w)									t
Sidewalk protective barrier (n, y)									n
LEVEL OF SERVICE THRESHOLDS									
Level of Service	Freeways	Highways		Arterials		Bicycle	Ped	Bus	
	Density	Two-Lane	Multilane	Class I	Class II	Score	Score	Buses/hr.	
		%ffs	Density	ats	ats				
B	≤ 17	> 83.3	≤ 17	> 31 mph	> 22 mph	≤ 2.75	≤ 2.75	≤ 6	
C	≤ 24	> 75.0	≤ 24	> 23 mph	> 17 mph	≤ 3.50	≤ 3.50	≤ 4	
D	≤ 31	> 66.7	≤ 31	> 18 mph	> 13 mph	≤ 4.25	≤ 4.25	< 3	
E	≤ 39	> 58.3	≤ 35	> 15 mph	> 10 mph	≤ 5.00	≤ 5.00	< 2	

% ffs = Percent free flow speed ats = Average travel speed

TABLE 6

**Generalized Peak Hour Two-Way Volumes for Florida's**  
**Rural Undeveloped Areas and**  
**Developed Areas Less Than 5,000 Population<sup>1</sup>**

January 2020

INTERRUPTED FLOW FACILITIES						UNINTERRUPTED FLOW FACILITIES					
<b>STATE SIGNALIZED ARTERIALS</b>						<b>FREEWAYS</b>					
Lanes	Median	B	C	D	E	Lanes	B	C	D	E	
2	Undivided	*	1,220	1,350	**	4	3,650	5,040	5,950	6,640	
4	Divided	*	2,790	2,890	**	6	5,130	7,250	8,670	9,950	
6	Divided	*	4,300	4,350	**	8	6,600	9,490	11,380	13,270	
<b>Non-State Signalized Roadway Adjustments</b>						<b>Freeway Adjustments</b>					
(Alter corresponding state volumes by the indicated percent.)						Auxiliary Lanes					
Non-State Signalized Roadways						Present in Both Directions					
						+ 1,800					
<b>Median &amp; Turn Lane Adjustments</b>						<b>UNINTERRUPTED FLOW HIGHWAYS</b>					
Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors		<b>Rural Undeveloped</b>					
2	Divided	Yes	No	+5%		Lanes	Median	B	C	D	E
2	Undivided	No	No	-20%		2	Undivided	440	820	1,330	2,710
Multi	Undivided	Yes	No	-5%		4	Divided	2,960	4,270	5,290	5,960
Multi	Undivided	No	No	-25%		6	Divided	4,450	6,420	7,930	8,950
—	—	—	Yes	+ 5%		<b>Developed Areas</b>					
<b>One-Way Facility Adjustment</b>						Lanes	Median	B	C	D	E
Multiply the corresponding two-directional volumes in this table by 0.6						2	Undivided	980	1,490	2,020	2,710
						4	Divided	2,780	4,020	5,130	5,850
						6	Divided	4,180	6,040	7,710	8,780
<b>BICYCLE MODE<sup>2</sup></b>						<b>Passing Lane Adjustments</b>					
(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)						Alter LOS B-D volumes in proportion to the passing lane length to the highway segment length					
<b>Rural Undeveloped</b>						<b>Uninterrupted Flow Highway Adjustments</b>					
Paved Shoulder/Bicycle Lane Coverage	B	C	D	E		Lanes	Median	Exclusive left lanes	Adjustment factors		
0-49%	*	120	190	300		2	Divided	Yes	+5%		
50-84%	100	200	310	1,010		Multi	Undivided	Yes	-5%		
85-100%	250	370	1,760	>1,760		Multi	Undivided	No	-25%		
<b>Developed Areas</b>						<sup>1</sup> Values shown are presented as peak hour directional volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.					
Paved Shoulder/Bicycle Lane Coverage	B	C	D	E		<sup>2</sup> Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.					
0-49%	*	220	460	1,480		* Cannot be achieved using table input value defaults.					
50-84%	170	430	1,270	>1,760		** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.					
85-100%	560	1,760	>1,760	**		Source: Florida Department of Transportation Systems Implementation Office <a href="https://www.fdot.gov/planning/systems/">https://www.fdot.gov/planning/systems/</a>					
<b>PEDESTRIAN MODE<sup>2</sup></b>											
(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)											
Sidewalk Coverage	B	C	D	E							
0-49%	*	*	220	840							
50-84%	*	120	780	1,390							
85-100%	320	940	1,560	>1,820							

**TABLE 6**  
(continued)

**Generalized Peak Hour Two-Way Volumes for Florida's**  
**Rural Undeveloped Areas and**  
**Developed Areas Less Than 5,000 Population**

January 2020

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities					Interrupted Flow Facilities				
	Freeways	Highways				Arterials	Bicycle	Pedestrian		
		Undeveloped		Developed						
ROADWAY CHARACTERISTICS										
Area type (urban, rural)	rural									
Number of through lanes (both dir.)	4-8	2	4-6	2	4-6	2	4-6	4	4	2
Posted speed (mph)	70	55	55	50	50	45	45	55	45	45
Free flow speed (mph)	75	60	60	55	55	50	50	60	50	50
Auxiliary lanes (n,y)	n									
Median (d, n, nr, r)			d		d	n	r	r	r	n
Terrain (l,r)	l	l	l	l	l	l	l	l	l	l
% no passing zone		20		60						
Exclusive left turn lanes (n, y)		[n]	y	[n]	y	y	y	y	y	y
Exclusive right turn lanes (n, y)						n	n	n	n	n
Facility length (mi)	18	10	10	5	5	1.9	2.2	4	2	2
TRAFFIC CHARACTERISTICS										
Planning analysis hour factor (K)	0.105	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095
Directional distribution factor (D)	0.55	0.55	0.55	0.55	0.55	0.550	0.550	0.570	0.570	0.550
Peak hour factor (PHF)	0.88	0.88	0.88	0.88	0.88	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)	2,400	1,700	2,200	1,700	2,200	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	12.0	5.0	12.0	5.0	8.0	3.0	3.0	6.0	3.5	3.0
Speed Adjustment Factor (SAF)	0.975		0.975		0.975					
Capacity Adjustment Factor (CAF)	0.968		0.968		0.968					
% left turns						12	12		12	12
% right turns						12	12		12	12
CONTROL CHARACTERISTICS										
Number of signals						5	6	2	4	4
Arrival type (1-6)						3	3	3	3	3
Signal type (a, c, p)						c	c	a	a	a
Cycle length (C)						90	90	60	90	90
Effective green ratio (g/C)						0.44	0.44	0.37	0.44	0.44
MULTIMODAL CHARACTERISTICS										
Paved shoulder/bicycle lane (n, y)								n,50%,y	n,50%,y	n
Outside lane width (n, t, w)								t	t	t
Pavement condition (d, t, u)								t	t	
Sidewalk (n, y)										n,50%,y
Sidewalk/roadway separation(a, t,w)										t
Sidewalk protective barrier (n, y)										n
LEVEL OF SERVICE THRESHOLDS										
Level of Service	Freeways	Highways					Arterials	Bicycle	Pedestrian	
		Two-Lane ru		Two-Lane rd		Multilane ru				Multilane rd
	Density	%tsf	ats	%ffs	Density	Density				
B	≤ 14	≤ 50	≤ 55	> 83.3	≤ 14	≤ 14				
C	≤ 22	≤ 65	≤ 50	> 75.0	≤ 22	≤ 22				
D	≤ 29	≤ 80	≤ 45	> 66.7	≤ 29	≤ 29				
E	≤ 36	> 80	≤ 40	> 58.3	≤ 34	≤ 34				
Level of Service	Arterials		Bicycle		Pedestrian					
	Major City/Co.(ats)		Score		Score					
B	> 31 mph		≤ 2.75		≤ 2.75					
C	> 23 mph		≤ 3.50		≤ 3.50					
D	> 18 mph		≤ 4.25		≤ 4.25					
E	> 15 mph		≤ 5.00		≤ 5.00					

%tsf = Percent time spent following %ffs = Percent of free flow speed ats = Average travel speed ru = Rural undeveloped rd = Rural developed

TABLE 7

Generalized **Peak Hour Directional** Volumes for Florida's  
Urbanized Areas

January 2020

INTERRUPTED FLOW FACILITIES						UNINTERRUPTED FLOW FACILITIES					
STATE SIGNALIZED ARTERIALS						FREEWAYS					
Class I (40 mph or higher posted speed limit)						Core Urbanized					
Lanes	Median	B	C	D	E	Lanes	B	C	D	E	
1	Undivided	*	830	880	**	2	2,230	3,100	3,740	4,080	
2	Divided	*	1,910	2,000	**	3	3,280	4,570	5,620	6,130	
3	Divided	*	2,940	3,020	**	4	4,310	6,030	7,490	8,170	
4	Divided	*	3,970	4,040	**	5	5,390	7,430	9,370	10,220	
						6	6,380	8,990	11,510	12,760	
Class II (35 mph or slower posted speed limit)						Urbanized					
Lanes	Median	B	C	D	E	Lanes	B	C	D	E	
1	Undivided	*	370	750	800	2	2,270	3,100	3,890	4,230	
2	Divided	*	730	1,630	1,700	3	3,410	4,650	5,780	6,340	
3	Divided	*	1,170	2,520	2,560	4	4,550	6,200	7,680	8,460	
4	Divided	*	1,610	3,390	3,420	5	5,690	7,760	9,520	10,570	
Non-State Signalized Roadway Adjustments						Freeway Adjustments					
(Alter corresponding state volumes by the indicated percent.)						Auxiliary Lane Ramp Metering					
Non-State Signalized Roadways - 10%						+ 1,000 + 5%					
Median & Turn Lane Adjustments						UNINTERRUPTED FLOW HIGHWAYS					
Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors		Lanes	Median	B	C	D	E
1	Divided	Yes	No	+5%		1	Undivided	580	890	1,200	1,610
1	Undivided	No	No	-20%		2	Divided	1,800	2,600	3,280	3,730
Multi	Undivided	Yes	No	-5%		3	Divided	2,700	3,900	4,920	5,600
Multi	Undivided	No	No	-25%							
—	—	—	Yes	+ 5%							
One-Way Facility Adjustment						Uninterrupted Flow Highway Adjustments					
Multiply the corresponding directional volumes in this table by 1.2						Lanes	Median	Exclusive left lanes		Adjustment factors	
						1	Divided	Yes		+5%	
						Multi	Undivided	Yes		-5%	
						Multi	Undivided	No		-25%	
BICYCLE MODE <sup>2</sup>						<sup>1</sup> Values shown are presented as peak hour directional volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.					
(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)											
Paved Shoulder/Bicycle											
Lane Coverage	B	C	D	E							
0-49%	*	150	390	1,000							
50-84%	110	340	1,000	>1,000							
85-100%	470	1,000	>1,000	**							
PEDESTRIAN MODE <sup>2</sup>						<sup>2</sup> Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.					
(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)											
Sidewalk Coverage											
0-49%	*	*	140	480							
50-84%	*	80	440	800							
85-100%	200	540	880	>1,000							
BUS MODE (Scheduled Fixed Route) <sup>3</sup>						<sup>3</sup> Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.					
(Buses in peak hour in peak direction)											
Sidewalk Coverage											
0-84%	> 5	≥ 4	≥ 3	≥ 2							
85-100%	> 4	≥ 3	≥ 2	≥ 1							
						<sup>4</sup> Cannot be achieved using table input value defaults.					
						<b>** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.</b>					
						<b>Source:</b> Florida Department of Transportation Systems Implementation Office <a href="https://www.fdot.gov/planning/systems/">https://www.fdot.gov/planning/systems/</a>					



**TABLE 7**  
(continued)

**Generalized Peak Hour Directional Volumes for Florida's  
Urbanized Areas**

January 2020

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities				Interrupted Flow Facilities					
					State Arterials			Class I		
	Freeways	Core Freeways	Highways		Class I		Class II		Bicycle	Pedestrian
ROADWAY CHARACTERISTICS										
Area type (urban, rural)	urban	urban								
Number of through lanes (both dir.)	4-10	4-12	2	4-6	2	4-8	2	4-8	4	4
Posted speed (mph)	70	65	50	50	45	50	30	30	45	45
Free flow speed (mph)	75	70	55	55	50	55	35	35	50	50
Auxiliary Lanes (n,y)	n	n								
Median (d, twlt, n, nr, r)				d	n	r	n	r	r	r
Terrain (l,r)	1	1	1	1	1	1	1	1	1	1
% no passing zone			80							
Exclusive left turn lane impact (n, y)			[n]	y	y	y	y	y	y	y
Exclusive right turn lanes (n, y)					n	n	n	n	n	n
Facility length (mi)	3	3	5	5	2	2	1.9	1.8	2	2
TRAFFIC CHARACTERISTICS										
Planning analysis hour factor (K)	0.090	0.085	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
Directional distribution factor (D)	0.55	0.55	0.55	0.55	0.550	0.560	0.565	0.560	0.565	0.565
Peak hour factor (PHF)	0.95	0.95	0.95	0.95	1.000	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)	2,400	2,400	1,700	2,200	1,950	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	4.0	4.0	2.0	2.0	1.0	1.0	1.0	1.0	2.5	2.0
Speed Adjustment Factor (SAF)	0.975	0.975		0.975						
Capacity Adjustment Factor (CAF)	0.968	0.968		0.968						
% left turns					12	12	12	12	12	12
% right turns					12	12	12	12	12	12
CONTROL CHARACTERISTICS										
Number of signals					4	4	10	10	4	6
Arrival type (1-6)					3	3	4	4	4	4
Signal type (a, c, p)					c	c	c	c	c	c
Cycle length (C)					120	150	120	120	120	120
Effective green ratio (g/C)					0.44	0.45	0.44	0.44	0.44	0.44
MULTIMODAL CHARACTERISTICS										
Paved shoulder/bicycle lane (n, y)									n, 50%, y	n
Outside lane width (n, t, w)									t	t
Pavement condition (d, t, u)									t	
On-street parking (n, y)										
Sidewalk (n, y)										n, 50%, y
Sidewalk/roadway separation(a, t, w)										t
Sidewalk protective barrier (n, y)										n
LEVEL OF SERVICE THRESHOLDS										
Level of Service	Freeways	Highways		Arterials			Bicycle	Ped	Bus	
	Density	Two-Lane	Multilane	Class I ats	Class II ats	Score	Score	Buses/hr.		
		%ffs	Density							
B	≤ 17	> 83.3	≤ 17	> 31 mph	> 22 mph	≤ 2.75	≤ 2.75	≤ 6		
C	≤ 24	> 75.0	≤ 24	> 23 mph	> 17 mph	≤ 3.50	≤ 3.50	≤ 4		
D	≤ 31	> 66.7	≤ 31	> 18 mph	> 13 mph	≤ 4.25	≤ 4.25	< 3		
E	≤ 39	> 58.3	≤ 35	> 15 mph	> 10 mph	≤ 5.00	≤ 5.00	< 2		

% ffs = Percent free flow speed ats = Average travel speed

TABLE 8

**Generalized Peak Hour Directional Volumes for Florida's  
Transitioning Areas and  
Areas Over 5,000 Not In Urbanized Areas<sup>1</sup>**

January 2020

INTERRUPTED FLOW FACILITIES

STATE SIGNALIZED ARTERIALS

Class I (40 mph or higher posted speed limit)

Lanes	Median	B	C	D	E
1	Undivided	*	710	800	**
2	Divided	*	1,740	1,820	**
3	Divided	*	2,670	2,740	**

Class II (35 mph or slower posted speed limit)

Lanes	Median	B	C	D	E
1	Undivided	*	330	680	720
2	Divided	*	500	1,460	1,600
3	Divided	*	810	2,280	2,420

Non-State Signalized Roadway Adjustments

(Alter corresponding state volumes by the indicated percent.)

Non-State Signalized Roadways - 10%

Median & Turn Lane Adjustments

Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors
1	Divided	Yes	No	+5%
1	Undivided	No	No	-20%
Multi	Undivided	Yes	No	-5%
Multi	Undivided	No	No	-25%
—	—	—	Yes	+ 5%

One-Way Facility Adjustment

Multiply the corresponding directional volumes in this table by 1.2

BICYCLE MODE<sup>2</sup>

(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Paved Shoulder/Bicycle Lane Coverage	B	C	D	E
0-49%	*	140	320	1,000
50-84%	100	280	940	>1,000
85-100%	380	1,000	>1,000	**

PEDESTRIAN MODE<sup>2</sup>

(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Sidewalk Coverage	B	C	D	E
0-49%	*	*	140	480
50-84%	*	80	440	800
85-100%	200	540	880	>1,000

BUS MODE (Scheduled Fixed Route)<sup>3</sup>

(Buses in peak hour in peak direction)

Sidewalk Coverage	B	C	D	E
0-84%	> 5	≥ 4	≥ 3	≥ 2
85-100%	> 4	≥ 3	≥ 2	≥ 1

UNINTERRUPTED FLOW FACILITIES

FREEWAYS

Lanes	B	C	D	E
2	2,430	3,180	3,790	3,910
3	3,520	4,670	5,610	5,870
4	4,630	6,170	7,440	7,830
5	5,480	7,310	8,730	9,800

Freeway Adjustments

Auxiliary Lane	Ramp Metering
+ 1,000	+ 5%

UNINTERRUPTED FLOW HIGHWAYS

Lanes	Median	B	C	D	E
1	Undivided	560	860	1,160	1,560
2	Divided	1,710	2,470	3,120	3,550
3	Divided	2,560	3,700	4,680	5,320

Uninterrupted Flow Highway Adjustments

Lanes	Median	Exclusive left lanes	Adjustment factors
1	Divided	Yes	+5%
Multi	Undivided	Yes	-5%
Multi	Undivided	No	-25%

<sup>1</sup>Values shown are presented as peak hour directional volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.

<sup>2</sup>Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.

<sup>3</sup>Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.

\* Cannot be achieved using table input value defaults.

\*\* Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.

Source:

Florida Department of Transportation

Systems Implementation Office

<https://www.fdot.gov/planning/systems/>

**TABLE 8**  
(continued)

**Generalized Peak Hour Directional Volumes for Florida's  
Transitioning Areas and  
Areas Over 5,000 Not In Urbanized Areas**

January 2020

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities			Interrupted Flow Facilities					
				State Arterials				Class I	
	Freeways	Highways		Class I		Class II		Bicycle	Pedestrian
ROADWAY CHARACTERISTICS									
Area type (urban, rural)	urban								
Number of through lanes (both dir.)	4-10	2	4-6	2	4-6	2	4-6	4	4
Posted speed (mph)	70	50	50	45	50	30	30	45	45
Free flow speed (mph)	75	55	55	50	55	35	35	50	50
Auxiliary lanes (n,y)	n								
Median (d, n, nr, r)			d	n	y	n	y	r	r
Terrain (l,r)	l	l	l	l	l	l	l	l	l
% no passing zone		60							
Exclusive left turn lane impact (n, y)		[n]	y	y	y	y	y	y	y
Exclusive right turn lanes (n, y)				n	n	n	n	n	n
Facility length (mi)	6	5	5	1.8	2	2	2	2	2
TRAFFIC CHARACTERISTICS									
Planning analysis hour factor (K)	0.098	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
Directional distribution factor (D)	0.55	0.55	0.55	0.550	0.570	0.570	0.565	0.570	0.570
Peak hour factor (PHF)	0.92	0.92	0.92	1.000	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)	2,400	1,700	2,200	1,950	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	9.0	4.0	4.0	2.0	3.0	2.0	3.0	3.0	3.0
Speed Adjustment Factor (SAF)	0.975		0.975						
Capacity Adjustment Factor (CAF)	0.968		0.968						
% left turns				12	12	12	12	12	12
% right turns				12	12	12	12	12	12
CONTROL CHARACTERISTICS									
Number of signals				5	4	10	10	4	6
Arrival type (1-6)				4	3	4	4	4	4
Signal type (a, c, p)				c	c	c	c	c	c
Cycle length (C)				120	150	120	150	120	120
Effective green ratio (g/C)				0.44	0.45	0.44	0.45	0.44	0.44
MULTIMODAL CHARACTERISTICS									
Paved shoulder/bicycle lane (n, y)								n, 50%, y	n
Outside lane width (n, t, w)								t	t
Pavement condition (d, t, u)								t	
On-street parking (n, y)								n	n
Sidewalk (n, y)									n, 50%, y
Sidewalk/roadway separation (a, t, w)									t
Sidewalk protective barrier (n, y)									n
LEVEL OF SERVICE THRESHOLDS									
Level of Service	Freeways	Highways		Arterials		Bicycle	Ped	Bus	
	Density	Two-Lane	Multilane	Class I	Class II	Score	Score	Buses/hr.	
		%ffs	Density	ats	ats				
B	≤ 17	> 83.3	≤ 17	> 31 mph	> 22 mph	≤ 2.75	≤ 2.75	≤ 6	
C	≤ 24	> 75.0	≤ 24	> 23 mph	> 17 mph	≤ 3.50	≤ 3.50	≤ 4	
D	≤ 31	> 66.7	≤ 31	> 18 mph	> 13 mph	≤ 4.25	≤ 4.25	< 3	
E	≤ 39	> 58.3	≤ 35	> 15 mph	> 10 mph	≤ 5.00	≤ 5.00	< 2	

% ffs = Percent free flow speed ats = Average travel speed

TABLE 9

**Generalized Peak Hour Directional Volumes for Florida's**  
**Rural Undeveloped Areas and**  
**Developed Areas Less Than 5,000 Population<sup>1</sup>**

January 2020

INTERRUPTED FLOW FACILITIES						UNINTERRUPTED FLOW FACILITIES					
<b>STATE SIGNALIZED ARTERIALS</b>						<b>FREEWAYS</b>					
Lanes	Median	B	C	D	E	Lanes	B	C	D	E	
1	Undivided	*	670	740	**	2	2,010	2,770	3,270	3,650	
2	Divided	*	1,530	1,580	**	3	2,820	3,990	4,770	5,470	
3	Divided	*	2,360	2,400	**	4	3,630	5,220	6,260	7,300	
<b>Non-State Signalized Roadway Adjustments</b>						<b>Freeway Adjustments</b>					
(Alter corresponding state volumes by the indicated percent.)						Auxiliary Lane + 1,000					
Non-State Signalized Roadways - 10%											
<b>Median &amp; Turn Lane Adjustments</b>						<b>UNINTERRUPTED FLOW HIGHWAYS</b>					
Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors		<b>Rural Undeveloped</b>					
1	Divided	Yes	No	+5%		Lanes	Median	B	C	D	E
1	Undivided	No	No	-20%		1	Undivided	240	450	730	1,490
Multi	Undivided	Yes	No	-5%		2	Divided	1,630	2,350	2,910	3,280
Multi	Undivided	No	No	-25%		3	Divided	2,450	3,530	4,360	4,920
—	—	—	Yes	+ 5%		<b>Developed Areas</b>					
<b>One-Way Facility Adjustment</b>						Lanes	Median	B	C	D	E
Multiply the corresponding directional volumes in this table by 1.2						1	Undivided	540	820	1,110	1,490
						2	Divided	1,530	2,210	2,820	3,220
						3	Divided	2,300	3,320	4,240	4,830
<b>BICYCLE MODE<sup>2</sup></b>						<b>Passing Lane Adjustments</b>					
(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)						Alter LOS B-D volumes in proportion to the passing lane length to the highway segment length					
<b>Rural Undeveloped</b>						<b>Uninterrupted Flow Highway Adjustments</b>					
Paved Shoulder/Bicycle Lane Coverage	B	C	D	E		Lanes	Median	Exclusive left lanes	Adjustment factors		
0-49%	*	70	110	170		1	Divided	Yes	+5%		
50-84%	60	120	180	580		Multi	Undivided	Yes	-5%		
85-100%	140	210	1,000	>1,000		Multi	Undivided	No	-25%		
<b>Developed Areas</b>						<sup>1</sup> Values shown are presented as peak hour directional volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.  <sup>2</sup> Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.  * Cannot be achieved using table input value defaults.  ** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.  Source: Florida Department of Transportation Systems Implementation Office <a href="https://www.fdot.gov/planning/systems/">https://www.fdot.gov/planning/systems/</a>					
Paved Shoulder/Bicycle Lane Coverage	B	C	D	E							
0-49%	*	120	260	840							
50-84%	100	240	720	1,000							
85-100%	320	1,000	>1,000	**							
<b>PEDESTRIAN MODE<sup>2</sup></b>											
(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)											
Sidewalk Coverage	B	C	D	E							
0-49%	*	*	120	460							
50-84%	*	80	430	770							
85-100%	180	520	860	>1,000							

**TABLE 9**  
(continued)

**Generalized Peak Hour Directional Volumes for Florida's**  
**Rural Undeveloped Areas and**  
**Developed Areas Less Than 5,000 Population**

January 2020

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities					Interrupted Flow Facilities				
	Freeways	Highways				Arterials	Bicycle	Pedestrian		
		Undeveloped	Developed							
ROADWAY CHARACTERISTICS										
Area type (urban, rural)	rural									
Number of through lanes (both dir.)	4-8	2	4-6	2	4-6	2	4-6	4	4	2
Posted speed (mph)	70	55	55	50	50	45	45	55	45	45
Free flow speed (mph)	75	60	60	55	55	50	50	60	50	50
Auxiliary lanes (n,y)	n									
Median (d, n, nr, r)			d		d	n	r	r	r	n
Terrain (l,r)	l	l	l	l	l	l	l	l	l	l
% no passing zone		20		60						
Exclusive left turn lanes (n, y)		[n]	y	[n]	y	y	y	y	y	y
Exclusive right turn lanes (n, y)						n	n	n	n	n
Facility length (mi)	18	10	10	5	5	1.9	2.2	4	2	2
TRAFFIC CHARACTERISTICS										
Planning analysis hour factor (K)	0.105	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095
Directional distribution factor (D)	0.55	0.55	0.55	0.55	0.55	0.550	0.550	0.570	0.570	0.550
Peak hour factor (PHF)	0.88	0.88	0.88	0.88	0.88	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)	2,400	1,700	2,200	1,700	2,200	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	12.0	5.0	12.0	5.0	8.0	3.0	3.0	6.0	3.5	3.0
Speed Adjustment Factor (SAF)	0.975		0.975		0.975					
Capacity Adjustment Factor (CAF)	0.968		0.968		0.968					
% left turns						12	12		12	12
% right turns						12	12		12	12
CONTROL CHARACTERISTICS										
Number of signals						5	6	2	4	4
Arrival type (1-6)						3	3	3	3	3
Signal type (a, c, p)						c	c	a	a	a
Cycle length (C)						90	90	60	90	90
Effective green ratio (g/C)						0.44	0.44	0.37	0.44	0.44
MULTIMODAL CHARACTERISTICS										
Paved shoulder/bicycle lane (n, y)								n,50%,y	n,50%,y	n
Outside lane width (n, t, w)								t	t	t
Pavement condition (d, t, u)								t	t	
Sidewalk (n, y)										n,50%,y
Sidewalk/roadway separation(a, t,w)										t
Sidewalk protective barrier (n, y)										n
LEVEL OF SERVICE THRESHOLDS										
Level of Service	Freeways	Highways					Arterials	Bicycle	Pedestrian	
		Two-Lane ru		Two-Lane rd		Multilane ru				Multilane rd
	Density	%tsf	ats	%ffs	Density	Density				
B	≤ 14	≤ 50	≤ 55	> 83.3	≤ 14	≤ 14				
C	≤ 22	≤ 65	≤ 50	> 75.0	≤ 22	≤ 22				
D	≤ 29	≤ 80	≤ 45	> 66.7	≤ 29	≤ 29				
E	≤ 36	> 80	≤ 40	> 58.3	≤ 34	≤ 34				
Level of Service	Arterials		Bicycle		Pedestrian					
	Major City/Co.(ats)		Score		Score					
B	> 31 mph		≤ 2.75		≤ 2.75					
C	> 23 mph		≤ 3.50		≤ 3.50					
D	> 18 mph		≤ 4.25		≤ 4.25					
E	> 15 mph		< 5.00		< 5.00					

%tsf = Percent time spent following %ffs = Percent of free flow speed ats = Average travel speed ru = Rural undeveloped rd = Rural developed

## Appendix F

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### Water Supply Assessment



# SB 610 Water Supply Assessment FNC Farming Subdivision

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**May 2024**

Prepared For:



City of Tulare  
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Tulare, CA 93274

Prepared By:



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## TABLE OF CONTENTS

1.0 INTRODUCTION AND BACKGROUND.....	2
2.0 PROJECT DESCRIPTION .....	4
3.0 PROJECT WATER DEMANDS .....	9
4.0 INCLUSION IN ADOPTED URBAN WATER MANAGEMENT PLAN .....	16
5.0 DRY YEAR WATER SUPPLY ADEQUACY (WATER CODE SECTION 10910(C)(4)).....	16
6.0 COMPARISON OF PROJECT DEMAND TO WATER SUPPLY SOURCES .....	18
7.0 WATER SUPPLY RIGHTS AND ENTITLEMENTS; HISTORIC WATER USAGE .....	22
8.0 CONTINGENCY ANALYSIS APPLICABILITY .....	25
9.0 ASSESSMENT FINDINGS .....	25
REFERENCES.....	26
PAGES EXCERPTED FROM CITY OF TULARE 2020 UWMP.....	APPENDIX A

## **1.0 Introduction and Background**

This Water Supply Assessment (WSA) has been prepared pursuant to the requirements of Senate Bill 610 ("SB 610"), requiring public water agencies, parties, or purveyors that may supply water to certain proposed development projects to prepare a WSA for use in environmental documentation for such projects, pursuant to the California Environmental Quality Act (CEQA). The City of Tulare is conducting an environmental review under the CEQA requirements for the proposed FNC Farming Project in the city of Tulare, California.

The WSA will evaluate if the total Project water supply determined to be available during normal, single dry, and multiple dry years will meet the Project water demand associated with the Project, in addition to existing and planned future uses in the City of Tulare.

This WSA contains information from the California Water Service 2020 Urban Water Management Plan Update (UWMP) for Tulare's service area and the Integrated Regional Water Management Plan (IRWMP) prepared by the Kaweah River Basin Regional Water Management Group.

SB 221 defines a subdivision as a proposed residential development of more than 500 units, except that for a water agency with fewer than 5,000 service connections, a subdivision includes a residential development project that would account for an increase of 10 percent or more in the number of the agency's existing service connections. Such approvals must be conditioned on the requirement that a sufficient water supply shall be available to serve the Project, where proof of the availability of that supply must be based on a WV prepared by the agency providing water service to the Project. As with SB 610, a "sufficient water supply" under SB 221 means that total water supplies available during normal, single-dry, and multiple-dry years within a 20-year projection will meet the projected demand associated with the proposed subdivision, in addition to existing and planned future uses, including agricultural and industrial uses. Therefore, since the FNC Farming Project proposes the development of 556 units, a WSA is required.

### **1.1 Water Agencies and Providers**

The City of Tulare provides water supplies throughout the city, as well as two unincorporated communities adjacent to the western city limit line, Matheny Tract and Souls Mutual Water Company. The Project involves the annexation of the Site into the City of Tulare. Upon annexation, the Site will be added to the Tulare service area.

Tulare collaborates with the Mid-Kaweah Delta Water Sustainability Agency (MKGSA) and other parties as part of the Mid-Kaweah Groundwater Sustainability Plan (MKGSP). This plan was developed following Assembly Bill 3030. As part of those efforts, the MKGSA member agencies have agreed to manage groundwater extraction in a manner that does not cause undesirable

results in the aquifer. At this time, groundwater pumping allocations have not been established or applied to the groundwater users in the Subbasin. However, the City is committed to working with the MKGSA to achieve groundwater sustainability by 2040.

While the City uses groundwater to supply its customer demands, it does have an agreement with Tulare Irrigation District (TID) to receive surface water supplies, which the City uses for intentional groundwater recharge. The City is working cooperatively with the MKGSA and TID to implement projects and management actions to offset the City's groundwater pumping impacts. Additionally, the city treats and uses its wastewater effluent for either percolation or agriculture. Between the surface water and wastewater effluent, the City is replenishing the aquifer to offset its groundwater extractions.

## **1.2 Water System and Supply**

The City is the only municipal water purveyor within the City limits and provides service to 67,834 City residents and 1,252 customers outside the City limits. The City provides water through five customer classes: single-family, multi-family, commercial, industrial, and landscape. The existing land uses within the city limits include 4,895 acres of residential, 1,501 acres of commercial, 2,308 acres of industrial, 309 acres of Parks and Recreation, and 1,646 acres of public facilities.

Groundwater is the only source of water in Tulare. The Kaweah Groundwater Subbasin is the primary water source for the City of Tulare and surrounding communities. While the Basin is not adjudicated and does not have legal limitations on groundwater pumping, it has been designated a "critically overdrafted basin" by the Department of Water Resources (DWR).

KDWCD regularly provides programs that benefit local agricultural customers by making additional surface water supplies for irrigation available. These programs effectively reduce the withdrawals of groundwater, resulting in in-lieu recharge of the aquifer. Groundwater is typically used by agriculture as an alternate source when surface supplies are not available and is the sole source in areas within KDWCD jurisdiction that do not have access to surface water. KDWCD also operates about 40 dedicated water management basins with an area of approximately 2,100 acres for flood control and groundwater replenishment. The basins can recharge approximately 983 acre-feet per day under optimal conditions.

Tulare District operates the Public Water System (PWS) listed in Table 1-1. Public Water Systems are the systems that provide drinking water for human consumption, and these systems are regulated by the State Water Resources Control Board (Board), Division of Drinking Water.

Table 1-1: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2020	Volume of Water Supplied, 2020 (AF)
5410015	City of Tulare	19,583	16,938

## 2.0 Project Description

### 2.1 Project Location and Setting

The proposed Project is located on approximately 140.32 acres in the northeast area of the City of Tulare, California, and is generally bound by Prosperity Avenue to the north, Morrison Street to the west, farmland (APNs 172-010-005 and 172-080-002) to the south, and farmland (APN 184-020-011 and 184-020-038) to the east. The Site is comprised of three parcels: APN numbers 184-020-010, 172-010-021, and 172-010-022. APN 184-020-010 consists of approximately 33.85 acres, 172-010-021 is 97.63 acres, and -022 is 10.10 acres. The Site is outside of Tulare's city limits; however, it is located within Tulare's Sphere of Influence. The General Plan designated the Site for Residential Estate and Rural Residential uses.

The proposed Project site is in a developing area of the City of Tulare. New single-family homes are developing to the west of the Project Site, connecting the Site with the existing City. Land uses of adjacent parcels surrounding the Project site are shown in Table 2-1:

Table 2-1: Surrounding Land Uses		
Location	Existing Land Use	Planned Land Use
North	Rural Residential	Rural Residential
South	Farmland	Rural Residential
West	Farmland	Low and Medium Density Residential
East	Farmland	Farmland

### 2.2 Description of Proposed Project

The Project Applicant is proposing a Specific Plan to develop approximately 140.32 acres of land into a residential development. The Project will feature single-family residential, rural residential, and park/trail facilities.

#### **Residential**

The proposal features several different types of housing which is broken down as follows:

- Low-Density Residential, 5,000 square feet lots: 248 Units

- Low-Density Residential, 6,600 square feet lots: 308 Units
- Rural Residential: 7.8 Acres

It should be noted that the rural residential portion has not been divided into lots at this time. The General Plan states that the density range for rural residential uses is between 0–2 Dwelling Units/Acre (DU/Acre). By using the average of 1 DU/Acre, it will be assumed that there will be 8 units on the 7.8 acres designated for Rural Residential.

### ***Parks, Trails, and Open Space***

The Project will provide and dedicate a 5.47-acre park to the City of Tulare. A trail would also be included that runs throughout the Site.

### ***Infrastructure***

The Project will require connection to various City-operated utility and infrastructure systems. These include City-provided services such as sewer/wastewater, water, and stormwater facilities. Non-City-provided infrastructure includes natural gas (to be provided by Southern California Gas Company) and electrical services (to be provided by Southern California Edison). The Project will be responsible for the construction of connection points to the City's existing infrastructure.

### ***Phasing / Construction Schedule***

The Project is proposed to be built out in five phases. Although the exact timing of construction and buildout will be determined by market conditions, the Project Applicant, and the City, it is anticipated that the Project would be built out over 15 years with approximately 50 residential units per year on average.

### ***Other Public Agencies Approval and Consultation***

The Project will require various permits and/or entitlements from regulatory agencies. Consultation may be required, and the City of Tulare will integrate CEQA review with these related environmental review requirements. The following discretionary approvals are required from the City of Tulare for the proposed Project:

- General Plan Land Use Amendment for Lot Sizes and Dwelling Unit Densities
- Zone Amendment Application
- Tulare County Local Agency Formation Commission Annexation
- Tentative Subdivision Map

- San Joaquin Valley Air Pollution Control District (SJVAPCD). The proposed Project is within the jurisdiction of the SJVAPCD and will be required to comply with Rule VIII, 3135, 4101, and 9510.
- Central Valley Regional Water Quality Control Board, SWPPP. The proposed Project site is within the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB). The Central Valley RWQCB will require a Storm Water Pollution Prevention Plan (SWPPP) to prevent impacts related to stormwater because of Project construction.

The following ministerial approvals are required from the City of Tulare for the proposed Project:

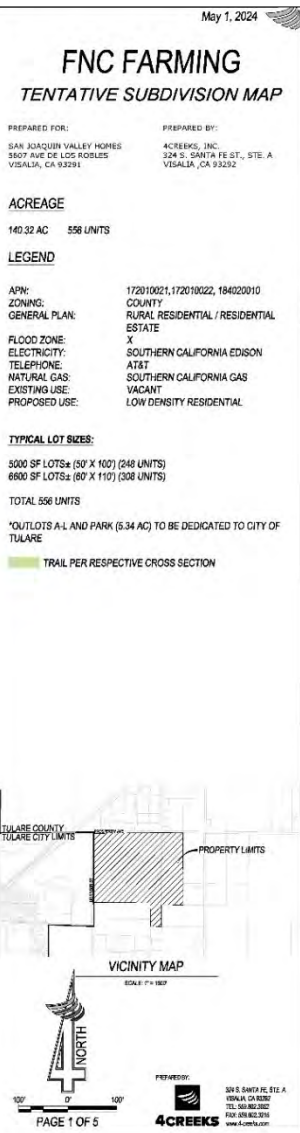
- City of Tulare Building and Encroachment Permits
- Roadway Dedication of Morrison Street, Oakmore Street, Castle Rock Avenue, and Monarch Dunes Avenue



Figure 2-1: Vicinity Map







## Figure 2-2: Project Site Plan

### 3.0 Project Water Demand

#### 3.1 Assumptions

Project water demand is estimated using information from the City's adopted 2020 Urban Water Management Plan (UWMP). Project water demand is calculated on the following assumptions:

- **Residential:** The Project is proposing 564 residential units.
- **Per Capita Water Use:** The City of Tulare's residential uses (Single and Multi-Family) used a total of 2,919 million gallons of water in 2020, according to the UWMP. The population was stated as 67,834. Therefore, the per capita water use was 43,032 gallons per year, or 118 gallons per capita per day (GPCD) for 2020. This includes residential landscaping. The 2020 UWMP identified the average residential water use as decreasing over time. Projected GPCD per person obtained from the 2020 UWMP will be used to calculate projected water demand from the Project. This includes water used for outdoor landscaping.
- **Household Size:** According to the American Community Survey, 2015–2019, Table S1101, the average household size is 3.2 persons per household.
- **Public Parks:** The Project includes approximately 5.47 acres of parks/trails/recreational facilities. To be conservative, it is assumed that the entire park space acreage will be irrigated lawn and will require approximately five acre-feet of water per acre per year. This figure is based on information about water requirements for large, irrigated lawns such as golf courses in the region.

#### 3.2 Project Water Demands

Based on the above assumptions, Project water demand is calculated as follows:

**Residential:** 564 dwelling units X 3.2 persons per dwelling unit = 1,805 persons X GPCD X 365 days per year = Total number of gallons per year.

It is anticipated that when the Project is complete in 2040, residential water use from the Project will be 77,732,736 gallons per year or approximately 238.5 AF per year. A breakdown of water uses for low-density residential, medium-density residential, and high-density residential is broken down in Table 3-1 below.

Table 3-1. Project Residential Water Demands				
Phase	Dwelling Units (Total)	Population	Water Use (Gal/Year)	Water Use (AF/Year)
<b>Phase 1 (2025-2027)</b>	112	358	15,436,288	47.4
<b>Phase 2 (2028-2030)</b>	112	358	30,872,576	94.7
<b>Phase 3 (2031-2033)</b>	112	358	46,308,864	142.1
<b>Phase 4 (2034- 2036)</b>	112	358	61,745,152	189.5
<b>Phase 5 (2037- 2040)</b>	116	371	77,732,736	238.5
<b>Total</b>	<b>564</b>	<b>1,805</b>	<b>77,732,736</b>	<b>238.5</b>

**Parks:** 5.47 acres X 5.0 acre-feet/year = ~27.35 acre-feet/year

It is anticipated that the Project would require approximately 265.89 acre-feet/year of water in the year following project completion.

### 3.3 Tulare Water Conservation Measures

As identified previously, the Project would use approximately 265.89 acre-feet/year of water once completed. Tulare also has an aggressive conservation program that will continue to reduce per-capita usage and, therefore, demands on critical water sources. Tulare is committed to helping its customers use water efficiently and has developed various water conservation programs to support this goal. To ensure that it is providing the right mix of programs in the most cost-effective manner possible, Tulare routinely conducts comprehensive conservation program analysis and planning. This is done on a five-year cycle in tandem with the UWMP. Tulare's current Water Shortage Contingency Plan provides the basis for the information on the implementation of and expected water savings from Demand Management Measures (DMMs).

Demand Management Measures: The first step in a demand reduction program is to prohibit wasteful practices and provide enforcement methods which is part of the City's Mandatory Stage One which is implemented year-round. City Ordinance 2020-07 modifies a portion of Chapter 7.32 in the City's Code to prohibit water waste at all stages and includes other specifics of base conservation including restricted hours of irrigation and ways to encourage minimal methods of watering. The City also maintains a penalty system with penalties that range from a warning to fines to flow restrictors or discontinuance of service.

- Stage 1: (Up to 10% Reduction of Normal Water Supply) Stage 1 is a base stage that is implemented year-round to ensure that the City's water supply is consistently protected and monitored, and that City Ordinance 2020-07 is fully implemented. Wasting water, as determined by the City's Public Utilities Board, includes:
  - The use of water which allows excess water runoff to a gutter, ditch or drain.

- The excessive use, loss or escape of water through breaks, leaks or malfunctions in the water user's plumbing or distribution facilities after such an event should reasonable have been discovered and corrected. It shall be presumed that a period of 48 hours after discovery is a reasonable time within which to correct the defect causing the water waste to occur.
  - The washing of vehicles, building exteriors, sidewalks, driveways, parking areas, tennis courts, patios, or other paved areas without the use of a positive shut-off nozzle on the hose, which results in excessive runoff, except where necessary in an emergency or to abate a danger to public health and safety.
  - Irrigation of ornamental landscape or other vegetated areas within 48 hours of a rain event if it is a designated watering day.
  - Any watering or irrigation of ornamental landscape, turf, or other vegetated area between the hours of 11 a.m. and 6 p.m. on any day, except by the use of a hand-held bucket or similar container or a hand-held hose fitted with a positive shut-off nozzle.
  - Installation of non-recirculating water systems in commercial car wash and laundry systems.
  - The draining of swimming pools more than once every three years, except for structural repairs, chemical imbalance, or to comply with public health standards determined by the County Health Officer or City code enforcement officer.
  - Operating a water feature that does not use recirculated water.
  - Food preparation establishments, such as restaurants or cafes, using non-water conserving dish-wash spray valves.
- Stage 2: (Up to 20% Reduction of Normal Water Supply) Stage 2 is a mandatory water shortage reduction stage and correlates to Stage 1 of the City's Ordinance 2020-07. All actions listed below are in addition to the previous stage unless a stricter restriction applies and is noted.
    - All outdoor irrigation shall occur only between the hours of 6 p.m. and 10 a.m. on designated days. Outdoor irrigation is permitted at any time if:
      - A hand-held faucet filled bucket of five gallons or less is used; or
      - A drip irrigation system is used.
    - Dwellings or establishments with even-numbered street addresses shall water only on Wednesday, Friday, and Sunday, subject to the time restrictions set forth above.
    - Dwellings or establishments with odd-numbered street addresses shall water only on Tuesday, Thursday, and Saturday, subject to the time restrictions set forth above.
    - Monday is a non-watering day unless an exemption is on file with the Public Works Department.

- The washing of sidewalks, driveways, parking areas, courts, patios, or other paved areas is prohibited unless an approved or conditionally approved exemption is on file with the Public Works Department.
- The operation of any ornamental fountain or other water feature structure making similar use of water is prohibited unless the fountain uses a recycling system, such as an electric pump. Water features are any structure other than a swimming pool or spa (as defined in California Health and Safety Code 115921) that use, receive, or discharge water for other than irrigation or human or animal consumption.
- All restaurants are requested to serve water to customers only when specifically requested by customers, and commercial kitchens are required to use pre-rinse spray valves.
- Lodging establishments must offer customers the option to not receive linen service between the days of their stay.
- The use of water for irrigation of golf greens and tees is permitted only on designated irrigation days between the hours of 8 p.m. and 10 a.m. The following exceptions are granted to the aforementioned restrictions:
  - Landscape irrigation zones that exclusively use drip irrigation systems.
  - Irrigation of ornamental landscapes with the use of an attended hand-held bucket or similar container or an attended hand-held hose equipped with a positive self-closing shut-off nozzle or device.
  - Operation for very short periods of time for the express purpose of adjusting or repairing an irrigation system. A sign must be displayed notifying the public of the repairs while the area remains wet.
  - Sports Fields and public and private golf course greens and tees may deviate from the mandatory irrigation day and time restrictions to maintain play areas and accommodated event schedules by submitting to the Public Works Director or designee an alternative watering schedule that reduces overall water use by 10% based on their respective 2013 consumption levels.
  - Large Landscape Areas may deviate from the mandatory irrigation day restrictions by submitting to the Public Works Director or designee an alternative watering schedule that reduces overall water use by 10% based on their respective 2013 consumption levels (additional details per City Ordinance 2020-07).
- Stage 3: (Up to 30% Reduction of Normal Water Supply) Stage 3 is a mandatory shortage reduction stage and correlates to Stage 2 of the City's Ordinance 2020- 07. All actions listed below are in addition to the previous stage unless a stricter restriction applies and is noted.
  - No outdoor irrigation allowed during the months of: December, January, and February.

- For the months watering is allowed: All outdoor irrigation shall occur only three days per week, between 12 a.m. and 4 a.m., then again between 9 a.m. and 11 a.m., and then again between 10 p.m. and 12 a.m. on the permitted watering days specified in City Ordinance 2020-07.
  - Dwellings or establishments with even-numbered street addresses shall water only on Wednesday, Friday, and Sunday, subject to the permitted time restrictions set forth above.
  - Dwellings or establishments with odd-numbered street addresses shall water only on Tuesday, Thursday, and Saturday, subject to the permitted time restrictions set forth above.
  - Monday will be a non-watering day, unless an approved or conditionally approved exemption is on file with the Public Works Department.
  - Overseeding of lawns is prohibited. Exception is provided for maintenance of sports fields and golf course greens and tees.
  - The washing of sidewalks, driveways, parking areas, courts, patios, or other paved areas is prohibited unless an approved or conditionally approved exemption is on file with the Public Works Department.
  - The washing of automobiles, trucks, trailers, boats, airplanes, and other types of mobile equipment is permitted only when using a hand-held hose equipped with a positive shut-off nozzle for quick rinses and on one permitted watering days. No fundraising car washes will be permitted.
  - In addition, the following prohibitions will apply:
    - Use of water from fire hydrants shall be limited to firefighting and/or testing activities necessary to maintain the health, safety, and welfare of the citizens of Tulare.
    - Commercial nurseries and commercial sod farms, sports fields, golf courses, cemeteries, city parks, and other large lawn areas will reduce their water consumption by 25% based on their respective 2013 consumption levels.
- Stage 4: (Up to 40% Reduction of Normal Water Supply) Stage 4 is a mandatory shortage reduction stage and correlates to Stage 3 of the City's Ordinance 2020- 07. Stage 4 may be immediately implemented forgoing other previous stages should the Governor of the State of California declare a State or County-wide water emergency. All actions listed below are in addition to the previous stage unless a stricter restriction applies and is noted.
    - No outdoor irrigation allowed during the months of: November, December, January, and February.
    - For the months watering is allowed: All outdoor irrigation shall occur only two days per week, between 12 a.m. and 4 a.m., then again between 9 a.m. and 11 a.m., and then again between 10 p.m. and 12 a.m. on the permitted watering days specified in City Ordinance 2020-07.

- Dwellings or establishments with even-numbered street addresses shall water only on Wednesday and Sunday, subject to the permitted time restrictions set forth above.
  - Dwellings or establishments with odd-numbered street addresses shall water only on Tuesday and Saturday, subject to the permitted time restrictions set forth above.
  - Monday, Thursday, and Friday are non-watering days, unless an approved or conditionally approved exemption is on file with the Public Works Department.
- Stage 5: (Up to 50% Reduction of Normal Water Supply) Stage 5 is a mandatory shortage reduction stage and correlates to Stage 4 of the City's Ordinance 2020- 07. All actions listed below are in addition to the previous stage unless a stricter restriction applies and is noted.
  - No outdoor irrigation allowed during the months of: November, December, January, February, and March.
  - For the months watering is allowed: All outdoor irrigation shall occur only one day per week, between 12 a.m. and 4 a.m., then again between 9 a.m. and 11 a.m., and then again between 10 p.m. and 12 a.m. on the permitted watering days specified in City Ordinance 2020-07.
  - Dwellings or establishments with even-numbered street addresses can water landscapes on SUNDAY only.
  - Dwellings or establishments with odd-numbered street addresses can water landscapes on SATURDAY only.
  - Monday, Tuesday, Wednesday, Thursday, and Friday are non-watering days, unless an approved or conditionally approved exemption is on file with the Public Works Department.
  - The washing down of sidewalks, driveways, parking areas, courtyards, patios, or any other paved areas is prohibited.
  - Commercial nurseries and commercial sod farms, sports fields, golf courses, cemeteries, city parks, and other large lawn areas will reduce their water consumption by 50% based on their respective 2013 consumption levels.
- Stage 6: (Greater than 50% Reduction of Normal Water Supply) Extreme water shortages require drastic reductions in water usage and correlates to Stage 5 of the City's Ordinance 2020-07. All actions listed below are in addition to the previous stage unless a stricter restriction applies and is noted.
  - Dwellings or establishments with even-numbered addresses can hand water trees and large shrubs on SUNDAY ONLY, between the hours of 7 a.m. and midnight.
  - Dwellings or establishments with odd-numbered addresses can hand water trees and large shrubs on SATURDAY ONLY, between the hours of 7 a.m. and midnight.



- **MWELO:** The California Water Commission approved the State's updated Model Water Efficient Landscape Ordinance (MWELO) on July 15, 2015. The updated MWELO supersedes the State's MWELO developed pursuant to AB 1881. The size of landscapes subject to MWELO has been lowered from 2500 sq. ft. to 500 sq. ft. The size threshold applies to residential, commercial, industrial, and institutional projects that require a permit, plan check or design review. Additionally, the maximum applied water allowance (MAWA) has been lowered from 70% of the reference evapotranspiration (ET<sub>o</sub>) to 55% for residential landscape projects, and to 45% of ET<sub>o</sub> for non-residential projects. This water allowance reduces the landscape area that can be planted with high water use plants such as cool season turf. For typical residential projects, the reduction in the MAWA reduces the percentage of landscape area that can be planted to high water use plants from 33% to 25%. In typical non-residential landscapes, the reduction in MAWA limits the planting of high-water use plants to special landscape areas. The revised MWELO allows the irrigation efficiency to be entered for each area of the landscape. The site-wide irrigation efficiency of the previous ordinance (2010) was 0.71; for the purposes of estimating total water use, the revised MWELO defines the irrigation efficiency (IE) of drip irrigation as 0.81 and overhead irrigation and other technologies must meet a minimum IE of 0.75.

### 3.4 City-Wide Future Estimated Water Use

Table 3-2 Retail: Water Supplies – Projected (AF)				
Water Supply	Projected Water Supply <i>Report To the Extent Practicable</i>			
	2025	2030	2035	2040
	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume
Groundwater: Kaweah Subbasin	6,255	6,421	6,910	7,436
Recycled Water	4,299	4,364	4,429	4,496
<b>Total</b>	<b>10,554</b>	<b>10,785</b>	<b>11,339</b>	<b>11,932</b>

Table 3-2 shows the projected supply volumes through 2040. Tulare assumes that current and planned basin recharge activities and land use conversions will result in sufficient groundwater supplies to meet demand through 2040. Therefore, the groundwater supply amounts shown in Table 3-3 equal the projected demand for each year. As the SGMA process unfolds and Tulare better understands the Basin and what is required to sustain it, this assumption will be continually reassessed. Future decisions on basin recharge activities and the potential

development of other supply sources will be based on the accumulated knowledge gained about the groundwater basin.

### **3.5 Acquisition of Water**

Tulare does not currently purchase imported water to serve demand and does not plan on doing so within the next five years.

## **4.0 Inclusion in Adopted Urban Water Management Plan**

UWMP guidelines and the California Water Code require UWMPs to integrate local land use plans in assessing future water conditions and projections for future water use. The Guidelines state: *A UWMP that meets statutory reporting requirements will also reflect short-term and long-term land use planning assumptions and goals, account for specific plan and infill development projects over the course of the UWMP planning period, and it will allow the Supplier to handle the dynamic nature of water supplies and demands through sound water-shortage contingency planning.*

The proposed project site is not shown within the service area boundaries in the current service area map. However, the Tulare UWMP includes growth outside of the current service area in its assessment of future water conditions and projections of future water use.

In the UWMP, projections for future population growth and future residential water use are based on the City's anticipated growth to follow the average rate of the past ten years at 1.5 percent. This includes the projection of expanding outside of City limits within Tulare's Sphere of Influence. As such, the adequacy of the water supply for the Project will be analyzed based on the Tulare's water supply analysis in the Urban Water Management Plan.

## **5.0 Dry Year Water Supply Adequacy (Water Code Section 10910(c)(4))**

The following dry year water supply adequacy is excerpted from the adopted 2020 UWMP for the City of Tulare.

The City's water supplies are drawn 100% from groundwater supplies. There are currently no concerns regarding a diminishment of the groundwater supplies, such as the City's inability to provide water to its service area. In all estimates and projections, supply is equal to demand, given that the City does not have an accurate account of the quantity of groundwater available in the aquifers below ground, and the City shares these aquifers with other municipal service areas. Current and ongoing management of these supplies is achieved through voluntary and state-mandated consumption conservation efforts and SGMA.

The reliability of the City's groundwater supplies for the various water year types is summarized in Table 5-1. The available supplies in Table 5-1 are assumed to equal the maximum demands across all forecast years in Tables 5-2, 5-3, and 5-4. Tulare expects that the assumption of the sufficiency of groundwater supplies, as augmented by expected enhanced recharge activities, to meet future demands through 2040 will be carefully evaluated and may be revised as part of the Groundwater Sustainability Plan required by SGMA.

Water supply and demand patterns change during normal, single-dry, and multi-dry years. Tulare has relied on demand modeling to forecast demands for normal, single dry, and multiple dry years. It is assumed that Tulare's groundwater supply for the District will be able to serve those demands.

<b>Table 5-1 Retail: Basis of Water Year Data</b>			
Year Type	Base Year	<b>Available supplies if year type repeats</b>	
		Agency may complete these columns for volume only, percent only, or both	
		Volume Available (AF)	% of avg supply
Average Year	2004	5,806	100%
Single-Dry Year	2011	5,694	90%
Multiple-Dry 1 <sup>st</sup> Year	2013	6,362	98%
Multiple-Dry Years 2 <sup>nd</sup> Year	2014	5,876	89%
Multiple Dry Years 3 <sup>rd</sup> Year	2015	5,002	75%
Multiple Dry Years 4 <sup>th</sup> Year	2016	5,099	76%
Multiple Dry Years 5 <sup>th</sup> Year	2017	5,319	77%

Table 5-2 shows a normal year's projected supply and demand totals. The supply totals match those in Table 3-2.

<b>Table 5-2 Retail: Normal Year Supply and Demand Comparison (AF)</b>				
	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>
Supply Totals	6,255	6,421	6,910	7,436
Demand Totals	6,255	6,421	6,910	7,436
Difference	0	0	0	0

Table 5-3 shows the projected supply and demand totals for a single dry year.

<b>Table 5-3 Retail: Single Dry Year Supply and Demand Comparison (AF)</b>				
	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>
Supply Totals	6,255	6,421	6,910	7,436
Demand Totals	6,255	6,421	6,910	7,436
Difference	0	0	0	0

Table 5-4 shows the projected supply and demand totals for the multiple dry years.

<b>Table 5-4 Retail: Multiple Dry Years Supply and Demand Comparison (AF)</b>					
Conditions		<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>
First Year	Supply Totals	6,255	6,421	6,910	7,436
	Demand Totals	6,255	6,421	6,910	7,436
	<b>Difference</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Second Year	Supply Totals	6,255	6,421	6,910	7,436
	Demand Totals	6,255	6,421	6,910	7,436
	<b>Difference</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Third Year	Supply Totals	6,255	6,421	6,910	7,436
	Demand Totals	6,255	6,421	6,910	7,436
	<b>Difference</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## 6.0 Comparison of Project Demand to Water Supply Sources

Table 6-2 analyzes projected water demands needed to serve the City of Tulare for the next 15 years, comparing projected baseline community growth against the reasonably expected population growth resulting from the FNC Farming Project. The table is labeled with lettering corresponding to each column of information.

Columns A through E represent the reasonably expected baseline condition for Tulare. Columns F through G represent the reasonably expected baseline condition for Tulare if the Project site was not developed at all. Columns H through J represents the population added by the FNC Farming Project alone. Columns K through N represents the Tulare water demand with the FNC Farming Project.

Column A represents the calendar year projection used in the analysis. Column B displays expected daily water use per person, which decreases over time due to measures taken by Tulare to increase water efficiency. Column C displays the forecast for the Tulare District population, which was excerpted from Tulare's UWMP. The annual growth rate calculated from this forecast is shown in Column D. Column E represents the expected residential water demand forecasted by the Tulare UWMP. The values in Column E are derived from the forecasted average per capita daily water consumption (Column B). Column E depicts the baseline future service area population with no project site development. Because the Site was planned for residential development, it was important to calculate the service area population with no site development to identify an appropriate baseline to which project-related water use should be added.

Existing residential General Plan Land Use designations on the Site were Residential Estate (2.1-3 DU/acre) and Rural Residential (0-2 DU/acre). Using these values and the acreage of each planned land use on the Site, it was determined that the Site was planned for 339 dwelling units or 1,084 residents (See Table 6-1 below). The values in Column F were calculated by subtracting 1,084 residents from the population expected to be added between 2025 and 2040 (Column C). These dates were selected because they coincide with the proposed buildout of the FNC Farming. The annual growth rate with no site development is shown in Column G.

<b>Table 6-1: Comparison of Planned Land Uses to Proposed Project</b>								
	<b>Existing (City of Tulare General Plan)</b>				<b>Proposed (FNC Farming)</b>			
	<b>Acres</b>	<b>Land Use Density (DU/Acre)</b>	<b>DU</b>	<b>Project Area Population<sup>1</sup></b>	<b>Acres</b>	<b>Land Use Density (DU/Acre)</b>	<b>DU</b>	<b>Project Area Population<sup>1</sup></b>
<b>Estate Residential</b>	131.48	2.5	329	1,052	0	N/A	N/A	N/A
<b>Rural Residential</b>	10.1	1	10	32	7.8	1	8	25
<b>Low Density Residential</b>	0	N/A	N/A	N/A	132.5	4.20	556	1,779
<b>Totals</b>	<b>141.6</b>	<b>-</b>	<b>339</b>	<b>1,084</b>	<b>140.32</b>	<b>-</b>	<b>564</b>	<b>1,804</b>
<b>Change in Population from Project</b>								<b>+720</b>
<i>1. Assumes 3.2 persons per dwelling unit (American Community Survey, 2015-2019, Table S1101)</i>								

The purpose of the remainder of the table (Columns H thru N) is to demonstrate the expected reasonable impact on water demand from the FNC Farming Project and to quantify any necessary new water supply needed from the Project to mitigate the reasonably foreseeable impacts. Columns H and I show the expected additional population resulting from the Project by year, in dwelling units and population. Column J identifies the Project's total accrued population for each construction year. Column M represents the expected population growth for the Tulare District, which includes the FNC Farming Project. The Values in Column K were calculated by adding the accrued population of the FNC Farming Project to the projected Service Area Population with no development of the project site. The resulting adjusted growth rate is depicted in Column L. Column M provides the resulting residential water demand for the

service area with the FNC Farming Project included. Column N provides the change in residential water demand attributable to the Project development.

The Tulare UWMP estimated the residential water demand within the service area to be 11,870 AF by 2040. The residential water demand in the service area with the Project was calculated to be 11,963 AF by 2040. The Project is expected to demand approximately 93 AF more water than the demand estimated by the Tulare UWMP. The Project will increase Tulare's water demand; however, because the City has no restrictions on groundwater pumping, it can be assumed that the water system can include the FNC Farming Project. However, the Project's pond will have an estimated yearly recharge of approximately 140 AF of groundwater. (See Section 7.3) This results in the Project using 125.89 AFY Net Consumed Groundwater and would result in the Project demanding approximately 47 AF less than the estimated demand from the Tulare UWMP.

Table 6-2: Anticipated City Water Demands and Available Supply: Years 2025 – 2045													
A	B	C	D	E	F	G	H	I	J	K	L	M	N
Year	Per Capita Water Use <sup>1</sup>	Service Area Population Anticipated by Tulare UWMP <sup>1</sup>	Service Area Growth Rate Assumed by Tulare UWMP	Service Area Residential Water Demand Assumed by Tulare UWMP	Service Area Population with no development of Project site <sup>2,3</sup>	Service Area Growth Rate with No Development of the Project Site <sup>3</sup>	Added Population from FNC Farming Project		Total FNC Farming Population (accrued)	Service Area Population with Project <sup>3,4</sup>	Service Area Growth Rate with Project <sup>3</sup>	Service Area Residential Water Demand with Project	Change in Service Area Residential Water Demand attributable to Project
	Gal/Person/Day			AFY								AFY	
2020	118	69,086	0.0%	9,130	69,086	-	0	0		69,086		9,130	0.00
2025	118	73,076	5.78%	9,658	71,991	4.20%	12	38	38	72,029	4.26%	9,519	-138.32
2026	118	74,206	1.55%	9,807	73,121	1.57%	50	160	198	73,319	1.79%	9,690	-117.17
2027	118	75,335	1.52%	9,956	74,250	1.54%	50	160	358	74,609	1.76%	9,860	-96.03
2028	118	76,465	1.50%	10,105	75,380	1.52%	12	38	397	75,777	1.57%	10,014	-90.95
2029	118	77,594	1.48%	10,255	76,509	1.50%	50	160	557	77,066	1.70%	10,185	-69.81
2030	118	78,724	1.46%	10,404	77,639	1.48%	50	160	717	78,356	1.67%	10,355	-48.66
2031	117	79,941	1.55%	10,475	78,856	1.57%	12	38	755	79,611	1.60%	10,432	-43.22
2032	117	81,158	1.52%	10,635	80,073	1.54%	50	160	915	80,988	1.73%	10,612	-22.25
2033	117	82,374	1.50%	10,794	81,289	1.52%	50	160	1,075	82,365	1.70%	10,793	-1.28
2034	117	83,591	1.48%	10,954	82,506	1.50%	12	38	1,114	83,620	1.52%	10,957	+3.75
2035	117	84,808	1.46%	11,113	83,723	1.47%	50	160	1,274	84,997	1.65%	11,138	+24.71
2036	116	86,119	1.55%	11,188	85,034	1.57%	50	160	1,434	86,468	1.73%	11,234	+45.29
2037	116	87,430	1.52%	11,359	86,345	1.54%	12	38	1,472	87,817	1.56%	11,409	+50.28
2038	116	88,741	1.50%	11,529	87,656	1.52%	50	160	1,632	89,288	1.68%	11,600	+71.06
2039	116	90,052	1.48%	11,699	88,967	1.50%	50	160	1,792	90,759	1.65%	11,791	+91.85
2040	116	91,363	1.46%	11,870	90,278	1.47%	4	13	1,805	92,083	1.46%	11,963	+93.51
2041	115	92,733	1.50%	11,944	91,648	1.52%	0	0	1,805	93,453	1.49%	12,037	+92.71
2042	115	94,124	1.50%	12,123	93,039	1.52%	0	0	1,805	94,844	1.49%	12,216	+92.71
2043	115	95,536	1.50%	12,305	94,451	1.52%	0	0	1,805	96,256	1.49%	12,398	+92.71
2044	115	96,969	1.50%	12,489	95,884	1.52%	0	0	1,805	97,689	1.49%	12,582	+92.71
2045	115	98,424	1.50%	12,677	97,339	1.52%	0	0	1,805	99,144	1.49%	12,769	+92.71
<sup>1</sup> Provided by Tulare Urban Water Management Plan <sup>2</sup> Calculated based on 1085 fewer residents added to population than was assumed by the Tulare UWMP. Reduction in population based on Site's GPLU designation. <sup>3</sup> Assumes normal growth rate would resume in 2040, when construction of the FNC Farming Project would be complete. <sup>4</sup> Calculated as: Previous Year Population + Anticipated Change in Population with No Development + Population Added from Proposed Development													



## **7.0 Water Supply Rights and Entitlements; Historic Water Usage (Water Code Section 10910(A)(1) and 10910(D)(2))**

The City's groundwater supplies stem from the unadjudicated Basin underlying the area, the Kaweah Groundwater Subbasin (Subbasin), as described in DWR's Bulletin 118 (DWR, 2006). While the Basin is not adjudicated and does not have legal limitations on groundwater pumping, it has been designated a "critically overdrafted basin" by DWR. The City participates in the Mid-Kaweah Groundwater Sustainability Agency (MKGSA), which prepared and submitted the Mid-Kaweah Groundwater Sustainability Plan (MKGSP) in January 2020. As part of those efforts, the MKGSA member agencies have agreed to manage groundwater extraction in a manner that does not cause undesirable results in the aquifer. Currently, groundwater pumping allocations have not been established or applied to the groundwater users in the Subbasin. However, the City is committed to working with the MKGSA to achieve groundwater sustainability by 2040.

### **7.1 Kaweah Subbasin**

The Kaweah Subbasin covers an area of approximately 446,000 acres (696 square miles) in the San Joaquin Valley and lies between the Kings Subbasin on the north, the Tule Subbasin on the south, crystalline bedrock of the Sierra Nevada foothills on the east, and the Tulare Lake subbasin on the west.

The Kaweah Subbasin is designated a high-priority basin under DWR's 2019 Phase 2 Basin Prioritization. Under this prioritization process, basins are ranked on eight components, and if a basin is assigned more than 21 total points, it is defined as "high priority." The main factors driving the designation in the Kaweah Subbasin include irrigated acreage per square mile (5 out of 5 possible points), population growth (5 out of 5 possible points), and groundwater reliance (5 out of 5 possible points). Additional factors include documented impacts, including declining groundwater levels and subsidence (4 out of 5 possible points) and total well density (4 out of 5 possible points). However, because the Subbasin is critically over-drafted, it is assigned 40 priority points, which is the maximum total points under DWR's ranking system.

Three GSAs were formed to collectively assume responsibility for sustainable groundwater management of the Kaweah Subbasin. The three GSAs within the Basin include the Mid-Kaweah GSA, East Kaweah GSA, and Greater Kaweah GSA. Each GSA prepared an individual GSP, but certain technical efforts (e.g., developing a coordinated water budget) were cooperatively developed through a Coordination Agreement.

Tulare falls within the jurisdiction of the Mid-Kaweah GSA, which covers an area of approximately 104,320 acres in the central to the southwestern side of the Kaweah Subbasin. The Mid-Kaweah GSA was formed on September 14, 2015, through the execution of a Joint Powers Agreement (JPA) between the City of Tulare, the City of Visalia, and TID to establish the

Mid-Kaweah Groundwater Subbasin JPA. The Mid-Kaweah GSA GSP was submitted to DWR on January 31, 2020.

As defined under SGMA, sustainable yield means "the maximum quantity of water, calculated over a base period representative of long-term conditions in a basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing undesirable results." The three GSAs within the Kaweah Subbasin determined a subbasin-wide sustainable yield of 660,000 acre-feet per year (AFY), which was further apportioned among the GSAs in the Kaweah Subbasin Coordination Agreement.

Projects and management actions described in the Mid-Kaweah GSA GSP include groundwater recharge projects and programs, surface reservoir projects, leveraged surface water exchange programs, a groundwater extraction measurement implementation program, a conceptual groundwater marketing program, and future urban and agricultural conservation. The Mid-Kaweah GSA GSP states that the GSA will work from 2020 to 2025 to develop a pumping allocation program to achieve, along with neighboring GSAs, the Kaweah Subbasin's sustainable yield by 2040. The Mid-Kaweah GSA plans to prioritize the projects/programs above to serve as the first means to achieve sustainability, but by 2026, it is anticipated that an allocation plan will be ready for implementation if necessary to achieve sustainability.

## **7.2 Tule Subbasin**

Tulare notified Tulare County, TID, KDWCD, MKGSA, and City of Visalia that the City's UWMP was being updated for 2020. In accordance with the UWMPA, this notification was provided to Tulare County at least 60 days prior to the public hearing of the plan. Copies of the final UWMP will be provided to Tulare County no later than 30 days after its submission to DWR.

The City has no wholesale arrangements (either as a customer or provider) as of the date this UWMP was adopted, so there were no required coordination efforts in this regard.

## **7.3 Kaweah Subbasin Sustainable Yield**

According to the Mid-Kaweah GSA GSP, the Kaweah Subbasin had an average annual overdraft of 77,600 AFY from 1997 to 2017. To counter this, the three GSAs in the Kaweah Subbasin set a sustainable yield allocation to respond to the current and anticipated long-term groundwater conditions of the Kaweah Subbasin, considering the requirement by the Sustainable Groundwater Management Act (SGMA) to have a sustainable groundwater supply by 2040. The sustainable yield allocations are set for groundwater pumping by agricultural lands. However, by comparing it to the Project's demands, the impact on the Subbasin can be tested. The sustainable yields and penalties are listed as follows:

- Sustainable Yield Allocation is 0.83 acre-feet/acre per year.
- Tier 1 Penalty Allocation is an additional 0.83 acre-feet/acre per year.
- Tier 2 Penalty Allocation is an additional 1.04 acre-feet/acre per year.

The combined total for Sustainable Yield, Tier 1, and Tier 2 is 2.70 acre-feet/acre. There will be penalty costs if a landowner uses more than the Sustainable Yield Allocation of 0.83 acre-feet/acre of groundwater. For water year (WY) 2023, Tier 1, the Penalty Rate is \$60.00 per acre-foot; for Tier 2, the Penalty Rate is \$120.00 per acre-foot. If a landowner exceeds the Tier 2 allocation, a \$500 penalty per acre-foot will be imposed.

The amount of water based on the sustainable yield allocation is the net groundwater consumptive use rather than the gross amount of groundwater pumped. The formula for net groundwater consumptive use is shown below.

$$\text{Net Consumed Groundwater Used} = (\text{Gross Groundwater Pumped}) - (\text{Estimated Return Flow})$$

The Project will demand and pump 265.89 AFY of groundwater at complete operation. The stormwater retention pond is estimated to recharge approximately 140 AF of groundwater annually. This results in the Project using 125.89 AFY Net Consumed Groundwater. Over the Project's 140.32 acres, the Project has a Net Consumed Groundwater of .90 acre-feet/acre per year. This is lower than the limit of 2.70 acre-feet/acre per year. This shows that the Project will not increase the danger of undesirable effects of overdraft in the Subbasin.

#### 7.4 Project's Water Demands Compared to Agricultural Demands

Urban development typically uses less water than agricultural uses. The Mid-Kaweah GSA states that 94% of the total water use is for agricultural services. Due to this, the current agrarian water demands should be compared to the project water demands. According to the California Natural Resources Agency, the Project Site is currently used for Truck Crops-Bushberries. The agrarian water demands are shown below in Table 7-1.

Table 7-1: Project Site Agricultural Demands			
<b>Crop Type</b>	<b>Acres of Crop</b>	<b>Crop Water Demands (AFY/Acre)<sup>1</sup></b>	<b>Total Water Demand (AFY)</b>
<b>Truck Crops-Bushberries</b>	127	3.5	444
1. Crop Demands are from Tulare County averages in 2015, provided by the California Department of Water Resources.			

As shown, the project site would be expected to demand approximately 444 AFY if it remained agricultural. This is higher than the Project's demand of 265.89 AFY. This shows that the Project will not increase the danger of undesirable effects of overdraft in the Subbasin.

## **8.0 Contingency Analysis Applicability (Government Code Section 66473.7 (2)(b))**

Tulare's 2021 Water Shortage Contingency Plan (WSCP) identifies six shortage levels that increase with the severity of the water supply shortage. A level 1 water shortage necessitates a demand reduction of up to 10%, while a level 6 shortage necessitates a demand reduction of 50% or greater. Tulare's WSCP provides a full spectrum of Water Shortage Contingency Plan measures to reduce the City's water consumption. Depending on the water shortage level, the urban water supplier may use any combination of consumption reduction measures to achieve the necessary water demand reductions. The City's contingency planning is designed to ensure that the necessary water supply will be available in each water shortage scenario. These water supply contingency measures, applicable to the entire Tulare water service area, are fully applicable to the Project and protective of the adequacy of the Project's water supply. Pages 5-1 to 5-7 of the WSCP are provided in Appendix A to satisfy Government Code Section 66473.7 (2)(b).

## **9.0 Assessment Findings**

It is concluded that Tulare's water system has sufficient capacity to supply the FNC Farming Project and other projected demands within the City's service area through the year 2040. The City of Tulare will provide the main source of water for this Project. Additionally, the Project will not increase the danger of undesirable effects of overdraft in the Kaweah subbasin.

Therefore, the City of Tulare is recommended to approve this assessment for inclusion in the CEQA documentation for the proposed FNC Farming Project.

## References

- California Department of Water Resources, 2015. Agricultural Land and Water Use Estimates. Available Online at [Source](#).
- California Natural Resources Agency, 2021. Statewide Crop Mapping 2021. Available Online at [Source](#).
- City of Tulare, Urban Water Management Plan, 2021. 2020 Urban Water Management Plan. Available Online at [Source](#).
- City of Tulare, 2014. Tulare General Plan. Available online at [source](#).
- Mid-Kaweah Groundwater Sustainability Agency, 2019. Groundwater Sustainability Plan. Available Online at [Source](#).
- Pacific Institute, 2003. Waste Not, Want Not: The Potential for Urban Water Conservation in California, Appendix E. Available Online at [Source](#).

# Appendix A

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## Pages Excerpted from City of Tulare 2020 UWMP

*Provided in satisfaction of Water Code Section 10910(A)(1), Water Code  
Section 10910(D)(2) and Government Code Section 66473.7 (2)(b)*

## 5 Shortage Response Actions

### 5.1 Demand Reduction

The first step in a demand reduction program is to prohibit wasteful practices and provide enforcement methods which is part of the City's Mandatory Stage One which is implemented year-round. City Ordinance 2020-07 (see [Appendix A](#)) modifies a portion of Chapter 7.32 in the City's Code to prohibit water waste at all stages and includes other specifics of base conservation including restricted hours of irrigation and ways to encourage minimal methods of watering. The City also maintains a penalty system with penalties that range from a warning to fines to flow restrictors or discontinuance of service.

The following section provides additional details regarding restrictions imposed by the six water shortage stages implemented during periods of dry hydrology or catastrophic water supply interruption.

Any person found violating any portion of mandatory compliance will be subject to penalties. All persons, customers, and property within the limits of the City shall not commit water waste as identified in the City's Code §7.32.50.

Legal Requirements:

<b>§10632(a)(4)</b> <i>Shortage response actions that align with the defined shortage levels.</i>
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#### 5.1.1 Stage 1: (Up to 10% Reduction of Normal Water Supply)

The City continues to strive to implement water conservation measures year-round. As good stewards of the available groundwater supplies and to ensure that groundwater supplies continue to be a reliable source, the City implements Stage 1 of its demand reduction program.

Stage 1 is a base stage that is implemented year-round to ensure that the City's water supply is consistently protected and monitored, and that City Ordinance 2020-07 is fully implemented.

- Wasting water, as determined by the City's Public Utilities Board, includes:
  - The use of water which allows excess water runoff to a gutter, ditch or drain.
  - The excessive use, loss or escape of water through breaks, leaks or malfunctions in the water user's plumbing or distribution facilities after such an event should reasonably have been discovered and corrected. It shall be presumed that a period of 48 hours after discovery is a reasonable time within which to correct the defect causing the water waste to occur.
  - The washing of vehicles, building exteriors, sidewalks, driveways, parking areas, tennis courts, patios, or other paved areas without the use of a positive shut-off nozzle on the hose, which results in excessive runoff, except where necessary in an emergency or to abate a danger to public health and safety.
  - Irrigation of ornamental landscape or other vegetated areas within 48 hours of a rain event if it is a designated watering day.



- Any watering or irrigation of ornamental landscape, turf, or other vegetated area between the hours of 11 a.m. and 6 p.m. on any day, except by the use of a hand-held bucket or similar container or a hand-held hose fitted with a positive shut-off nozzle.
- Installation of non-recirculating water systems in commercial car wash and laundry systems.
- The draining of swimming pools more than once every three years, except for structural repairs, chemical imbalance, or to comply with public health standards determined by the County Health Officer or City code enforcement officer.
- Operating a water feature that does not use recirculated water.
- Food preparation establishments, such as restaurants or cafes, using non-water conserving dish-wash spray valves.

### 5.1.2 Stage 2: (Up to 20% Reduction of Normal Water Supply)

Stage 2 is a mandatory water shortage reduction stage and correlates to Stage 1 of the City's Ordinance 2020-07. All actions listed below are in addition to the previous stage unless a stricter restriction applies and is noted.

- All outdoor irrigation shall occur only between the hours of 6 p.m. and 10 a.m. on designated days. Outdoor irrigation is permitted at any time if:
  - A hand-held faucet filled bucket of five gallons or less is used; or
  - A drip irrigation system is used.
- Dwellings or establishments with even-numbered street addresses shall water only on Wednesday, Friday, and Sunday, subject to the time restrictions set forth above.
- Dwellings or establishments with odd-numbered street addresses shall water only on Tuesday, Thursday, and Saturday, subject to the time restrictions set forth above.
- Monday is a non-watering day unless an exemption is on file with the Public Works Department.
- The washing of sidewalks, driveways, parking areas, courts, patios, or other paved areas is prohibited unless an approved or conditionally approved exemption is on file with the Public Works Department.
- The operation of any ornamental fountain or other water feature structure making similar use of water is prohibited unless the fountain uses a recycling system, such as an electric pump. Water features are any structure other than a swimming pool or spa (as defined in California Health and Safety Code 115921) that use, receive, or discharge water for other than irrigation or human or animal consumption.
- All restaurants are requested to serve water to customers only when specifically requested by customers, and commercial kitchens are required to use pre-rinse spray valves.
- Lodging establishments must offer customers the option to not receive linen service between the days of their stay.

- The use of water for irrigation of golf greens and tees is permitted only on designated irrigation days between the hours of 8 p.m. and 10 a.m.

The following exceptions are granted to the aforementioned restrictions:

- Landscape irrigation zones that exclusively use drip irrigation systems.
- Irrigation of ornamental landscapes with the use of an attended hand-held bucket or similar container or an attended hand-held hose equipped with a positive self-closing shut-off nozzle or device.
- Operation for very short periods of time for the express purpose of adjusting or repairing an irrigation system. A sign must be displayed notifying the public of the repairs while the area remains wet.
- Sports Fields and public and private golf course greens and tees may deviate from the mandatory irrigation day and time restrictions to maintain play areas and accommodated event schedules by submitting to the Public Works Director or designee an alternative watering schedule that reduces overall water use by 10% based on their respective 2013 consumption levels.
- Large Landscape Areas may deviate from the mandatory irrigation day restrictions by submitting to the Public Works Director or designee an alternative watering schedule that reduces overall water use by 10% based on their respective 2013 consumption levels (additional details per City Ordinance 2020-07).

### 5.1.3 Stage 3: (Up to 30% Reduction of Normal Water Supply)

Stage 3 is a mandatory shortage reduction stage and correlates to Stage 2 of the City's Ordinance 2020-07. All actions listed below are in addition to the previous stage unless a stricter restriction applies and is noted.

- No outdoor irrigation allowed during the months of: December, January, and February.
- For the months watering is allowed: All outdoor irrigation shall occur only three days per week, between 12 a.m. and 4 a.m., then again between 9 a.m. and 11 a.m., and then again between 10 p.m. and 12 a.m. on the permitted watering days specified in City Ordinance 2020-07.
- Dwellings or establishments with even-numbered street addresses shall water only on Wednesday, Friday, and Sunday, subject to the permitted time restrictions set forth above.
- Dwellings or establishments with odd-numbered street addresses shall water only on Tuesday, Thursday, and Saturday, subject to the permitted time restrictions set forth above.
- Monday will be a non-watering day, unless an approved or conditionally approved exemption is on file with the Public Works Department.
- Overseeding of lawns is prohibited. Exception is provided for maintenance of sports fields and golf course greens and tees.

- The washing of sidewalks, driveways, parking areas, courts, patios, or other paved areas is prohibited unless an approved or conditionally approved exemption is on file with the Public Works Department.
- The washing of automobiles, trucks, trailers, boats, airplanes, and other types of mobile equipment is permitted only when using a hand-held hose equipped with a positive shut-off nozzle for quick rinses and on one permitted watering days. No fundraising car washes will be permitted.
- In addition, the following prohibitions will apply:
  - Use of water from fire hydrants shall be limited to firefighting and/or testing activities necessary to maintain the health, safety, and welfare of the citizens of Tulare.
  - Commercial nurseries and commercial sod farms, sports fields, golf courses, cemeteries, city parks, and other large lawn areas will reduce their water consumption by 25% based on their respective 2013 consumption levels.

#### 5.1.4 Stage 4: (Up to 40% Reduction of Normal Water Supply)

Stage 4 is a mandatory shortage reduction stage and correlates to Stage 3 of the City's Ordinance 2020-07. Stage 4 may be immediately implemented forgoing other previous stages should the Governor of the State of California declare a State or County-wide water emergency. All actions listed below are in addition to the previous stage unless a stricter restriction applies and is noted.

- No outdoor irrigation allowed during the months of: November, December, January, and February.
- For the months watering is allowed: All outdoor irrigation shall occur only two days per week, between 12 a.m. and 4 a.m., then again between 9 a.m. and 11 a.m., and then again between 10 p.m. and 12 a.m. on the permitted watering days specified in City Ordinance 2020-07.
- Dwellings or establishments with even-numbered street addresses shall water only on Wednesday and Sunday, subject to the permitted time restrictions set forth above.
- Dwellings or establishments with odd-numbered street addresses shall water only on Tuesday and Saturday, subject to the permitted time restrictions set forth above.
- Monday, Thursday, and Friday are non-watering days, unless an approved or conditionally approved exemption is on file with the Public Works Department.

#### 5.1.5 Stage 5: (Up to 50% Reduction of Normal Water Supply)

Stage 5 is a mandatory shortage reduction stage and correlates to Stage 4 of the City's Ordinance 2020-07. All actions listed below are in addition to the previous stage unless a stricter restriction applies and is noted.

- No outdoor irrigation allowed during the months of: November, December, January, February, and March.

- For the months watering is allowed: All outdoor irrigation shall occur only one day per week, between 12 a.m. and 4 a.m., then again between 9 a.m. and 11 a.m., and then again between 10 p.m. and 12 a.m. on the permitted watering days specified in City Ordinance 2020-07.
- Dwellings or establishments with even-numbered street addresses can water landscapes on SUNDAY only.
- Dwellings or establishments with odd-numbered street addresses can water landscapes on SATURDAY only.
- Monday, Tuesday, Wednesday, Thursday, and Friday are non-watering days, unless an approved or conditionally approved exemption is on file with the Public Works Department.
- The washing down of sidewalks, driveways, parking areas, courtyards, patios, or any other paved areas is prohibited.
- Commercial nurseries and commercial sod farms, sports fields, golf courses, cemeteries, city parks, and other large lawn areas will reduce their water consumption by 50% based on their respective 2013 consumption levels.

#### 5.1.6 Stage 6: (Greater than 50% Reduction of Normal Water Supply)

Extreme water shortages require drastic reductions in water usage and correlates to Stage 5 of the City's Ordinance 2020-07. All actions listed below are in addition to the previous stage unless a stricter restriction applies and is noted.

- Dwellings or establishments with even-numbered addresses can hand water trees and large shrubs on SUNDAY ONLY, between the hours of 7 a.m. and midnight.
- Dwellings or establishments with odd-numbered addresses can hand water trees and large shrubs on SATURDAY ONLY, between the hours of 7 a.m. and midnight.

**Table 5-1** shows the demand reduction actions and their associated percentage by which it is anticipated each action will reduce overall system demands. Although the City has not experienced water supply shortages historically, even during drought conditions, the City continues to implement demand reduction efforts year-round (Stage 1) and additional mandatory demand reductions in response to periods of dry hydrology or other water shortage conditions that may arise not related to drought conditions. This table is reformatted from the standard DWR Submittal Table 8-2 but presents the same information.

Section Five: Shortage Response Actions  
City of Tulare: Water Shortage Contingency Plan

Table 5-1: Demand Reduction Actions (DWR WSCP Submittal Table 8-2)

Shortage Stage	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Additional Explanation or Reference (optional)	Penalty, Charge, or Other Enforcement?
All	Expand Public Information Campaign	4%		Yes
All	Landscape - Restrict or prohibit runoff from landscape irrigation	1%		Yes
All	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	1%		Yes
All	Other - Require automatic shut-off hoses	1%		Yes
All	Landscape - Other landscape restriction or prohibition	1%	Irrigating ornamental landscape or vegetated areas within 48 hours of a rain event	Yes
All	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	2%		Yes
All	Other water feature or swimming pool restriction	1%	Draining of pools more than once every three years with exceptions (see Ordinance for complete language)	Yes
All	Water Features - Restrict water use for decorative water features, such as fountains	1%		Yes
All	CII - Commercial kitchens required to use pre-rinse spray valves	1%		Yes
2 thru 6	Increase Water Waste Patrols	3%		Yes
2 thru 6	CII - Restaurants may only serve water upon request	1%		Yes
2 thru 6	Landscape - Limit landscape irrigation to specific times	2%		Yes
2 thru 6	CII - Lodging establishment must offer opt out of linen service	1%		Yes
2 thru 6	Other - Prohibit use of potable water for washing hard surfaces	3%		Yes
2	Landscape - Limit landscape irrigation to specific days	5%	3 days per week	Yes

Section Five: Shortage Response Actions  
City of Tulare: Water Shortage Contingency Plan

Shortage Stage	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Additional Explanation or Reference (optional)	Penalty, Charge, or Other Enforcement?
3	Landscape - Limit landscape irrigation to specific days	10%	3 days per week, 9 months of the year	Yes
4	Landscape - Limit landscape irrigation to specific days	15%	2 days per week, 8 months of the year	Yes
5	Landscape - Limit landscape irrigation to specific days	20%	1 day per week, 7 months of the year	Yes
6	Landscape - Limit landscape irrigation to specific days	23%	1 day per week, hand watering trees and shrubs only	Yes
3 thru 6	Landscape - Other landscape restriction or prohibition	1%	Overseeding of lawns is prohibited.	Yes
3 thru 6	Other	1%	Use of water from fire hydrants shall be limited to firefighting and/or strictly necessary testing activities.	Yes
3 thru 4	Other	5%	Commercial nurseries and commercial sod farms, sports fields, golf courses, cemeteries, city parks, and other large lawn areas will reduce their water consumption by 25%.	Yes
5 thru 6	Other	10%	Commercial nurseries and commercial sod farms, sports fields, golf courses, cemeteries, city parks, and other large lawn areas will reduce their water consumption by 50%.	Yes

## Appendix B

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# Mitigation Monitoring and Reporting Program



**MITIGATION MONITORING AND REPORTING PROGRAM**

As required by Public Resources Code Section 21081.6, subd. (a)(1), a Mitigation Monitoring and Reporting Program (MMRP) has been prepared for the Project in order to monitor the implementation of the mitigation measures that have been adopted for the Project. This Mitigation Monitoring and Reporting Program (MMRP) has been created based upon the findings of the Initial study (IS) and Environmental Impact Report (EIR) for the FNC Farming Subdivision Project in the City of Tulare.

The first column of the table identifies the mitigation measure. The second column names the party responsible for carrying out the required action. The third column, “Timing of Mitigation Measure” identifies the time the mitigation measure should be initiated. The fourth column, “Responsible Party for Monitoring,” names the party ensuring that the mitigation measure is implemented. The last column will be used by the City to ensure that the individual mitigation measures have been monitored.

Plan checking and verification of mitigation compliance shall be the responsibility of the City of Tulare.

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
<p><b>Mitigation Measure AG-1:</b> Prior to issuance of a grading or building permit, whichever occurs first, the Project proponent shall provide written evidence of completion of one or more of the following measures, consistent with Tulare General Plan Policy COS-P3.12 to mitigate the loss of agricultural land at a ratio of 1:1 for net acreage before conversion:</p> <ul style="list-style-type: none"><li>o Funding and/or purchasing agricultural conservation easements which shall be managed and maintained by an appropriate entity;</li><li>o Purchasing credits from an established agricultural farmland mitigation bank;</li></ul>	City of Tulare	Prior to Construction	City of Tulare	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
<ul style="list-style-type: none"> <li>Contributing agricultural land or equivalent funding to an organization that provides for the preservation of farmland in California; or</li> <li>Participating in any agricultural land mitigation program adopted by Tulare County provides equal or more effective mitigation than the measures listed above.</li> </ul> <p>The net acreage calculation used to determine mitigation lands shall exclude the existing roads and areas already developed with structures on the project site. A site plan shall be submitted to the City of Tulare Community Development Department to substantiate the net acreage calculation, along with written evidence of compliance. Mitigation land shall meet the definition of Prime Farmland and be of similar agricultural quality or higher, as established by the Department of Conservation. Completion of the selected measure or a combination of selected mitigation measures can occur on qualifying land within the southern San Joaquin Valley (Kings, Tulare, or Kern County) that is located outside of a City's UDB and shall be approved by the City of Tulare Community Development Department Director.</p>				

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
<p><b>Mitigation Measure BIO-1: Swainson's Hawk Nesting Habitat</b></p> <p>A. Protocol Surveys: If construction, grading, or project-related improvements are to commence between March 1 and September 15, a qualified biologist with expertise in Swainson's hawk shall conduct protocol surveys of potential nesting habitat within 0.5 mile of any ground disturbing activities prior to initiation of such activities. Protocol level surveys shall be conducted in conformance with the "Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures for Renewable Energy Projects in the Antelope Valley of Los Angeles and Kern," (<a href="https://www.wildlife.ca.gov/conservation/survey-protocols#377281284-birds">https://www.wildlife.ca.gov/conservation/survey-protocols#377281284-birds</a>) (June 2, 2010) hereby incorporated by references. This protocol prescribes minimum standards for survey equipment, mode of survey, angle and distance to tree, speed, visual and audible clues, distractions, notes and observations, and timing of surveys. If construction work begins after September 15 and ends before March 1 (outside of the breeding season), impacts to the Swainson's hawk would be avoided. Surveys would not be required for work conducted during this part of the year. A written report with the pre-construction survey results must be provided to the Planning Department and CDFW within 30 days prior to commencement of construction-related activities. The report shall include: the date of the report, authors, and affiliations, contact information, introduction, methods, study location, including map, results, discussion, and literature cited. B. Nest</p>	City of Tulare	30 days Prior to the Start of Construction	City of Tulare	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
<p>Avoidance. If the required protocol surveys show there are no active nests within 0.5-mile of construction activities, then no additional mitigation for nest disturbance will be required. If nesting Swainson's hawks are observed within 0.5-mile of the project site, the project applicant must implement CDFW pre-approved mitigation measures to avoid nest impacts during construction. These measures include: 1. All project-related activities with the potential to cause nest abandonment or forced fledging of young shall be avoided until the young have fledged. 2. If disturbances, habitat conversions, or other project-related activities, that may cause nest abandonment or forced fledging, are necessary, within the nest protection buffer zone (0.5-mile), monitoring of the nest site by a qualified raptor biologist, funded by the project applicant, shall be required, to determine if the nest is abandoned. If the nest is abandoned, but the nestlings are still alive, the project proponent is required to fund the recovery and hacking, that is the controlled release of captive reared young, of the nestling. 3. The project applicant shall be required to coordinate with CDFW to determine if project activities with the potential to cause disturbance to nesting Swainson's hawks within the 0.5-mile buffer may proceed with a reduced nest buffer and an approved biological monitor. CDFW may authorize a reduced nest buffer with the presence of a monitoring biologist during construction activities to ensure that the nest is not disturbed. 4. Routine disturbances such as agricultural activities, commuter traffic, and routine maintenance</p>				

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
activities within 0.5- mile of an active nest are not prohibited. C. Foraging Impacts: Generally, CDFW requires mitigation for foraging habitat based on the presence of active nests within 10 miles of the project. If an active nest site is identified within ten miles of the project site, the project proponent will be required by CDFW to provide off-site foraging habitat management lands at a specified Mitigation Ratio that is based on nest proximity to the project site.				
<b>Mitigation Measure BIO-2A: Nesting Bird, Roosting Bat, Burrowing Owl Survey, San Joaquin kit fox den Survey:</b> If project related activities are scheduled between February 1 to August 31 (the typical nesting season), a focused survey for nests shall be conducted by a Designated Biologist within fourteen (14) calendar days prior to the beginning of Project-related activities. The Designated Biologist shall survey: a minimum radius of 500-feet for migratory birds around the Project Area, and for sign of roosting bats, active burrowing owl burrows or active San Joaquin kit fox dens. If no active nests, roosts, burrows or dens are found, project activities may proceed as scheduled.	City of Tulare	14 days Prior to the Start of Construction	City of Tulare	
<b>Mitigation Measure BIO-2B: Active Nests or Roosts or Burrows or Dens</b> If an active nest, roost or burrow or den is located, then active nests, roosts or burrows or dens should be avoided, and a nodisturbance or destruction buffer shall be determined and established by a Designated Biologist. The buffer shall be kept in place until after the breeding nesting season or the Designated	City of Tulare	Ongoing during Construction	City of Tulare	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
<p>Biologist confirms the young have fledged, are foraging independently, and the nest or burrow is no longer active for the season. The extent of these buffers shall be determined by the Designated Biologist and will depend on the species present, the level of noise or construction disturbance, line of sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. If an occupied burrowing owl burrow is located the Biologist will consult with CDFW to install one-way doors over the burrow for an individual or an appropriate buffer distance for a nesting pair. If an active San Joaquin kit fox den is located, then consultation with the USFWS would be required in order to document this federally listed species presence in the Project Area.</p>				
<p><b>Mitigation Measure BIO-1c: Project Delay</b> If a lapse in Project-related work of thirty (30) calendar days or longer occurs, the Designated Biologist shall complete another focused survey before Project work can be reinitiated.</p>	City of Tulare	Prior to restarting construction	City of Tulare	
<p><b>Mitigation Measure CUL-1:</b> If previously unknown resources are encountered before or during grading activities, construction shall stop in the immediate vicinity of the find and a qualified historical resources specialist shall be consulted to determine whether the resource requires further study. The qualified historical resources specialist shall make recommendations to the City on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds</p>	City of Tulare	Ongoing During Construction	City of Tulare	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
<p>and evaluation of the finds in accordance with Section 15064.5 of the CEQA Guidelines and the City's Historic Preservation Ordinance. If the resources are determined to be unique historical resources as defined under Section 15064.5 of the CEQA Guidelines, measures shall be identified by the monitor and recommended to the Lead Agency. Appropriate measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these resources. Any historical artifacts recovered as a result of mitigation shall be provided to a City-approved institution or person who is capable of providing long-term preservation to allow future scientific study.</p>				
<p><b>Mitigation Measure CUL-2:</b> In the event that human remains are unearthed during excavation and grading activities of any future development Project, all activity shall cease immediately. Pursuant to Health and Safety Code (HSC) Section 7050.5, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98(a). If the remains are determined to be of Native American descent, the coroner shall within 24 hours notify the Native American Heritage Commission (NAHC). The NAHC shall then contact the most likely descendent of the deceased Native American, who shall then serve as the consultant on how to proceed</p>	City of Tulare	Ongoing During Construction	City of Tulare	



Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
with the remains. Pursuant to PRC Section 5097.98(b), upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment.				
<b>Mitigation Measure HRA-1:</b> Implement Tier 4 Engine Controls for all off-road, diesel-fueled equipment during construction.	City of Tulare	Prior to the Start of Construction	City of Tulare	
<b>HAZ-1 Soil Sampling:</b> Prior to the commencement of construction activities, the Project site must undergo soil sampling conducted by a qualified environmental consultant. A Soil Sampling and Analysis Plan (SSAP) will be developed and approved by the relevant regulatory agency. Soil samples will be collected and analyzed for contaminants, and the results will be compared to DTSC thresholds. If contamination is found, a Remediation Plan will be implemented to address the issue before construction begins. All activities will be documented and clearance from the regulatory agency must be obtained before proceeding with construction.	City of Tulare	Prior to the Start of Construction	City of Tulare	
<b>Mitigation Measure HYD-1:</b> Prior to the issuance of any construction/grading	City of Tulare	Prior to the Start of Construction	City of Tulare	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
<p>permit and/or the commencement of any clearing, grading, or excavation, the Applicant shall submit a Notice of Intent (NOI) for discharge from the Project site to the California SWRCB Storm Water Permit Unit.</p> <ul style="list-style-type: none"> <li>• Prior to issuance of grading permits for Phase 1 the Applicant shall submit a copy of the NOI to the City.</li> <li>• The City shall review noticing documentation prior to approval of the grading permit. City monitoring staff will inspect the site during construction for compliance.</li> </ul>				
<p><b>Mitigation Measure HYD-2:</b> The Applicant shall require the building contractor to prepare and submit a Storm Water Pollution Prevention Plan (SWPPP) to the City 45 days prior to the start of work for approval. The contractor is responsible for understanding the State General Permit and instituting the SWPPP during construction. A SWPPP for site construction shall be developed prior to the initiation of grading and implemented for all construction activity on the Project site in excess of one (1) acre, or where the area of disturbance is less than one acre but is part of the Project's plan of development that in total disturbs one or more acres. The SWPPP shall identify potential pollutant sources that may affect the quality of discharges to storm water and shall include specific BMPs to control the discharge of material from the site. The following BMP methods shall include, but would not be limited to:</p>	City of Tulare	45 Prior to the Start of Construction	City of Tulare	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
<ul style="list-style-type: none"> <li>Dust control measures will be implemented to ensure success of all onsite activities to control fugitive dust;</li> <li>A routine monitoring plan will be implemented to ensure success of all onsite erosion and sedimentation control measures;</li> <li>Provisional detention basins, straw bales, erosion control blankets, mulching, silt fencing, sand bagging, and soil stabilizers will be used;</li> <li>Soil stockpiles and graded slopes will be covered after two weeks of inactivity and 24 hours prior to and during extreme weather conditions; and</li> </ul> <p>BMPs will be strictly followed to prevent spills and discharges of pollutants onsite, such as material storage, trash disposal, construction entrances, etc.</p>				
<p><b>Mitigation Measure HYD-3:</b> A Development Maintenance Manual for the Project shall include comprehensive procedures for maintenance and operations of any stormwater facilities to ensure long-term operation and maintenance of post-construction stormwater controls. The maintenance manual shall require that stormwater BMP devices be inspected, cleaned, and maintained in accordance with the manufacturer's maintenance conditions. The manual shall require that devices be cleaned prior to the onset of the</p>	City of Tulare	Ongoing through Construction and Operation	City of Tulare	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
<p>rainy season (i.e., mid-October) and immediately after the end of the rainy season (i.e., mid-May). The manual shall also require that all devices be checked after major storm events. The Development Maintenance Manual shall include the following:</p> <ul style="list-style-type: none"> <li>• Runoff shall be directed away from trash and loading dock areas;</li> <li>• Bins shall be lined or otherwise constructed to reduce leaking of liquid wastes;</li> <li>• Trash and loading dock areas shall be screened or walled to minimize offsite transport of trash; and</li> <li>• Impervious berms, trench catch basin, drop inlets, or overflow containment structures nearby docks and trash areas shall be installed to minimize the potential for leaks, spills or wash down water to enter the drainage system.</li> </ul>				
<p><b>Mitigation Measure TRT-1:</b> The- following improvements shall be implemented as part of the Project's off-site transportation mitigation. These improvements are necessary to ensure that intersections continue to operate at an acceptable Level of Service (LOS) in compliance with the City of Tulare's General Plan and minimize congestion as the Project is developed:</p> <ol style="list-style-type: none"> <li>1. Mooney Blvd &amp; Cartmill Ave: Add a northbound through lane (NBT) and a southbound through lane (SBT).</li> </ol>	City of Tulare	Prior to the Respective Phase	City of Tulare	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
<p>2. Mooney Blvd &amp; Prosperity Ave: Add a northbound through lane (NBT), northbound left-turn lane (NBL), southbound through lane (SBT), southbound left-turn lane (SBL), eastbound through lane (EBT), eastbound left-turn lane (EBL), westbound through lane (WBT), and westbound left-turn lane (WBL).</p> <p>3. Morrison St &amp; Prosperity Ave: Install a traffic signal, eastbound right-turn lane (EBR) and westbound left-turn lane (WBL) as part of Phase 1 opening day improvements.</p> <ul style="list-style-type: none"> <li>A focused traffic study shall be completed prior to Phases 2 and 3 to determine whether warrants for traffic signal construction are projected to be met by the completion of each phase. If the traffic signal warrants will be met, a traffic signal or roundabout will be required as an opening day improvement for that phase.</li> </ul> <p>4. Mooney Blvd &amp; Seminole Ave: Install a traffic signal.</p> <ul style="list-style-type: none"> <li>A focused traffic study shall be completed prior to Phases 2 and 3 to determine whether warrants for traffic signal construction will be met. If so, a traffic signal and median island modifications will be part of opening day requirements for Phases 2 and 3.</li> </ul>				

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
<p>5. Morrison St &amp; Tulare Ave: Add an eastbound right-turn lane (EBR).</p> <p>6. Prosperity Ave &amp; Oakmore St: This intersection shall incorporate an eastbound right-turn lane (EBR), eastbound left-turn lane (EBL) and a westbound left-turn lane (WBL) by opening day of Phase 3.</p> <ul style="list-style-type: none"> <li>A focused traffic study shall be completed prior to Phase 3 to determine if warrants for traffic signal construction will be met. If so, a traffic signal or roundabout will be required by opening day of Phase 3.</li> </ul> <p>All traffic improvements shall be subject to Caltrans design and permitting requirements, including completion of an Intersection Control Evaluation per Caltrans guidelines, with completion of the improvements recommended therein required as an opening day improvement.</p>				

# Appendix C

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## Health Risk Assessment



**Technical Report**  
Health Risk Assessment  
For California Environmental Quality Act (CEQA)

**Project Name:**  
FNC Farming Residential Project  
Tulare, CA

**Prepared for:**  
4Creeks, Inc.  
Visalia, CA

**Author:**  
Core Environmental Consulting  
Clovis, CA

**Lead Agency:**  
City of Tulare

**Date of Preparation:**  
September 2024



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## Contents

1	Executive Summary .....	1
2	Project Description .....	2
3	Health Risk Assessment Setting .....	7
3.1	San Joaquin Valley Air Pollution Control District.....	7
3.2	Thresholds of Significance.....	8
4	HRA Methodology .....	10
5	HRA Results .....	12
5.1	Construction Risk .....	12
5.2	Mitigation .....	12
6	References.....	14

## Tables

Table 1	SJVAPCD Thresholds of Significance – Toxic Air Contaminants.....	9
Table 2	HRA Results Compared to SJVAPCD Thresholds of Significance .....	12

## Figures

Figure 1	Vicinity Map .....	4
Figure 2	Regional Location .....	5
Figure 3	Conceptual Site Plan .....	6

## 1 Executive Summary

This technical report has been prepared to summarize the background, methodology, and results of a Health Risk Assessment (HRA) for the FNC Farming Residential project (Project) in Tulare, California. The Project proposes development of 556 units of low-density residential development, a community park, and a 7.8-acre rural residential remainder parcel on approximately 140.32 gross acres of land within an unincorporated area of the County of Tulare. The Project would also include annexation of the Project site into the City limits of the City of Tulare, a General Plan Amendment, pre-zoning of the property, and a subdivision map.

The Project is subject to the California Environmental Quality Act (CEQA), with City of Tulare (City) serving as the Lead Agency pursuant to the *CEQA Statute and Guidelines*<sup>1</sup> (CEQA Guidelines). An Initial Study was completed and subsequently a focused Environmental Impact Report (EIR) due to potentially significant biological and cultural impacts. The City issued comments requesting an HRA to assess the impact of construction diesel particulate matter (DPM) on nearby receptors; there were no other potentially-significant impacts expected for air quality or greenhouse gases.

The Project site is under the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD), which oversees the assessment of health risk associated with Toxic Air Contaminant (TAC) emissions from new development in the San Joaquin Valley Air Basin (SJVAB). SJVAPCD lays out a basic framework for understanding and assessing health risk, under CEQA, in its *Guidance for Assessing and Mitigating Air Quality Impacts*<sup>2</sup> (GAMAQI). Projects that would either place a new source of TAC in the vicinity of existing sensitive receptors, or would place new sensitive receptors in the vicinity of existing sources of TAC, must be assessed to determine whether the resulting health risk to sensitive receptors would exceed SJVAPCD established thresholds of significance for carcinogenic, acute, and chronic risk.

This HRA was prepared in accordance with the guidelines outlined in the Office of Environmental Health Hazard Assessment (OEHHA) *Guidance Manual for Preparation of Health Risk Assessments*<sup>3</sup>, SJVAPCD Policy APR 1906 – *Framework for Performing Health Risk Assessments*<sup>4</sup>, and SJVAPCD *Guidance for Air Dispersion Modeling*<sup>5</sup>.

Construction health risk, associated with diesel particulate matter (DPM) emissions from construction vehicle and equipment use, was modeled using the CARB Hotspots Analysis and Reporting Program (HARP2) *Air Dispersion Modeling and Risk Tool*<sup>6</sup> (ADMRT). A mitigation measure (HRA-1 Tier 4 Engine Controls for off-road equipment) was incorporated to ensure calculated risks remain less than significant.

The results of this HRA demonstrate that the Project would result in construction health risk below the SJVAPCD thresholds of significance. Therefore, the Project would not expose sensitive receptors to substantial pollutant concentrations, and related impacts would be *less than significant with mitigation incorporated* according to the *CEQA Guidelines*.

<sup>1</sup> (Association of Environmental Professionals, 2024)

<sup>2</sup> (San Joaquin Valley Air Pollution Control District, 2015)

<sup>3</sup> (Office of Environmental Health Hazard Assessment, 2015)

<sup>4</sup> (San Joaquin Valley Air Pollution Control District, 2020)

<sup>5</sup> (San Joaquin Valley Air Pollution Control District, 2022a)

<sup>6</sup> (California Air Resources Board, 2022a)

## 2 Project Description

According to the *Initial Study for the FNC Farming Residential Project* prepared by 4Creeks, Inc.<sup>7</sup> (Initial Study), the Project proposes the construction of 556 single-family residential units and a 5.47-acre central park and pond on parcels 172-010-021, 172-010-022, and 184-020-010 as well as annexation of the 140.32-acre site into the City of Tulare. The Project also proposes the zoning of 7.8-acres of the site as Rural Residential, but the parcel will remain undeveloped at this time.

A Vicinity Map, Regional Location, and Conceptual Site Plan, from the Initial Study are included below as Figure 1, Figure 2, and Figure 3, respectively.

The Project site is located on the Southeast corner of Prosperity Avenue and Morrison Street within the City of Tulare Urban Development Boundary and Sphere of Influence and the unincorporated area of Tulare County. The site is West of Road 126, East of Morrison Street, and South of Prosperity Avenue, approximately 2.87 miles Northeast of downtown Tulare. The site is topographically flat and is bounded by agricultural uses to the South and East, single-family housing to the North, and a single-family subdivision that is currently under construction to the West. The property was used for irrigated row crops until recently. Currently the Project Area is partially covered with a tarp or is bare ground after row crop removal, with annual grasses and herbaceous weeds in portions where there is no tarp cover. A small portion of the property is used for potted blueberry cultivation. The site also contains an on-site irrigation water supply, which includes a 0.5-acre pump station pond.

The 140.32-acre Project site is currently under Tulare County jurisdiction but has been included in the City of Tulare's Sphere of Influence according to the 2035 City of Tulare General Plan. The County has zoned the site as Exclusive Agriculture 20-Acre and 40-Acre minimum (AE-20, AE-40), and the City of Tulare has designated the site as Residential Estate (2.1-3 D.U./acre) and Rural Residential (0-2 D.U./acre). The applicant is proposing to pre-zone the majority of the subject property to R-1-5 Single-Family Residential, 5,000 sq. ft. minimum lot area zoning designation with an approximately 7.8-acre remainder to be zoned Rural Residential. The proposed pre-zoning will become effective upon annexation of the Project site into the City of Tulare.

The Project would result in onsite and offsite infrastructure improvements including new and relocated utilities, new residential streets, including the extension of North Oakmore Street. Morrison Street and Prosperity Avenue would be widened to their full planned right-of-way and curb, gutter, and sidewalk would be installed. The Project would require no demolition of any anchored structure, but there are approximately 33.9 acres of agricultural high tunnels that will be removed prior to construction.

Additionally, several roadway improvements to intersections surrounding the Project site may result which may include the installation of traffic signals, realignment or addition of traffic lanes, and/or addition of turn-lanes. Further analysis on potential traffic improvements and the potential impact of traffic delays is discussed in more detail in the Focused Environmental Impact Report (EIR) prepared for the proposed Project.

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<sup>7</sup> (4Creeks, Inc., 2024)

Surrounding land uses include:

- North: rural, single family housing; then agricultural
- South: agricultural; then low-density, rural, single-family housing
- East: agricultural
- West: currently vacant; then single-family housing and City of Tulare

Construction is currently expected to occur in five (5) phases; however, the exact timelines, along with final details of the fully-developed Project, are not yet known as they will depend on completing all required permits and incorporating all design considerations and conditions of approval.



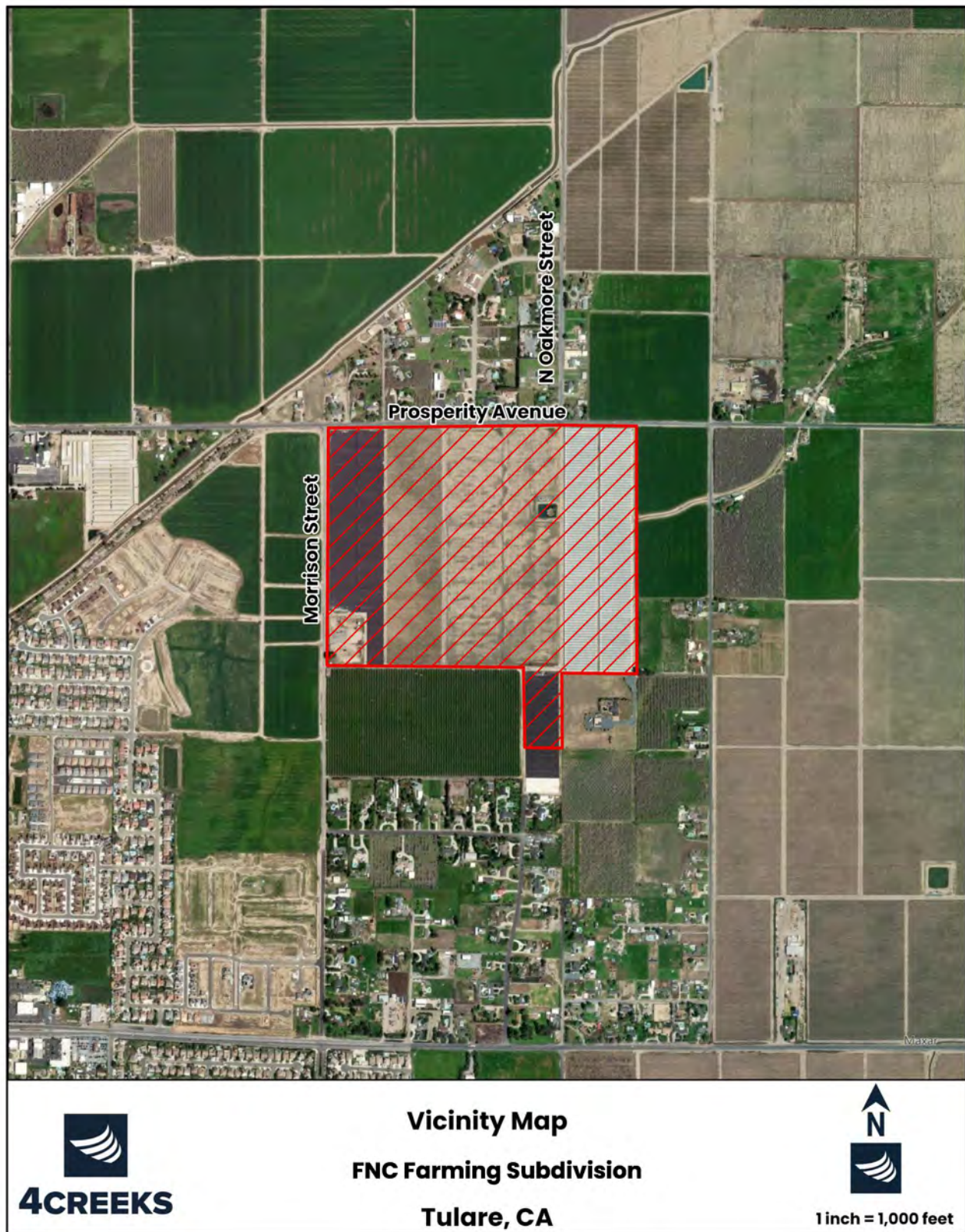


Figure 1. Vicinity Map





Figure 2. Regional Location Map



Figure 3: Conceptual Site Plan



### 3 Health Risk Assessment Setting

#### 3.1 San Joaquin Valley Air Pollution Control District

The Project is located in the San Joaquin Valley Air Basin (SJVAB), which consists of eight counties: Fresno, Kern (western and central), Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare. Air pollution in the SJVAB can be attributed to both human-related (anthropogenic) and natural (biogenic) activities that produce emissions.

Area and stationary sources within SJVAB are under the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD). An overview of important air pollutants, and SJVAPCD roles in controlling them, is provided in the SJVAPCD *Guidance for Assessing and Mitigating Air Quality Impacts*<sup>8</sup> (GAMAQI), along with in-depth discussions on the meteorology and geography that contribute to unhealthy levels of air pollution. This HRA focuses on Toxic Air Contaminants (TAC).

Toxic Air Contaminants (TAC), as defined by the California Health & Safety Code (CH&SC) §44321, are listed in Appendices AI and AII in AB 2588 Air Toxic “Hot Spots” and Assessment Act’s Emissions Inventory Criteria and Guideline Regulation document. Potential health impacts from TACs are generally categorized into two groups: carcinogenic (cancer causing) effects and non-carcinogenic (non-cancer-causing) effects.

The non-carcinogenic effects can be further divided into long-term (chronic) health effects such as birth defects, neurological damage, or genetic damage; and short-term (acute) effects such as eye irritation, respiratory irritation, and nausea. The California TAC list identifies about 700 plus pollutants. Carcinogenic and/or non-carcinogenic toxicity criteria have been established for a subset of these pollutants by OEHHA, as required by CH&SC §44360. TACs used in determining the potential exposure to the public should not be confused with the 189 Hazardous Air Pollutants (HAP) listed in the Clean Air Act.

SJVAPCD oversees the assessment of health risk associated with TAC emissions from new development in the SJVAB. SJVAPCD lays out a basic framework for understanding and assessing health risk, under CEQA, in the GAMAQI.

The location of a development project is a major factor in determining whether the project will result in localized air quality impacts. The potential for adverse air quality impacts increases as the distance between the source of emissions and receptors decreases. Receptors include sensitive receptors and worker receptors. Sensitive receptors refer to those segments of the population most susceptible to poor air quality (i.e., children, the elderly, and those with pre-existing serious health problems affected by air quality). Land uses where sensitive individuals are most likely to spend time include schools and schoolyards, parks and playgrounds, daycare centers, nursing homes, hospitals, and residential communities (these sensitive land uses may also be referred to as sensitive receptors). Worker receptors refer to employees and locations where people work. Impacts on sensitive receptors are of particular concern, because they are the people most vulnerable to the effects of air pollution.

<sup>8</sup> (San Joaquin Valley Air Pollution Control District, 2015)

From a health risk perspective there are two types of land use projects that have the potential to cause long-term public health risk impacts:

**Type A Projects:** Land use projects that will place new toxic sources in the vicinity of existing receptors.

**Type B Projects:** Land use projects that will place new receptors in the vicinity of existing toxics sources.

Projects of either type must be assessed to determine whether the resulting health risk to sensitive receptors would exceed SJVAPCD established thresholds of significance for carcinogenic, non-carcinogenic acute, and non-carcinogenic chronic risk.

The OEHHA *Risk Assessment Guidelines* are the standards for estimating health risks. OEHHA is responsible for developing and providing toxicological and medical information relevant to decisions involving public health to state and local government agencies. Historically, state laws have required OEHHA to develop Risk Assessment Guidelines for estimating health risk associated with various sources of air pollution. Furthermore, the Children's Environmental Health Protection Act (SB 25, Escutia, 1999) requires OEHHA to biennially review risk assessment methods for air toxics, and related information, to ensure that they adequately protect infants and children.

The SJVAPCD risk management policy works in conjunction with the OEHHA *Risk Assessment Guidelines*. The SJVAPCD risk management policy further clarifies and provides guidance on the appropriate options to use, such as a longer exposure period and more conservative air dispersion modeling.

SJVAPCD staff members are considered leading statewide experts in the field of health risk assessment and have developed significant resources from guidance documents to database tools to assist other agencies, consultants, and regulated sources. Therefore, the SJVAPCD concludes that use of its risk management policy and the OEHHA *Risk Assessment Guidelines* is appropriate in determining significance within the environmental review process.

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## 3.2 Thresholds of Significance

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This HRA focuses on answering the following question from the Air Quality section of Appendix G in the *CEQA Guidelines*<sup>9</sup>:

### ***3. Would the Project expose sensitive receptors to substantial pollutant concentrations?***

The *CEQA Guidelines* state that, where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make a significance determination.

SJVAPCD has established the following thresholds of significance for risk exposure to TAC:

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<sup>9</sup> (Association of Environmental Professionals, 2024)

**Table 1 SJVPACD Thresholds of Significance – Toxic Air Contaminants**

<b>CARCINOGENS</b>	Maximally Exposed Individual risk equals or exceeds 20 in one million
<b>NON CARCINOGENS</b>	<b>Acute:</b> Hazard Index equals or exceeds 1 for the Maximally Exposed Individual
	<b>Chronic:</b> Hazard Index equals or exceeds 1 for the Maximally Exposed Individual

Source: (San Joaquin Valley Air Pollution Control District, 2015)

Therefore, if the calculated risk exposure from Project TAC emissions is below the SJVAPCD thresholds of significance, it can be concluded that the Project would not expose sensitive receptors to substantial pollutant concentrations and this impact would be considered less than significant under CEQA.

## 4 HRA Methodology

The Project could result in toxic air contaminant (TAC) emissions during construction and, to a limited extent, during operation. The primary TAC emissions resulting from Project construction would include diesel particulate matter (DPM), which consists of particulate matter 2.5 microns and smaller (PM<sub>2.5</sub>) exhausted during the operation of on- and-off road diesel-fueled vehicles and equipment.

DPM is the particulate component of diesel exhaust and has been identified as a TAC by the California Air Resources Board (CARB) based on its potential exposures and health concerns. Epidemiological studies strongly suggest a relationship between occupational diesel exhaust exposure and lung cancer. A number of adverse acute and chronic effects have also been associated with exposure to diesel exhaust.<sup>10</sup>

Once operational, diesel-fueled vehicle and equipment use would be minimal and would not result in a substantial health risk. The Project includes residential units and a city park; thus, there are no other substantial sources of TAC expected during construction or operation. Additional health risk could occur from the use of household cleaners, commercial products, landscaping equipment, and a number of other area sources; however, determining the use of such TAC sources would be highly speculative, and the health risk impact from these sources would be less than significant because existing federal, state, and local regulations are enforced for the composition, use, and disposal of these hazardous materials. This HRA is thus focused on construction DPM.

Construction health risk was evaluated in the following steps:

1. Maximum (worst year) annual construction emissions of exhaust PM<sub>2.5</sub> were estimated using the *California Emissions Estimator Model*<sup>11</sup> (CalEEMod) (Version 2022.1). CalEEMod results are attached in Appendix A. The land uses described in the Project Description were input, consistent with the Initial Study, and default values were used for construction duration and equipment. Modeling the unmitigated construction DPM emissions resulted in estimated risk that could have exceeded the SJVAPCD threshold of significance for carcinogens. Therefore, Mitigation Measure HRA-1 (see Mitigation section below) was applied in the CalEEMod analysis, and the mitigated DPM emissions were used for the ADMRT calculations described below.
2. The United States Environmental Protection Agency's (U.S. EPA) *American Meteorological Society/EPA Regulatory Model* (AERMOD) air dispersion model was used to model the annual downwind air concentration at nearby receptors, based on a normalized emission rate of one gram per second. Meteorological data was obtained from SJVAPCD (Visalia met site), along with required modeling parameters. Terrain was incorporated using built in tools. A total of 89 nearby receptors, all residences, were selected.
3. Normalized downwind air concentrations for each receptor were imported into the CARB Hotspots Analysis and Reporting Program (HARP2) *Air Dispersion Modeling and Risk Tool*<sup>12</sup> (ADMRT) and combined with the toxic emissions data (mitigated DPM emissions from the CalEEMod step described above) to estimate the ground level concentrations of DPM at each receptor.

<sup>10</sup> (California Air Resources Board, 2024)

<sup>11</sup> (California Air Pollution Control Officers Association, 2022)

<sup>12</sup> (California Air Resources Board, 2022a)

4. Cancer risk and chronic and acute hazard indices were then estimated in ADMRT using SJVAPCD required exposure parameters and Project information.

Sensitive receptors include nearby residences to the north, east, and west, with the closest being approximately 40 meters north of the Project site perimeter. A total of 89 nearby receptors were selected for a representative analysis. SJVAPCD recommended parameters were used throughout. Results of the AERMOD modeling and ADMRT calculations are attached in Appendix B, along with a map of receptors.

Modeling input and output files will be made available to reviewing agencies upon request.



## 5 HRA Results

### 5.1 Construction Risk

Results of the construction risk assessments are compared to SJVAPCD thresholds of significance in the table below. The highest risk exposure occurred at receptor 3, approximately 40 meters north of the Project site.

**Table 2 HRA Results Compared to SJVAPCD Thresholds of Significance**

RISK	CARCINOGEN (risk in one million)	ACUTE HAZARD INDEX	CHRONIC HAZARD INDEX
Construction	9.4	n/a	n/a
<b>Thresholds of Significance</b>	20	1	1

Notes: Hazard indices are for Maximally Exposed Individual.  
Includes Tier 4 Engine Controls for Off-Road Diesel Equipment

Sources: Appendix B HRA Results

As shown in the Table above, construction risk would be below the SJVAPCD Thresholds of Significance. The results include implementation of Mitigation Measure HRA-1, described below. Therefore, consistent with the *CEQA Guidelines*<sup>13</sup>, the Project would not expose sensitive receptors to substantial pollutant concentrations, and this impact would be considered *less-than-significant with mitigation incorporated*.

As described in the Air Quality and Greenhouse Gas sections of the Initial Study, the Project would also comply with other regulatory requirements to reduce construction emissions, further reducing associated risks.

### 5.2 Mitigation

Modeling the unmitigated DPM emissions resulted in risk estimates that could exceed the SJVAPCD threshold of significance for carcinogens. Implementation of the following Mitigation Measure HRA-1 would reduce DPM emissions to a level that results in carcinogenic risk below the SJVAPCD threshold of significance.

***Mitigation Measure HRA-1: Implement Tier 4 Engine Controls for all off-road, diesel-fueled equipment during construction.***

Additionally, the use of Tier 4 engine controls is consistent with U.S. EPA, CARB, and SJVAPCD goals for implementing mitigation measures that directly reduce DPM emissions. According to the CalEEMod analysis, implementation of Mitigation Measure HRA-1 would reduce worst-year, annual DPM emissions by approximately 69%, thus reducing potential impacts to a less-than-significant level.

<sup>13</sup> (Association of Environmental Professionals, 2024)

Unlike Tier 1 through Tier 3 engine controls, Tier 4 generally requires the addition of emissions control equipment even to new engines, such as a Diesel Particulate Filter (DPF).<sup>14</sup> The construction contractor(s) may decide implementation is not technically or economically feasible. Modeling indicated that only a 34% reduction<sup>15</sup> was required to keep cancer risk below the threshold of significance.

Tier 4 engine controls were selected as a health-conservative risk reduction measure to ensure that, regardless of whether additional reductions are implemented or slightly higher levels of DPM are produced, the health risk would remain well below the threshold.

Other measures were considered (lower-tier engine controls; Construction Clean Fleet) but were either not effective enough to achieve the required emissions reduction without also including Tier 4 controls (or component equipment such as diesel particulate filters, oxidative catalysts, etc.), or likely to be equally burdensome to the contractor(s) and agencies responsible for verifying. There are still a wide variety of alternative measures that could be selected and combined to achieve the required reduction, including but not limited to the following relevant options:

- **Electrification and/or Hybridization.** The construction contractor(s) could replace diesel-fueled equipment with electric and/or hybrid options.
- **Less diesel-fueled equipment and/or less operating hours.** The construction contractor(s) could require less equipment and/or less operating hours than included in the health-conservative CalEEMod default assumptions.
- **Use Newer Equipment or Clean Fuels.** Similar to the options above, the construction contractor(s) could use newer equipment or cleaner fuel equipment than included in the CalEEMod analysis.

If a different option is selected that Mitigation Measure HRA-1, an updated CalEEMod analysis should be performed, and reviewed by the Lead Agency (City), to demonstrate a reduction in DPM emissions (compared to the unmitigated emissions presented Appendix A of the Initial Study) of at least 34%. The selected control method(s) should be added as specifications to construction bid documents, along with a requirement to submit records of implementation to the Lead Agency before project closeout is approved. It is recommended that quarterly and/or annual reporting be required throughout construction as well.

Implementation of Mitigation Measure HRA-1 would ensure that carcinogenic health risk impacts from construction DPM would remain less than significant.

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<sup>14</sup> (California Air Pollution Control Officers Association, 2024)

<sup>15</sup> Calculated dividing the difference between threshold of significance and risk from unmitigated emissions by the risk from unmitigated emissions.

## 6 References

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## Appendix A. CalEEMod Results

Prepared by Core Environmental Consulting:

Jesse Madsen, Owner, Principal Environmental Scientist  
Clovis, CA

September 2024

# FNC Farming Summary Report

## Table of Contents

- 1. Basic Project Information
  - 1.1. Basic Project Information
  - 1.2. Land Use Types
  - 1.3. User-Selected Emission Reduction Measures by Emissions Sector
- 2. Emissions Summary
  - 2.1. Construction Emissions Compared Against Thresholds
- 6. Climate Risk Detailed Report
  - 6.2. Initial Climate Risk Scores
  - 6.3. Adjusted Climate Risk Scores
- 7. Health and Equity Details
  - 7.3. Overall Health & Equity Scores
  - 7.5. Evaluation Scorecard

# 1. Basic Project Information

## 1.1. Basic Project Information

Data Field	Value
Project Name	FNC Farming
Construction Start Date	1/25/2025
Lead Agency	City of Tulare
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	1.90
Precipitation (days)	24.4
Location	36.22250929924985, -119.29890717919542
County	Tulare
City	Unincorporated
Air District	San Joaquin Valley APCD
Air Basin	San Joaquin Valley
TAZ	2747
EDFZ	9
Electric Utility	Eastside Power Authority
Gas Utility	Southern California Gas
App Version	2022.1.1.28

## 1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Single Family Housing	556	Dwelling Unit	127	1,084,200	6,512,348	—	1,879	—
City Park	5.47	Acre	5.47	0.00	214,446	214,446	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-5	Use Advanced Engine Tiers

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Un/Mit.	PM2.5E
Daily, Summer (Max)	—
Unmit.	1.14
Mit.	0.40
% Reduced	65%
Daily, Winter (Max)	—
Unmit.	1.26
Mit.	0.40
% Reduced	68%
Average Daily (Max)	—
Unmit.	0.76
Mit.	0.23
% Reduced	69%
Annual (Max)	—
Unmit.	0.14
Mit.	0.04
% Reduced	69%

6. Climate Risk Detailed Report



6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

## 7. Health and Equity Details

### 7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	79.0
Healthy Places Index Score for Project Location (b)	55.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

b: The maximum Healthy Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

### 7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

## Appendix B. AERMOD and ADMRT Results

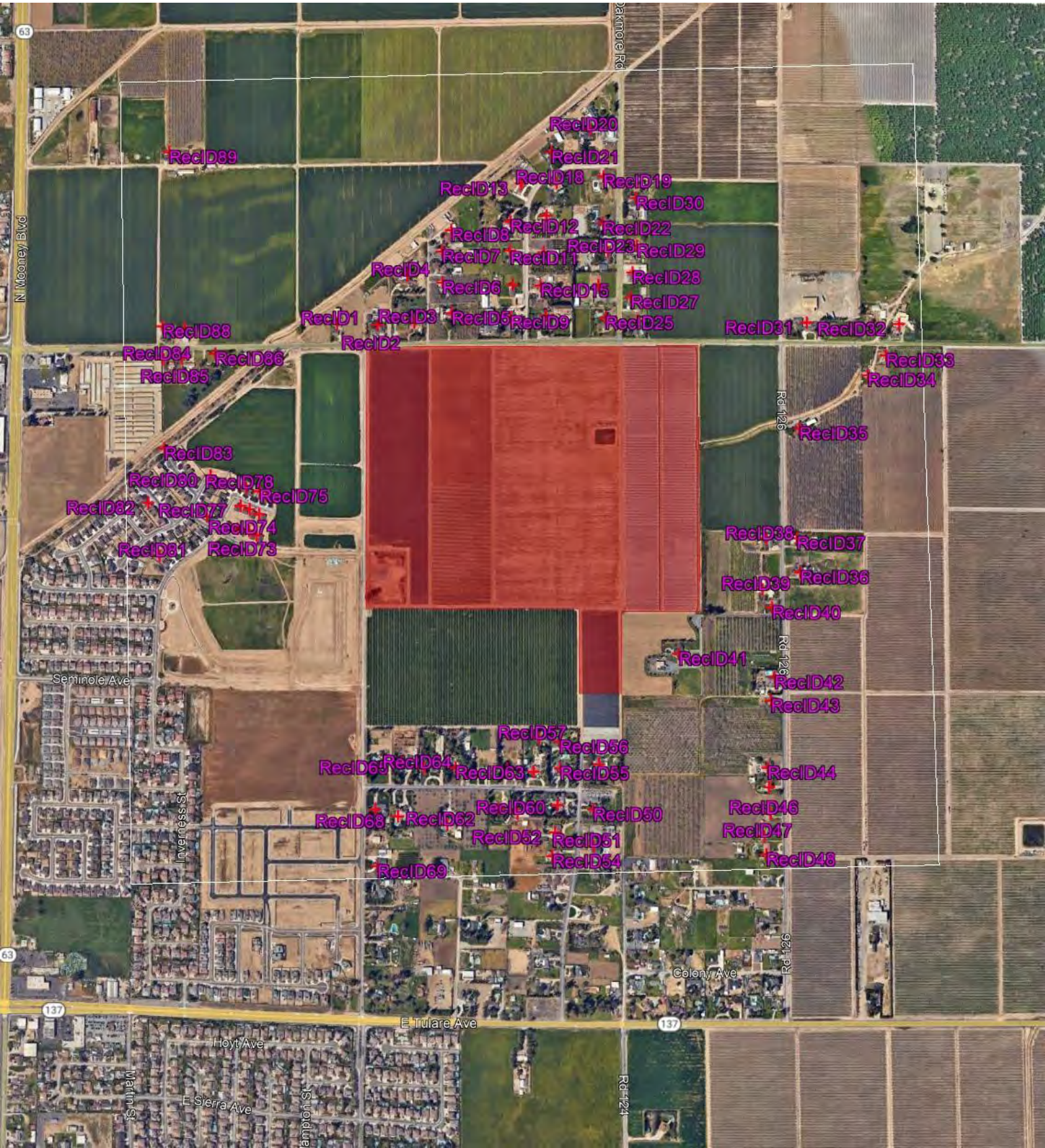
Prepared by Core Environmental Consulting:

Jesse Madsen, Owner, Principal Environmental Scientist  
Clovis, CA

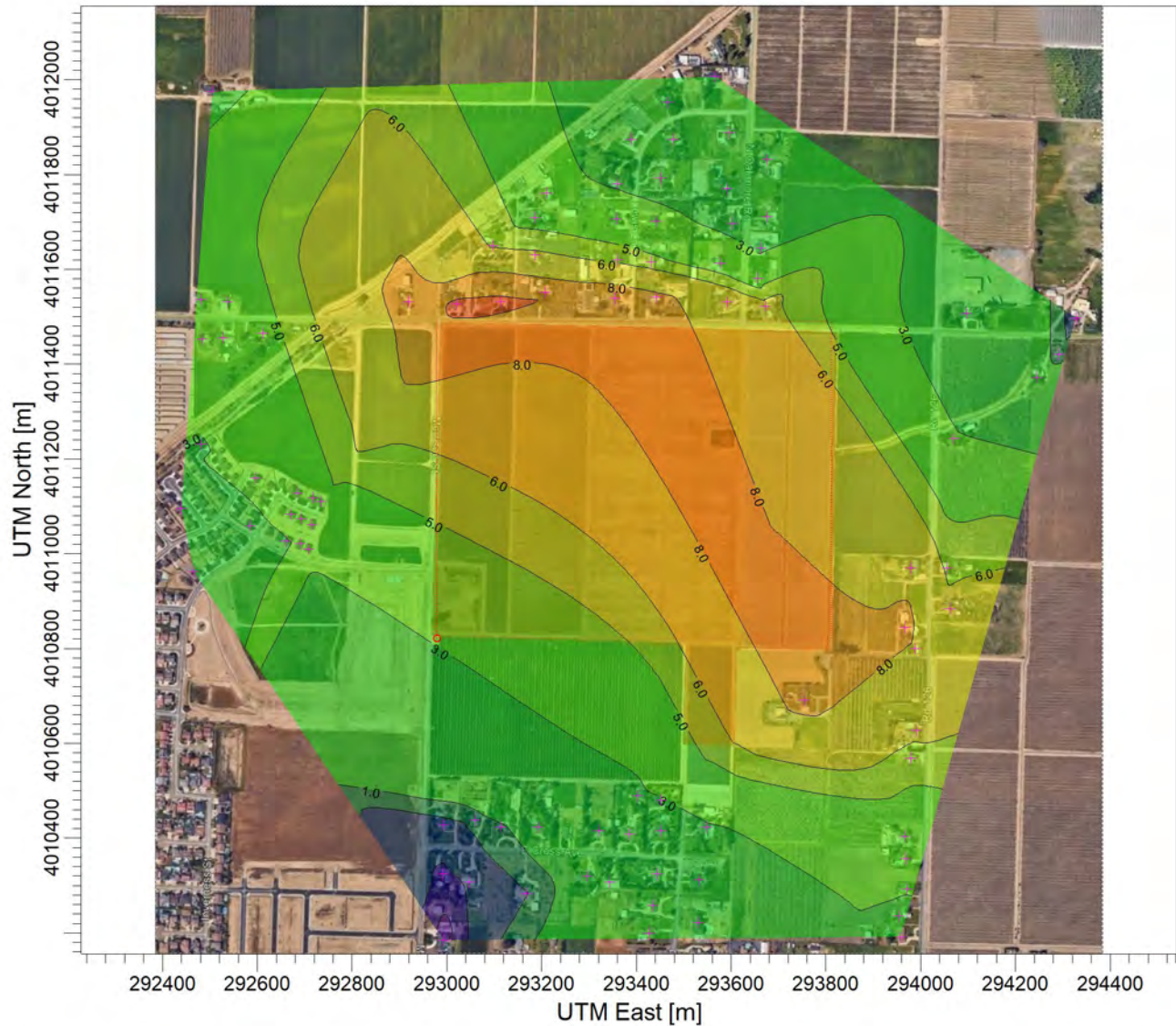
September 2024



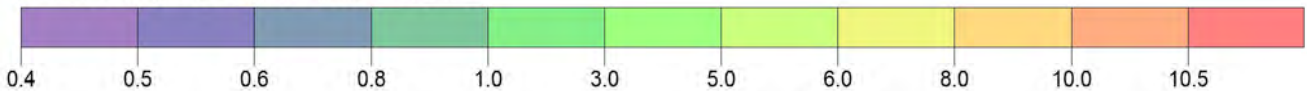
FNC Farming Residential HRA  
Appendix B - AERMOD/ADMRT Results  
Receptor Map  
September 2024








PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 4 YEARS FOR SOURCE GROUP: AREA1  
Max: 10.5 [ug/m^3] at (293112.89, 4011531.96)



COMMENTS:	SOURCES: <b>1</b>	COMPANY NAME:	
	RECEPTORS: <b>89</b>	MODELER:	
	OUTPUT TYPE: <b>Concentration</b>	SCALE: 1:14,546 0  0.5 km	
	MAX: <b>10.5 ug/m^3</b>	DATE: <b>9/5/2024</b>	PROJECT NO.:

\*\*HARP - Air Dispersion Modeling and Risk Tool v22118

\*\*9/4/2024

\*\*Exported Risk Results

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO	INHAL_RIS	SOIL_RISK	DERMAL_R
1	ALL		292918.9	4011533	7.74E-06	15YrCance	7.74E-06	0	0
2	ALL		293021	4011527	9.36E-06	15YrCance	9.36E-06	0	0
3	ALL		293112.9	4011532	9.40E-06	15YrCance	9.40E-06	0	0
4	ALL		293098	4011651	5.26E-06	15YrCance	5.26E-06	0	0
5	ALL		293207.2	4011552	8.22E-06	15YrCance	8.22E-06	0	0
6	ALL		293185.9	4011630	5.59E-06	15YrCance	5.59E-06	0	0
7	ALL		293186.6	4011708	4.02E-06	15YrCance	4.02E-06	0	0
8	ALL		293210.7	4011762	3.23E-06	15YrCance	3.23E-06	0	0
9	ALL		293354.2	4011538	8.34E-06	15YrCance	8.34E-06	0	0
10	ALL		293361.6	4011620	5.13E-06	15YrCance	5.13E-06	0	0
11	ALL		293357.6	4011706	3.45E-06	15YrCance	3.45E-06	0	0
12	ALL		293359.6	4011780	2.57E-06	15YrCance	2.57E-06	0	0
13	ALL		293389	4011875	1.79E-06	15YrCance	1.79E-06	0	0
14	ALL		293442.7	4011541	7.57E-06	15YrCance	7.57E-06	0	0
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16	ALL		293441.2	4011700	3.13E-06	15YrCance	3.13E-06	0	0
17	ALL		293450.6	4011792	2.13E-06	15YrCance	2.13E-06	0	0
18	ALL		293478.1	4011875	1.56E-06	15YrCance	1.56E-06	0	0
19	ALL		293595.9	4011888	1.23E-06	15YrCance	1.23E-06	0	0
20	ALL		293566.5	4012006	9.69E-07	15YrCance	9.69E-07	0	0
21	ALL		293466.7	4011953	1.27E-06	15YrCance	1.27E-06	0	0
22	ALL		293591.7	4011770	1.77E-06	15YrCance	1.77E-06	0	0
23	ALL		293602.7	4011697	2.27E-06	15YrCance	2.27E-06	0	0
24	ALL		293576.7	4011614	3.71E-06	15YrCance	3.71E-06	0	0
25	ALL		293592.5	4011532	6.52E-06	15YrCance	6.52E-06	0	0
26	ALL		293672.6	4011523	5.77E-06	15YrCance	5.77E-06	0	0
27	ALL		293656.9	4011582	3.66E-06	15YrCance	3.66E-06	0	0
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31	ALL		294096.4	4011508	9.49E-07	15YrCance	9.49E-07	0	0
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33	ALL		294292.3	4011421	7.96E-07	15YrCance	7.96E-07	0	0
34	ALL		294245.2	4011373	1.04E-06	15YrCance	1.04E-06	0	0
35	ALL		294070	4011243	2.84E-06	15YrCance	2.84E-06	0	0
36	ALL		294062	4010885	5.54E-06	15YrCance	5.54E-06	0	0
37	ALL		294055.5	4010970	5.25E-06	15YrCance	5.25E-06	0	0
38	ALL		293979.7	4010970	6.86E-06	15YrCance	6.86E-06	0	0
39	ALL		293966.7	4010845	7.60E-06	15YrCance	7.60E-06	0	0
40	ALL		293988.9	4010799	7.00E-06	15YrCance	7.00E-06	0	0

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47 ALL	293953.3	4010236	2.42E-06	15YrCance	2.42E-06	0	0
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50 ALL	293531.7	4010312	1.74E-06	15YrCance	1.74E-06	0	0
51 ALL	293530.4	4010222	1.35E-06	15YrCance	1.35E-06	0	0
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82 ALL	292439.4	4011096	1.87E-06	15YrCance	1.87E-06	0	0
83 ALL	292481.8	4011231	2.62E-06	15YrCance	2.62E-06	0	0
84 ALL	292483.6	4011454	3.14E-06	15YrCance	3.14E-06	0	0



85 ALL	292527.8	4011456	3.42E-06	15YrCance	3.42E-06	0	0
86 ALL	292612.6	4011465	4.06E-06	15YrCance	4.06E-06	0	0
87 ALL	292537.1	4011531	3.44E-06	15YrCance	3.44E-06	0	0
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**
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**
** AERMOD Input Produced by:
** AERMOD View Ver. 12.0.0
** Lakes Environmental Software Inc.
** Date: 9/4/2024
** File: C:\Lakes\AERMOD View\FNC Farming\FNC Farming.ADI
**
*****
**
**
*****
** AERMOD Control Pathway
*****
**
**
CO STARTING
  TITLEONE C:\Lakes\AERMOD View\FNC Farming\FNC Farming.isc
  MODELOPT DFAULT CONC
  AVERTIME ANNUAL
  POLLUTID OTHER
  RUNORNOT RUN
  ERRORFIL "FNC Farming.err"
CO FINISHED
**
*****
** AERMOD Source Pathway
*****
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
  LOCATION AREA1      AREA      292979.000   4010822.000      89.250
** DESCRSRC Construction
** Source Parameters **
  SRCPARAM AREA1      1.7977E-06      4.000   834.000   667.000      0.000
0.000
  SRCGROUP AREA1      AREA1
SO FINISHED
**
*****
** AERMOD Receptor Pathway
*****
**
**
RE STARTING
** DESCRREC "" ""
  DISCCART      292918.88   4011532.75   90.82   90.82

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DISCCART	293112.89	4011531.96	90.84	90.84
DISCCART	293097.97	4011650.57	90.66	90.66
DISCCART	293207.15	4011552.39	90.69	90.69
DISCCART	293185.94	4011630.15	90.65	90.65
DISCCART	293186.63	4011708.40	90.88	90.88
DISCCART	293210.67	4011761.81	90.95	90.95
DISCCART	293354.22	4011538.14	90.69	90.69
DISCCART	293361.57	4011620.26	90.76	90.76
DISCCART	293357.56	4011706.39	91.01	91.01
DISCCART	293359.56	4011779.84	91.23	91.23
DISCCART	293388.95	4011874.62	91.22	91.22
DISCCART	293442.74	4011540.90	90.68	90.68
DISCCART	293431.75	4011616.31	90.74	90.74
DISCCART	293441.17	4011700.36	90.98	90.98
DISCCART	293450.60	4011792.27	91.63	91.63
DISCCART	293478.09	4011874.75	91.46	91.46
DISCCART	293595.92	4011888.10	91.46	91.46
DISCCART	293566.50	4012006.20	91.58	91.58
DISCCART	293466.73	4011952.78	91.44	91.44
DISCCART	293591.66	4011769.63	91.25	91.25
DISCCART	293602.66	4011697.36	91.16	91.16
DISCCART	293576.74	4011614.09	91.00	91.00
DISCCART	293592.45	4011531.60	90.93	90.93
DISCCART	293672.58	4011522.96	90.92	90.92
DISCCART	293656.87	4011581.88	91.01	91.01
DISCCART	293663.15	4011643.94	91.19	91.19
DISCCART	293675.72	4011710.71	91.24	91.24
DISCCART	293676.51	4011830.90	91.48	91.48
DISCCART	294096.35	4011507.52	91.30	91.30
DISCCART	294327.42	4011498.28	92.08	92.08
DISCCART	294292.30	4011420.64	91.79	91.79
DISCCART	294245.16	4011372.57	91.79	91.79
DISCCART	294069.97	4011243.08	91.48	91.48
DISCCART	294061.98	4010885.03	90.63	90.63
DISCCART	294055.45	4010969.88	90.73	90.73
DISCCART	293979.74	4010969.88	90.32	90.32
DISCCART	293966.69	4010844.57	90.30	90.30
DISCCART	293988.88	4010798.88	90.25	90.25
DISCCART	293753.93	4010690.54	90.33	90.33
DISCCART	293990.19	4010626.58	90.31	90.31
DISCCART	293979.74	4010569.15	89.98	89.98
DISCCART	293966.39	4010404.31	89.43	89.43
DISCCART	293969.01	4010356.01	89.40	89.40
DISCCART	293970.31	4010292.05	89.25	89.25
DISCCART	293953.34	4010235.92	89.12	89.12
DISCCART	293957.26	4010191.54	89.08	89.08
DISCCART	293548.68	4010422.58	89.19	89.19
DISCCART	293531.71	4010311.63	88.88	88.88
DISCCART	293530.41	4010221.56	88.75	88.75

DISCCART	293435.12	4010258.11	88.60	88.60
DISCCART	293442.95	4010324.68	89.15	89.15
DISCCART	293427.29	4010199.37	88.66	88.66
DISCCART	293452.09	4010414.75	89.51	89.51
DISCCART	293452.09	4010480.02	89.37	89.37
DISCCART	293401.18	4010489.16	89.08	89.08
DISCCART	293385.52	4010408.22	89.42	89.42
DISCCART	293320.25	4010416.06	89.08	89.08
DISCCART	293343.74	4010306.41	89.00	89.00
DISCCART	293296.75	4010319.46	88.95	88.95
DISCCART	293168.83	4010282.91	89.16	89.16
DISCCART	293192.32	4010422.58	89.18	89.18
DISCCART	293114.00	4010423.89	89.19	89.19
DISCCART	293059.18	4010438.25	88.99	88.99
DISCCART	292992.61	4010427.80	88.87	88.87
DISCCART	292991.30	4010324.68	88.71	88.71
DISCCART	293047.43	4010306.41	88.91	88.91
DISCCART	292993.91	4010185.01	88.43	88.43
DISCCART	292708.49	4011009.73	89.59	89.59
DISCCART	292715.87	4011061.35	89.53	89.53
DISCCART	292734.30	4011109.28	89.53	89.53
DISCCART	292690.06	4011020.79	89.43	89.43
DISCCART	292691.90	4011074.25	89.62	89.62
DISCCART	292717.71	4011118.49	89.52	89.52
DISCCART	292660.57	4011026.32	89.60	89.60
DISCCART	292669.78	4011083.47	89.73	89.73
DISCCART	292684.53	4011127.71	89.89	89.89
DISCCART	292584.99	4011059.51	89.53	89.53
DISCCART	292596.05	4011160.89	89.66	89.66
DISCCART	292465.17	4010963.65	89.13	89.13
DISCCART	292439.36	4011096.37	88.69	88.69
DISCCART	292481.76	4011230.94	89.71	89.71
DISCCART	292483.60	4011453.99	89.66	89.66
DISCCART	292527.84	4011455.83	89.49	89.49
DISCCART	292612.64	4011465.05	89.62	89.62
DISCCART	292537.06	4011531.41	90.05	90.05
DISCCART	292481.76	4011536.94	90.04	90.04
DISCCART	292504.75	4011975.56	90.92	90.92

RE FINISHED

\*\*

\*\*\*\*\*

\*\* AERMOD Meteorology Pathway

\*\*\*\*\*

\*\*

\*\*

ME STARTING

SURFFILE visalia-muni-93144\Visalia\_07-10.SFC

PROFFILE visalia-muni-93144\Visalia\_07-10.PFL

SURFDATA 93144 2007 Visalia

UAIRDATA 23230 2007 OAKLAND/WSO\_AP

PROFBASE 89.0 METERS  
ME FINISHED  
\*\*  
\*\*\*\*\*  
\*\* AERMOD Output Pathway  
\*\*\*\*\*  
\*\*  
\*\*  
OU STARTING  
\*\* Auto-Generated Plotfiles  
PLOTFILE ANNUAL AREA1 "FNC Farming.AD\AN00G001.PLT" 31  
SUMMFILE "FNC Farming.sum"  
OU FINISHED

\*\*\* Message Summary For AERMOD Model Setup \*\*\*

----- Summary of Total Messages -----

A Total of                0 Fatal Error Message(s)  
A Total of                1 Warning Message(s)  
A Total of                0 Informational Message(s)

\*\*\*\*\* FATAL ERROR MESSAGES \*\*\*\*\*  
\*\*\* NONE \*\*\*

\*\*\*\*\* WARNING MESSAGES \*\*\*\*\*  
ME W187        151        MEOPEN: ADJ\_U\* Option for Stable Low Winds used in AERMET

\*\*\*\*\*  
\*\*\* SETUP Finishes Successfully \*\*\*  
\*\*\*\*\*

▲ \*\*\* AERMOD - VERSION 23132 \*\*\*        \*\*\* C:\Lakes\AERMOD View\FNC Farming\FNC  
Farming.isc                                \*\*\*        09/04/24  
\*\*\* AERMET - VERSION 21112 \*\*\*        \*\*\*  
\*\*\*                                16:55:07

PAGE 1  
\*\*\* MODELOPTs:    RegDFault    CONC    ELEV    RURAL    ADJ\_U\*

\*\*\*        MODEL SETUP OPTIONS SUMMARY

\*\*\*

---  
---  
\*\* Model Options Selected:

- \* Model Uses Regulatory DEFAULT Options
- \* Model Is Setup For Calculation of Average CONCentration Values.
- \* NO GAS DEPOSITION Data Provided.
- \* NO PARTICLE DEPOSITION Data Provided.
- \* Model Uses NO DRY DEPLETION. DDPLETE = F
- \* Model Uses NO WET DEPLETION. WETDPLT = F
- \* Stack-tip Downwash.
- \* Model Accounts for ELEVated Terrain Effects.
- \* Use Calms Processing Routine.
- \* Use Missing Data Processing Routine.
- \* No Exponential Decay.
- \* Model Uses RURAL Dispersion Only.
- \* ADJ\_U\* - Use ADJ\_U\* option for SBL in AERMET
- \* CCVR\_Sub - Meteorological data includes CCVR substitutions
- \* TEMP\_Sub - Meteorological data includes TEMP substitutions
- \* Model Assumes No FLAGPOLE Receptor Heights.
- \* The User Specified a Pollutant Type of: OTHER

\*\*Model Calculates ANNUAL Averages Only

\*\*This Run Includes:        1 Source(s);        1 Source Group(s); and        89  
Receptor(s)

with:        0 POINT(s), including  
              0 POINTCAP(s) and        0 POINTHOR(s)  
and:        0 VOLUME source(s)  
and:        1 AREA type source(s)  
and:        0 LINE source(s)  
and:        0 RLINE/RLINEXT source(s)  
and:        0 OPENPIT source(s)  
and:        0 BUOYANT LINE source(s) with a total of        0 line(s)  
and:        0 SWPOINT source(s)

\*\*Model Set To Continue RUNning After the Setup Testing.

\*\*The AERMET Input Meteorological Data Version Date: 21112

\*\*Output Options Selected:

Model Outputs Tables of ANNUAL Averages by Receptor  
Model Outputs External File(s) of High Values for Plotting (PLOTFILE

Keyword)

Model Outputs Separate Summary File of High Ranked Values (SUMMFILE

Keyword)

\*\*NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours  
m for Missing Hours  
b for Both Calm and

Missing Hours

\*\*Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 89.00 ; Decay  
Coef. = 0.000 ; Rot. Angle = 0.0  
Emission Units = GRAMS/SEC ;  
Emission Rate Unit Factor = 0.10000E+07  
Output Units = MICROGRAMS/M\*\*3

\*\*Approximate Storage Requirements of Model = 3.5 MB of RAM.

\*\*Input Runstream File: aermod.inp

\*\*Output Print File: aermod.out

\*\*Detailed Error/Message File: FNC Farming.err

\*\*File for Summary of Results: FNC Farming.sum

▲ \*\*\* AERMOD - VERSION 23132 \*\*\* \*\*\* C:\Lakes\AERMOD View\FNC Farming\FNC  
Farming.isc \*\*\* 09/04/24  
\*\*\* AERMET - VERSION 21112 \*\*\* \*\*\*  
\*\*\* 16:55:07

PAGE 2

\*\*\* MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ\_U\*

\*\*\* AREA SOURCE DATA \*\*\*

Y-DIM	ORIENT.	NUMBER	EMISSION RATE	COORD (SW CORNER)	BASE	RELEASE	X-DIM
SOURCE	PART.	INIT.	URBAN	EMISSION RATE	AIRCRAFT	HEIGHT	OF AREA
OF AREA	OF AREA	SZ	SOURCE	SCALAR VARY	ELEV.	(METERS)	(METERS)
ID	CATS.	/METER**2)	(METERS)	(METERS)	(METERS)	(METERS)	(METERS)
(METERS)	(DEG.)	(METERS)	BY				

AREA1 0 0.17977E-05 292979.0 4010822.0 89.2 4.00 834.00  
667.00 0.00 0.00 NO NO

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\*\*\* 16:55:07

PAGE 3

\*\*\* MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ\_U\*

\*\*\* SOURCE IDs DEFINING SOURCE GROUPS \*\*\*



SRCGROUP ID

SOURCE IDs

AREA1 AREA1 ,  
▲ \*\*\* AERMOD - VERSION 23132 \*\*\* C:\Lakes\AERMOD View\FNC Farming\FNC  
Farming.isc \*\*\* 09/04/24  
\*\*\* AERMET - VERSION 21112 \*\*\*  
\*\*\* 16:55:07

PAGE 4

\*\*\* MODELOPTs: RegDEFAULT CONC ELEV RURAL ADJ\_U\*

\*\*\* DISCRETE CARTESIAN RECEPTORS \*\*\*  
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)  
(METERS)

( 292918.9, 4011532.8,	90.8,	90.8,	0.0);	( 293021.0,
4011527.2, 90.7, 90.7,	0.0);			
( 293112.9, 4011532.0,	90.8,	90.8,	0.0);	( 293098.0,
4011650.6, 90.7, 90.7,	0.0);			
( 293207.1, 4011552.4,	90.7,	90.7,	0.0);	( 293185.9,
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4011761.8, 91.0, 91.0,	0.0);			
( 293354.2, 4011538.1,	90.7,	90.7,	0.0);	( 293361.6,
4011620.3, 90.8, 90.8,	0.0);			
( 293357.6, 4011706.4,	91.0,	91.0,	0.0);	( 293359.6,
4011779.8, 91.2, 91.2,	0.0);			
( 293389.0, 4011874.6,	91.2,	91.2,	0.0);	( 293442.7,
4011540.9, 90.7, 90.7,	0.0);			
( 293431.8, 4011616.3,	90.7,	90.7,	0.0);	( 293441.2,
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( 293450.6, 4011792.3,	91.6,	91.6,	0.0);	( 293478.1,
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( 293595.9, 4011888.1,	91.5,	91.5,	0.0);	( 293566.5,
4012006.2, 91.6, 91.6,	0.0);			
( 293466.7, 4011952.8,	91.4,	91.4,	0.0);	( 293591.7,
4011769.6, 91.2, 91.2,	0.0);			
( 293602.7, 4011697.4,	91.2,	91.2,	0.0);	( 293576.7,
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( 293592.5, 4011531.6,	90.9,	90.9,	0.0);	( 293672.6,
4011523.0, 90.9, 90.9,	0.0);			
( 293656.9, 4011581.9,	91.0,	91.0,	0.0);	( 293663.1,
4011643.9, 91.2, 91.2,	0.0);			
( 293675.7, 4011710.7,	91.2,	91.2,	0.0);	( 293676.5,
4011830.9, 91.5, 91.5,	0.0);			
( 294096.3, 4011507.5,	91.3,	91.3,	0.0);	( 294327.4,
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( 294292.3, 4011420.6,	91.8,	91.8,	0.0);	( 294245.2,

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4010885.0,	90.6,	90.6,	0.0);		
( 294055.5,	4010969.9,	90.7,	90.7,	0.0);	( 293979.7,
4010969.9,	90.3,	90.3,	0.0);		
( 293966.7,	4010844.6,	90.3,	90.3,	0.0);	( 293988.9,
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( 293753.9,	4010690.5,	90.3,	90.3,	0.0);	( 293990.2,
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4010292.0,	89.2,	89.2,	0.0);		
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4010311.6,	88.9,	88.9,	0.0);		
( 293530.4,	4010221.6,	88.8,	88.8,	0.0);	( 293435.1,
4010258.1,	88.6,	88.6,	0.0);		
( 293443.0,	4010324.7,	89.1,	89.1,	0.0);	( 293427.3,
4010199.4,	88.7,	88.7,	0.0);		
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4010306.4,	89.0,	89.0,	0.0);		
( 293296.8,	4010319.5,	89.0,	89.0,	0.0);	( 293168.8,
4010282.9,	89.2,	89.2,	0.0);		
( 293192.3,	4010422.6,	89.2,	89.2,	0.0);	( 293114.0,
4010423.9,	89.2,	89.2,	0.0);		
( 293059.2,	4010438.2,	89.0,	89.0,	0.0);	( 292992.6,
4010427.8,	88.9,	88.9,	0.0);		
( 292991.3,	4010324.7,	88.7,	88.7,	0.0);	( 293047.4,
4010306.4,	88.9,	88.9,	0.0);		
( 292993.9,	4010185.0,	88.4,	88.4,	0.0);	( 292708.5,
4011009.7,	89.6,	89.6,	0.0);		
( 292715.9,	4011061.3,	89.5,	89.5,	0.0);	( 292734.3,
4011109.3,	89.5,	89.5,	0.0);		
( 292690.1,	4011020.8,	89.4,	89.4,	0.0);	( 292691.9,
4011074.2,	89.6,	89.6,	0.0);		
( 292717.7,	4011118.5,	89.5,	89.5,	0.0);	( 292660.6,
4011026.3,	89.6,	89.6,	0.0);		
( 292669.8,	4011083.5,	89.7,	89.7,	0.0);	( 292684.5,
4011127.7,	89.9,	89.9,	0.0);		
( 292585.0,	4011059.5,	89.5,	89.5,	0.0);	( 292596.0,
4011160.9,	89.7,	89.7,	0.0);		
( 292465.2,	4010963.6,	89.1,	89.1,	0.0);	( 292439.4,
4011096.4,	88.7,	88.7,	0.0);		
( 292481.8,	4011230.9,	89.7,	89.7,	0.0);	( 292483.6,

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Farming.isc *** 09/04/24
*** AERMET - VERSION 21112 *** ***
*** 16:55:07

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\*\*\* MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ U\*

PROCESSING \*\*\*

[illegible]

\*\*\* UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED

(METERS/SEC)

10.80,

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Farming.isc *** 09/04/24
*** AERMET - VERSION 21112 *** ***
*** 16:55:07

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\*\*\* MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ\_U\*

\*\*\* UP TO THE FIRST 24 HOURS OF METEOROLOGICAL

DATA \*\*\*

Surface file: visalia-muni-93144\Visalia\_07-10.SFC

Met Version: 21112

Profile file: visalia-muni-93144\Visalia\_07-10.PFL

Surface format: FREE

Profile format: FREE

Surface station no.: 93144

Upper air station no.: 23230

Name: VISALIA

Name:

OAKLAND/WSO\_AP

Year: 2007

Year: 2007

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O	LEN	Z0	BOWEN
ALBEDO	REF	WS	WD	HT	REF	TA	HT							
07	01	01	1	01	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.02	0.79	
1.00	0.00	0.	10.0	277.1	2.0									
07	01	01	1	02	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.02	0.79	
1.00	0.00	0.	10.0	276.1	2.0									
07	01	01	1	03	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.02	0.79	
1.00	0.00	0.	10.0	276.1	2.0									
07	01	01	1	04	-11.5	0.137	-9.000	-9.000	-999.	121.	20.5	0.02	0.79	
1.00	2.36	123.	10.0	274.1	2.0									
07	01	01	1	05	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.02	0.79	
1.00	0.00	0.	10.0	273.1	2.0									
07	01	01	1	06	-6.3	0.100	-9.000	-9.000	-999.	75.	14.3	0.02	0.79	
1.00	1.76	122.	10.0	273.1	2.0									
07	01	01	1	07	-11.5	0.137	-9.000	-9.000	-999.	121.	20.5	0.02	0.79	
1.00	2.36	125.	10.0	272.1	2.0									
07	01	01	1	08	-19.9	0.200	-9.000	-9.000	-999.	214.	43.8	0.02	0.79	
0.63	3.36	143.	10.0	274.1	2.0									
07	01	01	1	09	-3.6	0.174	-9.000	-9.000	-999.	175.	134.1	0.02	0.79	
0.35	2.86	147.	10.0	275.1	2.0									
07	01	01	1	10	8.7	0.192	0.218	0.011	43.	201.	-73.0	0.02	0.79	
0.26	2.86	141.	10.0	276.1	2.0									
07	01	01	1	11	16.3	0.248	0.321	0.012	73.	296.	-84.4	0.03	0.79	
0.22	3.36	184.	10.0	276.1	2.0									
07	01	01	1	12	20.2	-9.000	-9.000	-9.000	140.	-999.	-99999.0	0.02	0.79	
0.21	0.00	0.	10.0	276.1	2.0									
07	01	01	1	13	20.5	0.182	0.472	0.012	185.	187.	-26.7	0.03	0.79	

0.21	2.36	163.	10.0	278.1	2.0							
07 01 01	1 14	16.9	0.212	0.471	0.011	223.	234.	-51.0	0.03	0.79		
0.22	2.86	169.	10.0	279.1	2.0							
07 01 01	1 15	52.0	0.226	0.810	0.012	368.	258.	-20.0	0.03	0.79		
0.25	2.86	162.	10.0	281.1	2.0							
07 01 01	1 16	10.8	0.132	0.482	0.012	375.	119.	-19.3	0.02	0.79		
0.35	1.76	224.	10.0	282.1	2.0							
07 01 01	1 17	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.02	0.79		
0.61	0.00	0.	10.0	280.1	2.0							
07 01 01	1 18	-11.7	0.139	-9.000	-9.000	-999.	125.	21.3	0.02	0.79		
1.00	2.36	17.	10.0	278.1	2.0							
07 01 01	1 19	-11.6	0.138	-9.000	-9.000	-999.	123.	20.9	0.02	0.79		
1.00	2.36	34.	10.0	278.1	2.0							
07 01 01	1 20	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.02	0.79		
1.00	0.00	0.	10.0	277.1	2.0							
07 01 01	1 21	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.02	0.79		
1.00	0.00	0.	10.0	276.1	2.0							
07 01 01	1 22	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.02	0.79		
1.00	0.00	0.	10.0	274.1	2.0							
07 01 01	1 23	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.02	0.79		
1.00	0.00	0.	10.0	274.1	2.0							
07 01 01	1 24	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.02	0.79		
1.00	0.00	0.	10.0	274.1	2.0							

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
07	01	01	01	10.0	1	-999.	-99.00	277.2	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

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PAGE 7

\*\*\* MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ\_U\*

\*\*\* THE ANNUAL AVERAGE CONCENTRATION VALUES AVERAGED OVER 4  
 YEARS FOR SOURCE GROUP: AREA1 \*\*\*  
 INCLUDING SOURCE(S): AREA1 ,

\*\*\* DISCRETE CARTESIAN RECEPTOR POINTS

\*\*\*

\*\* CONC OF OTHER IN MICROGRAMS/M\*\*3

\*\*

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)
Y-COORD (M)	CONC		

-----				
292918.88	4011532.75	8.62679	293020.99	
4011527.25	10.42879			
293112.89	4011531.96	10.47392	293097.97	
4011650.57	5.86050			
293207.15	4011552.39	9.15602	293185.94	
4011630.15	6.22396			
293186.63	4011708.40	4.48418	293210.67	
4011761.81	3.60063			
293354.22	4011538.14	9.29079	293361.57	
4011620.26	5.71999			
293357.56	4011706.39	3.84146	293359.56	
4011779.84	2.86039			
293388.95	4011874.62	1.99024	293442.74	
4011540.90	8.43585			
293431.75	4011616.31	5.35858	293441.17	
4011700.36	3.48984			
293450.60	4011792.27	2.37857	293478.09	
4011874.75	1.73333			
293595.92	4011888.10	1.36945	293566.50	
4012006.20	1.07977			
293466.73	4011952.78	1.41496	293591.66	
4011769.63	1.96688			
293602.66	4011697.36	2.53452	293576.74	
4011614.09	4.13544			
293592.45	4011531.60	7.26158	293672.58	
4011522.96	6.43385			
293656.87	4011581.88	4.07414	293663.15	
4011643.94	2.75040			
293675.72	4011710.71	1.99101	293676.51	
4011830.90	1.37377			
294096.35	4011507.52	1.05715	294327.42	
4011498.28	0.65371			
294292.30	4011420.64	0.88708	294245.16	
4011372.57	1.15823			
294069.97	4011243.08	3.16671	294061.98	
4010885.03	6.16804			
294055.45	4010969.88	5.84490	293979.74	
4010969.88	7.64143			
293966.69	4010844.57	8.46799	293988.88	
4010798.88	7.80271			
293753.93	4010690.54	8.56984	293990.19	
4010626.58	6.25126			
293979.74	4010569.15	5.61122	293966.39	
4010404.31	3.92888			
293969.01	4010356.01	3.53685	293970.31	
4010292.05	3.07792			
293953.34	4010235.92	2.69682	293957.26	
4010191.54	2.45097			

293548.68	4010422.58	2.84636	293531.71
4010311.63	1.94125		
293530.41	4010221.56	1.50561	293435.12
4010258.11	1.36956		
293442.95	4010324.68	1.68137	293427.29
4010199.37	1.16480		
293452.09	4010414.75	2.28940	293452.09
4010480.02	2.89528		
293401.18	4010489.16	2.67330	293385.52
4010408.22	1.91580		
293320.25	4010416.06	1.66215	293343.74
4010306.41	1.27229		
293296.75	4010319.46	1.17753	293168.83
4010282.91	0.79180		
293192.32	4010422.58	1.19440	293114.00
4010423.89	0.95999		
293059.18	4010438.25	0.85232	292992.61
4010427.80	0.70043		
292991.30	4010324.68	0.56645	293047.43
4010306.41	0.61901		
292993.91	4010185.01	0.44851	292708.49
4011009.73	3.20630		
292715.87	4011061.35	3.79315	292734.30
4011109.28	4.48114		
292690.06	4011020.79	3.13756	292691.90
4011074.25	3.64225		
292717.71	4011118.49	4.33766	292660.57
4011026.32	2.93145		
292669.78	4011083.47	3.49252	292684.53
4011127.71	4.00595		
292584.99	4011059.51	2.63545	292596.05
4011160.89	3.37440		

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PAGE 8

\*\*\* MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ\_U\*

\*\*\* THE ANNUAL AVERAGE CONCENTRATION VALUES AVERAGED OVER 4  
 YEARS FOR SOURCE GROUP: AREA1 \*\*\*  
 INCLUDING SOURCE(S): AREA1 ,

\*\*\* DISCRETE CARTESIAN RECEPTOR POINTS

\*\*\*

\*\* CONC OF OTHER IN MICROGRAMS/M\*\*3

\*\*



Y-COORD (M)	X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)
4011096.37	292465.17	4010963.65	1.61776	292439.36
4011453.99	292481.76	4011230.94	2.91444	292483.60
4011465.05	292527.84	4011455.83	3.81192	292612.64
4011536.94	292537.06	4011531.41	3.83105	292481.76
	292504.75	4011975.56	2.27977	

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PAGE 9

\*\*\* MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ\_U\*

\*\*\* THE SUMMARY OF MAXIMUM ANNUAL RESULTS

AVERAGED OVER 4 YEARS \*\*\*

\*\* CONC OF OTHER IN MICROGRAMS/M\*\*3

\*\*

GROUP ID	NETWORK	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV,
ZHILL, ZFLAG)	OF TYPE	GRID-ID	
AREA1	1ST HIGHEST VALUE IS	10.47392 AT (	293112.89, 4011531.96, 90.84,
90.84,	0.00) DC		
	2ND HIGHEST VALUE IS	10.42879 AT (	293020.99, 4011527.25, 90.69,
90.69,	0.00) DC		
	3RD HIGHEST VALUE IS	9.29079 AT (	293354.22, 4011538.14, 90.69,
90.69,	0.00) DC		
	4TH HIGHEST VALUE IS	9.15602 AT (	293207.15, 4011552.39, 90.69,
90.69,	0.00) DC		
	5TH HIGHEST VALUE IS	8.62679 AT (	292918.88, 4011532.75, 90.82,
90.82,	0.00) DC		
	6TH HIGHEST VALUE IS	8.56984 AT (	293753.93, 4010690.54, 90.33,
90.33,	0.00) DC		
	7TH HIGHEST VALUE IS	8.46799 AT (	293966.69, 4010844.57, 90.30,
90.30,	0.00) DC		

8TH HIGHEST VALUE IS 8.43585 AT ( 293442.74, 4011540.90, 90.68,  
90.68, 0.00) DC  
9TH HIGHEST VALUE IS 7.80271 AT ( 293988.88, 4010798.88, 90.25,  
90.25, 0.00) DC  
10TH HIGHEST VALUE IS 7.64143 AT ( 293979.74, 4010969.88, 90.32,  
90.32, 0.00) DC

\*\*\* RECEPTOR TYPES: GC = GRIDCART  
GP = GRIDPOLR  
DC = DISCCART  
DP = DISCPOLR

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Farming.isc \*\*\* 09/04/24  
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PAGE 10

\*\*\* MODELOPTs: RegDEFAULT CONC ELEV RURAL ADJ\_U\*

\*\*\* Message Summary : AERMOD Model Execution \*\*\*

----- Summary of Total Messages -----

A Total of 0 Fatal Error Message(s)  
A Total of 1 Warning Message(s)  
A Total of 10959 Informational Message(s)  
  
A Total of 35064 Hours Were Processed  
  
A Total of 9719 Calm Hours Identified  
  
A Total of 1240 Missing Hours Identified ( 3.54 Percent)

\*\*\*\*\* FATAL ERROR MESSAGES \*\*\*\*\*  
\*\*\* NONE \*\*\*

\*\*\*\*\* WARNING MESSAGES \*\*\*\*\*  
ME W187 151 MEOPEN: ADJ\_U\* Option for Stable Low Winds used in AERMET

\*\*\*\*\*  
\*\*\* AERMOD Finishes Successfully \*\*\*  
\*\*\*\*\*

# HARP Project Summary Report 9/4/2024 6:29:25 PM

## \*\*\*PROJECT INFORMATION\*\*\*

HARP Version: 22118

Project Name: FNC FARMING

Project Output Directory: C:\Users\geniu\OneDrive\Desktop\24007 - FNC Farming  
HRA\HARP2 (ADMRT)\FNC FARMING

HARP Database: NA

## \*\*\*FACILITY INFORMATION\*\*\*

Origin

X (m):0

Y (m):0

Zone:1

No. of Sources:0

No. of Buildings:0

## \*\*\*EMISSION INVENTORY\*\*\*

No. of Pollutants:1

No. of Background Pollutants:0

### Emissions

ScrID	StkID	ProID	PolID	PolAbbrev	
Multi	Annual Ems	MaxHr Ems	MWAF		
	(lbs/yr)	(lbs/hr)			
1	0	0	9901	DieselExhPM	1
	257.4	0	1		

### Background

PolID	PolAbbrev	Conc (ug/m^3)	MWAF
-------	-----------	---------------	------

Ground level concentration files (\glc\)

9901MAXHR.txt

9901PER.txt

## \*\*\*POLLUTANT HEALTH INFORMATION\*\*\*

Health Database: C:\HARP2\Tables\HEALTH17320.mdb

Health Table Version: HEALTH22013

Official: True

PolID	PolAbbrev	InhCancer	OralCancer	AcuteREL
InhChronicREL	OralChronicREL	InhChronic8HRREL		
9901	DieselExhPM	1.1		5

\*\*\*AIR DISPERSION MODELING INFORMATION\*\*\*

Versions used in HARP. All executables were obtained from USEPA's Support Center for Regulatory Atmospheric Modeling website (<http://www.epa.gov/scram001/>)

AERMOD: 18081

AERMAP: 18081

BPIPPRM: 04274

AERPLOT: 13329

\*\*\*METEOROLOGICAL INFORMATION\*\*\*

Version:

Surface File:

Profile File:

Surface Station:

Upper Station:

On-Site Station:

\*\*\*LIST OF AIR DISPERSION FILES\*\*\*

AERMOD Input File:

AERMOD Output File:

AERMOD Error File:

Plotfile list

---

\*\*\*LIST OF RISK ASSESSMENT FILES\*\*\*

Health risk analysis files (\hra\)

---

Construction HRACancerRisk.csv

Construction HRACancerRiskSumByRec.csv

Construction HRAGLCList.csv

Construction HRAHRAInput.hra

Construction HRANCAcuteRisk.csv

Construction HRANCAcuteRiskSumByRec.csv

Construction HRANCCChronicRisk.csv

Construction HRANCCChronicRiskSumByRec.csv

Construction HRAOutput.txt

Construction HRAPathwayRec.csv

Construction HRAPolDB.csv

Spatial averaging files (\sa\)

---

# Appendix D

---

## Traffic Study

# TRAFFIC STUDY

**RESIDENTIAL DEVELOPMENT  
PROSPERITY AVENUE & MORRISON STREET  
TULARE, CALIFORNIA**

**Prepared for:  
4CREEKS**

**March 2024  
REVISED September 2024**

**Prepared by:**



**1800 30TH STREET, SUITE 260  
BAKERSFIELD, CA 93301**

A handwritten signature in blue ink, appearing to read "Ian J. Parks", is written over a horizontal line.

Ian J. Parks, RCE 51825



## TABLE OF CONTENTS

	<u>Pg</u>
INTRODUCTION .....	1
FIGURE 1: VICINITY MAP.....	2
FIGURE 2: LOCATION MAP.....	3
FIGURE 3: SITE PLAN .....	4
PROJECT TRIP GENERATION .....	7
TABLE 1a: PHASE I PROJECT TRIP GENERATION.....	<b>Error! Bookmark not defined.</b>
TABLE 1b: PHASE II PROJECT TRIP GENERATION .....	7
TABLE 1c: PHASE III PROJECT TRIP GENERATION .....	7
TRIP DISTRIBUTION AND ASSIGNMENT.....	8
TABLE 2: PROJECT TRIP DISTRIBUTION .....	8
EXISTING AND FUTURE TRAFFIC.....	8
FIGURE 4a: PHASE I PROJECT PEAK HOUR TRAFFIC .....	10
FIGURE 4b: PHASE II PROJECT PEAK HOUR TRAFFIC.....	11
FIGURE 4c: PHASE III PROJECT PEAK HOUR TRAFFIC.....	12
FIGURE 5: 2024 PEAK HOUR TRAFFIC.....	13
FIGURE 6: 2027 PROJECT PEAK HOUR TRAFFIC .....	14
FIGURE 7: 2027+PROJECT PEAK HOUR TRAFFIC.....	15
FIGURE 8: 2029 PEAK HOUR TRAFFIC.....	16
FIGURE 9: 2029+PROJECT PEAK HOUR TRAFFIC.....	17
FIGURE 10: 2044 PEAK HOUR TRAFFIC.....	18
FIGURE 11: 2044+PROJECT PEAK HOUR TRAFFIC.....	19
INTERSECTION ANALYSIS .....	20
TABLE 3a: PM INTERSECTION LEVEL OF SERVICE .....	21
TABLE 3b: AM INTERSECTION LEVEL OF SERVICE .....	22
TRAFFIC SIGNAL WARRANT ANALYSIS.....	23
TABLE 4a: PM TRAFFIC SIGNAL WARRANTS.....	23
TABLE 4b: AM TRAFFIC SIGNAL WARRANTS.....	23
ROADWAY ANALYSIS .....	25
TABLE 5a: PM ROADWAY LEVEL OF SERVICE.....	25
TABLE 5b: AM ROADWAY LEVEL OF SERVICE .....	26
IMPROVEMENTS.....	27
TABLE 6: FUTURE INTERSECTION IMPROVEMENTS .....	27
VMT ANALYSIS.....	28
SUMMARY AND CONCLUSIONS .....	29
REFERENCES .....	30
APPENDIX.....	31



## **INTRODUCTION**

The purpose of this study is to evaluate the potential traffic impacts of a proposed residential development located on the south side of Prosperity Avenue east of Morrison Street in Tulare, CA. A vicinity map and location map are presented in Figures 1 and 2, respectively.

The proposed project consists of a total of 556 single-family residential homes proposed to be built over three phases. The site plan for the project is shown in Figure 3.

### **A. Land Use, Site and Study Area Boundaries**

The existing zoning is A (Agriculture). The existing land use designation is A (Agriculture). Proposed zoning and land use designation is neighborhood commercial and residential.

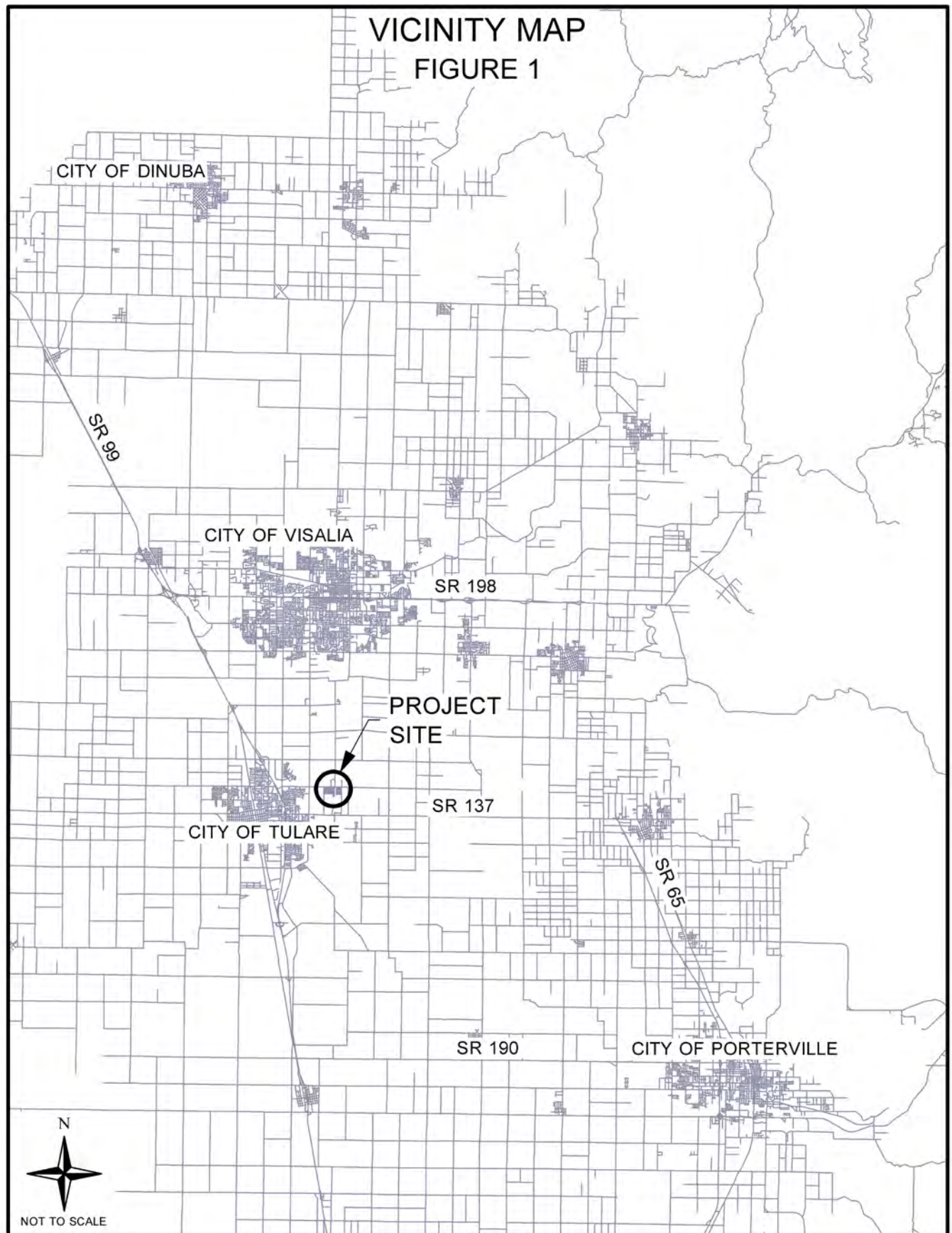
The study area includes a total of 12 intersections (four stop-controlled, eight signalized). The scope of the study was developed in association with the City of Tulare.

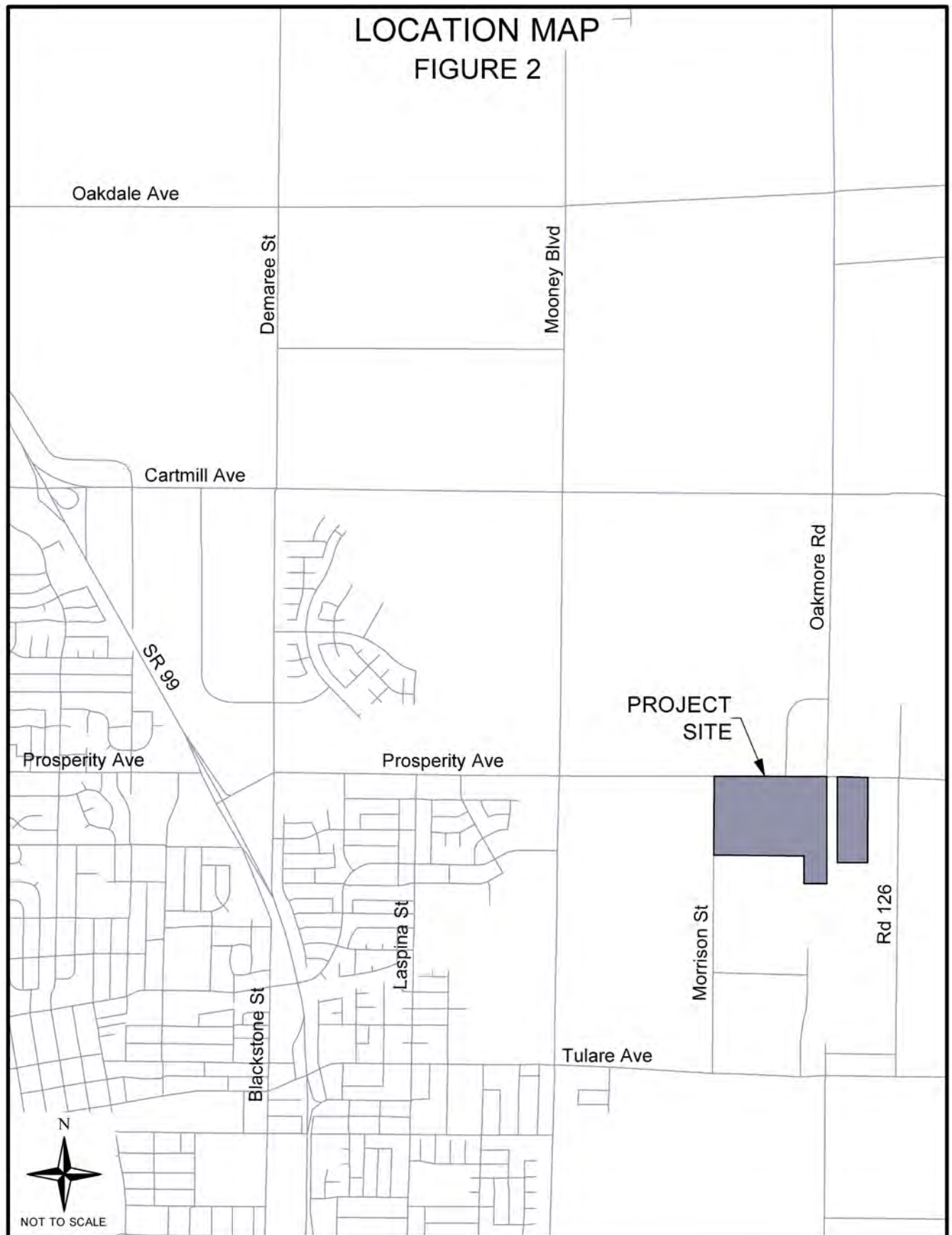
### **B. Existing Site Uses and Site Access**

The site is currently used for agricultural production. As currently planned, access to the proposed development would be provided along Morrison Street, Prosperity Avenue, and Oakmore Road.

### **C. Existing Uses in Vicinity of the Site**

The site is bounded by Prosperity Avenue to the north, Morrison Street to the west, with Oakmore Road dissecting the project. Residential land uses exist to the north and generally south of the site, with agricultural land uses to the immediate east, west, and south of the site.







**FNC FARMING**  
**PRELIMINARY PHASING PLAN**

PREPARED FOR:  
SAN JOAQUIN VALLEY HOMES  
3857 AVE. DE LOS RINOS  
MORAGA, CA 94556

PREPARED BY:  
4CREEKS, INC.  
334 S. SANTA FE ST., STE. 4  
TULARE, CA 93201

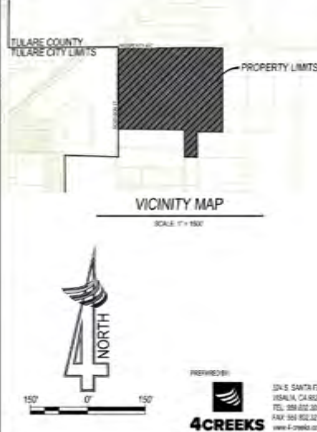
**ACREAGE**  
142.22 AC 358 UNITS

**LEGEND**

APN	172810271, 172810322, 184228010
ZONING	COUNTY
GENERAL PLAN	AURAL RESIDENTIAL - RESIDENTIAL ESTATE
FLOOD ZONE	3
ELECTRICITY	SOUTHERN CALIFORNIA Edison
TELEPHONE	AT&T
NATURAL GAS	SOUTHERN CALIFORNIA GAS
EXISTING USE	VACANT
PROPOSED USE	LOW DENSITY RESIDENTIAL

**TYPICAL LOT SIZES:**  
3030 SF LOTS (50' x 150') (146 UNITS)  
6030 SF LOTS (60' x 150') (73 UNITS)  
TOTAL 519 UNITS  
\*OUTLOTS A1 AND PARK (5.34 AC) TO BE DEDICATED TO CITY OF TULARE

**SITE PLAN**  
**FIGURE 3**



## D. Roadway Descriptions

Blackstone Street is a primarily north-south arterial that extends south from Prosperity Avenue in the city of Tulare. In the vicinity of the project, it exists as a four-lane roadway and provides access from State Route 99 as well as commercial land uses.

Cartmill Avenue is an east-west major arterial that extends throughout the northern part of the city of Tulare. In the vicinity of the project, it exists as a two- to four-lane roadway and provides access to agricultural and residential land uses.

Hillman Street is a north-south major arterial north of Prosperity Avenue and collector south of Prosperity Avenue in the city of Tulare. In the vicinity of the project, it exists as a three- to six-lane roadway and provides access to agricultural, commercial, and residential land uses.

Laspina Street is a north-south arterial that extends south from Rosa Avenue in the city of Tulare. In the vicinity of the project, it exists as a two-lane roadway and provides access to commercial and residential land uses.

Mooney Boulevard is a north-south major arterial that extends throughout the center of the city of Tulare. In the vicinity of the project, it exists as a four-lane roadway and provides access to agricultural, commercial, and residential land uses.

Morrison Street is a north-south collector that extends south from Prosperity Avenue in the city of Tulare. In the vicinity of the project, it exists as a two-lane roadway and provides access to agricultural and residential land uses.

Oakmore Road is a north-south arterial that extends north from Prosperity Avenue in the city of Tulare. In the vicinity of the project, it exists as a two-lane roadway and provides access to agricultural and residential land uses.

Prosperity Avenue is an east-west arterial that extends throughout the center of the city of Tulare. In the vicinity of the project, it exists as a four-lane roadway and provides access to agricultural, commercial, industrial, and residential land uses.

Seminole Avenue is an east-west local roadway that extends from Mooney Boulevard to Spyglass Street in the city of Tulare. In the vicinity of the project, it exists as a two-lane roadway and provides access to residential land uses.

State Route 99 is a primarily north-south highway that extends throughout the state of California. In the vicinity of the project, it exists as a four-lane highway and provides access to Blackstone Street, Hillman Street, Tulare Avenue, and Bardsley Avenue.

Tulare Avenue is an east-west major arterial that extends throughout the southern portion of the city of Tulare. In the vicinity of the project, it exists as a four-lane roadway and provides access to agricultural, commercial, and residential land uses.

## **PROJECT TRIP GENERATION**

The trip generation volumes for the residential development were calculated using the Institute of Transportation Engineers (ITE) Trip Generation, 11th Edition. Trip generation and design hour volumes are shown for the three project phases in Tables 1a through 1c.

The ADT, AM and PM peak hour rate equations, and peak hour directional splits for ITE Land Use Codes 210 (Single-Family Detached Housing) were used to estimate the project traffic.

**Table 1c  
Phase I Project Trip Generation**

General Information			Daily Trips		AM Peak Hour Trips			PM Peak Hour Trips		
ITE Code	Development Type	Variable	ADT RATE	ADT	Rate	In % Split/ Trips	Out % Split/ Trips	Rate	In % Split/ Trips	Out % Split/ Trips
210	Single-Family detached Housing	195 Dwelling Units	eq	1865	eq	25% 34	75% 103	eq	63% 117	37% 69

**Table 1b  
Phase II Project Trip Generation**

General Information			Daily Trips		AM Peak Hour Trips			PM Peak Hour Trips		
ITE Code	Development Type	Variable	ADT RATE	ADT	Rate	In % Split/ Trips	Out % Split/ Trips	Rate	In % Split/ Trips	Out % Split/ Trips
210	Single-Family detached Housing	393 Dwelling Units	eq	3554	eq	25% 65	75% 194	eq	63% 227	37% 133

**Table 1c  
Phase III Project Trip Generation**

General Information			Daily Trips		AM Peak Hour Trips			PM Peak Hour Trips		
ITE Code	Development Type	Variable	ADT RATE	ADT	Rate	In % Split/ Trips	Out % Split/ Trips	Rate	In % Split/ Trips	Out % Split/ Trips
210	Single-Family detached Housing	556 Dwelling Units	eq	5243	eq	25% 89	75% 266	eq	63% 314	37% 184

## **TRIP DISTRIBUTION AND ASSIGNMENT**

The project trip distribution in Table 2 represents the most likely travel routes for traffic accessing the project. Project traffic distribution was estimated based on a review of the potential draw from population centers within the region and the types of land uses involved. These assumptions were used to distribute project traffic as shown in Figure 4.

**Table 2**  
**Project Trip Distribution**

<b>Direction</b>	<b>Percent</b>
North	10
East	5
South	45
West	40

## **EXISTING AND FUTURE TRAFFIC**

Weekday peak hour turning movements were counted at the following intersections in January and February 2024 (see Appendix for count data).

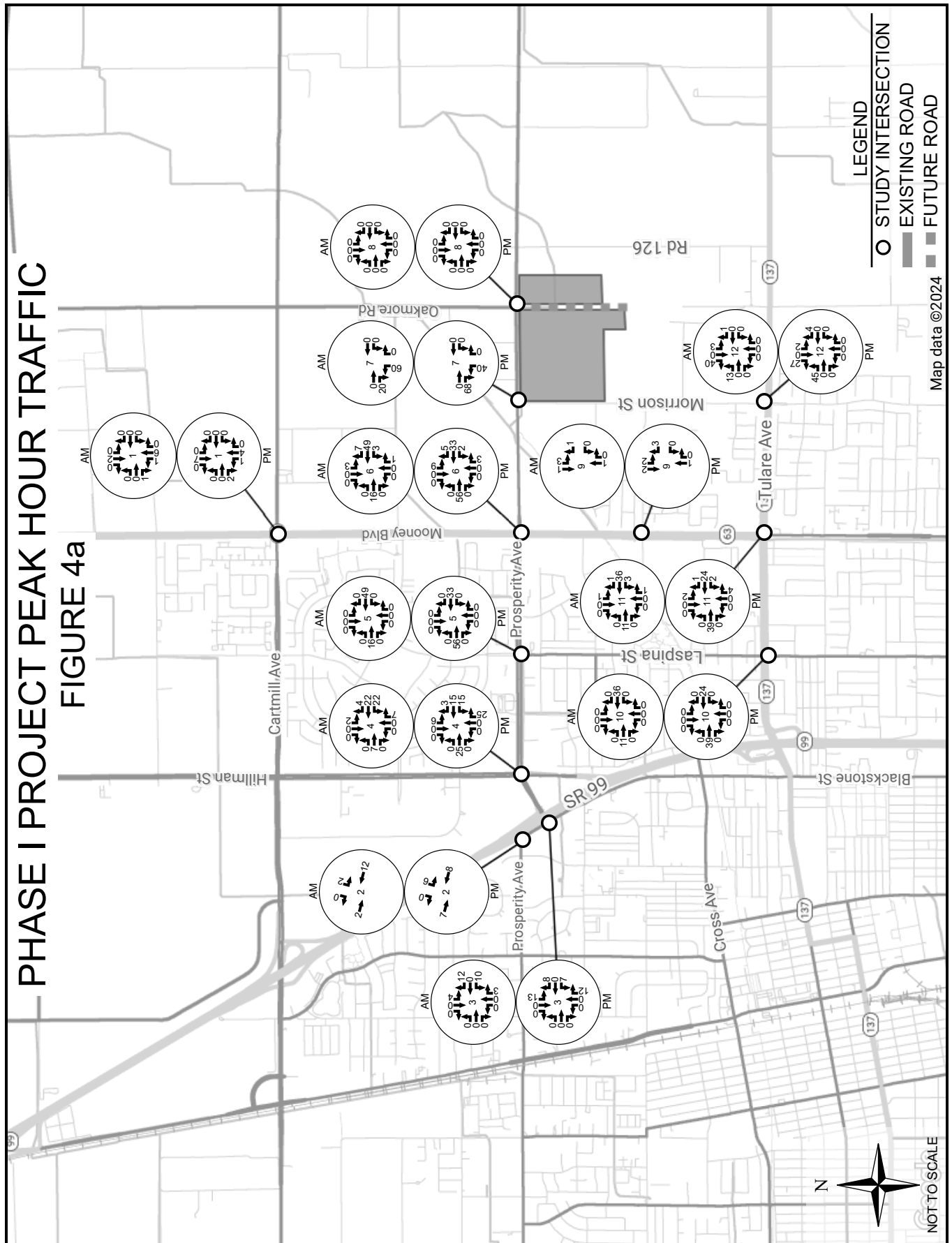
- Mooney Boulevard & Cartmill Avenue
- Prosperity Avenue & State Route 99 Southbound Offramp
- Prosperity Avenue & Blackstone Street
- Prosperity Avenue & Hillman Street
- Prosperity Avenue & Laspina St
- Prosperity Avenue & Mooney Boulevard
- Prosperity Avenue & Morrison Street
- Prosperity Avenue & Oakmore Street
- Tulare Avenue & Laspina Street
- Tulare Avenue & Mooney Boulevard
- Tulare Avenue & Morrison Street
- Seminole Avenue & Mooney Boulevard

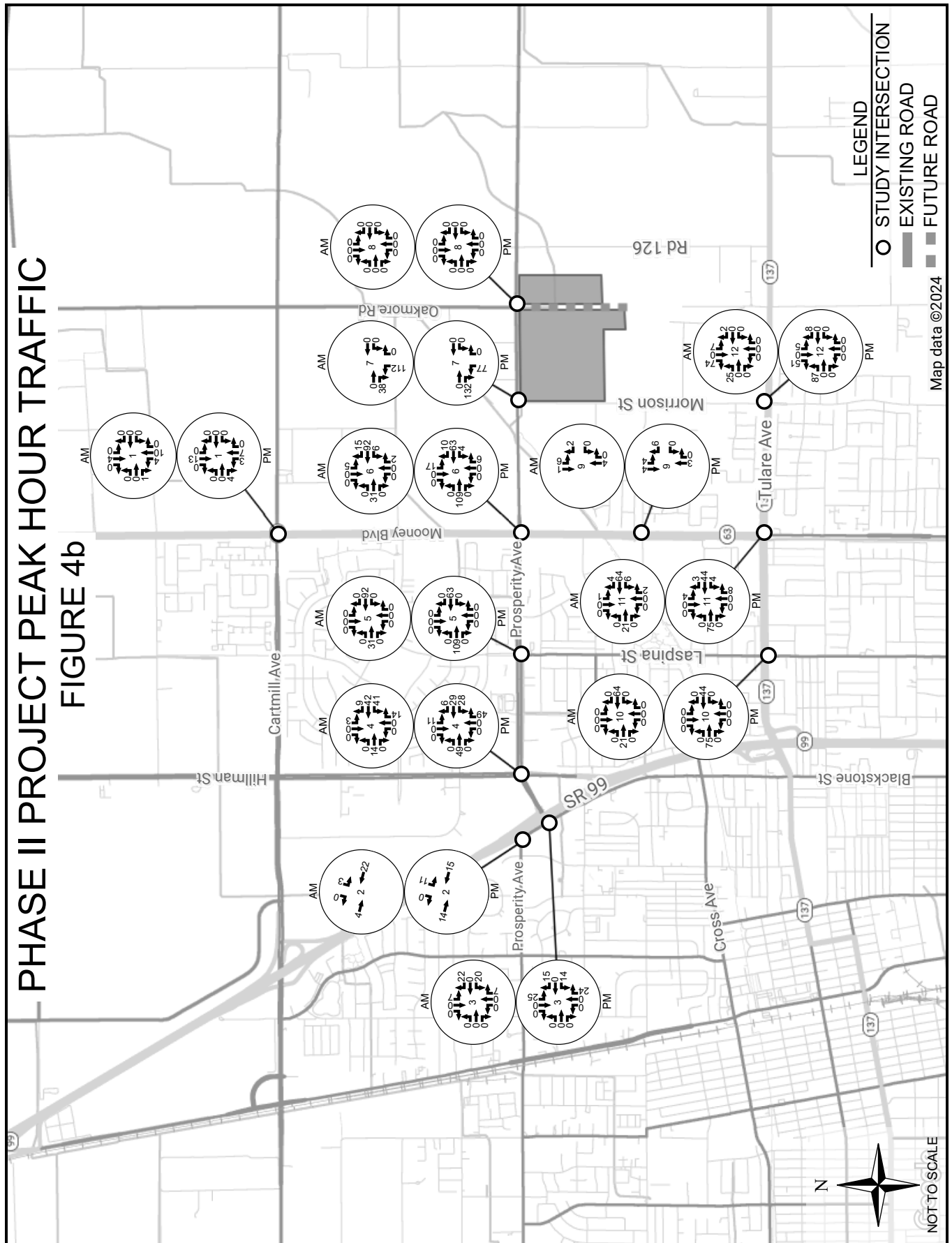
Traffic counts were conducted between the hours 6:00 to 8:00 AM and 4:00 to 6:00 PM. AM Peak Hour was determined to be 7:00 to 8:00 AM and 4:30 to 5:30 PM and are shown in Figure 5. The scope of

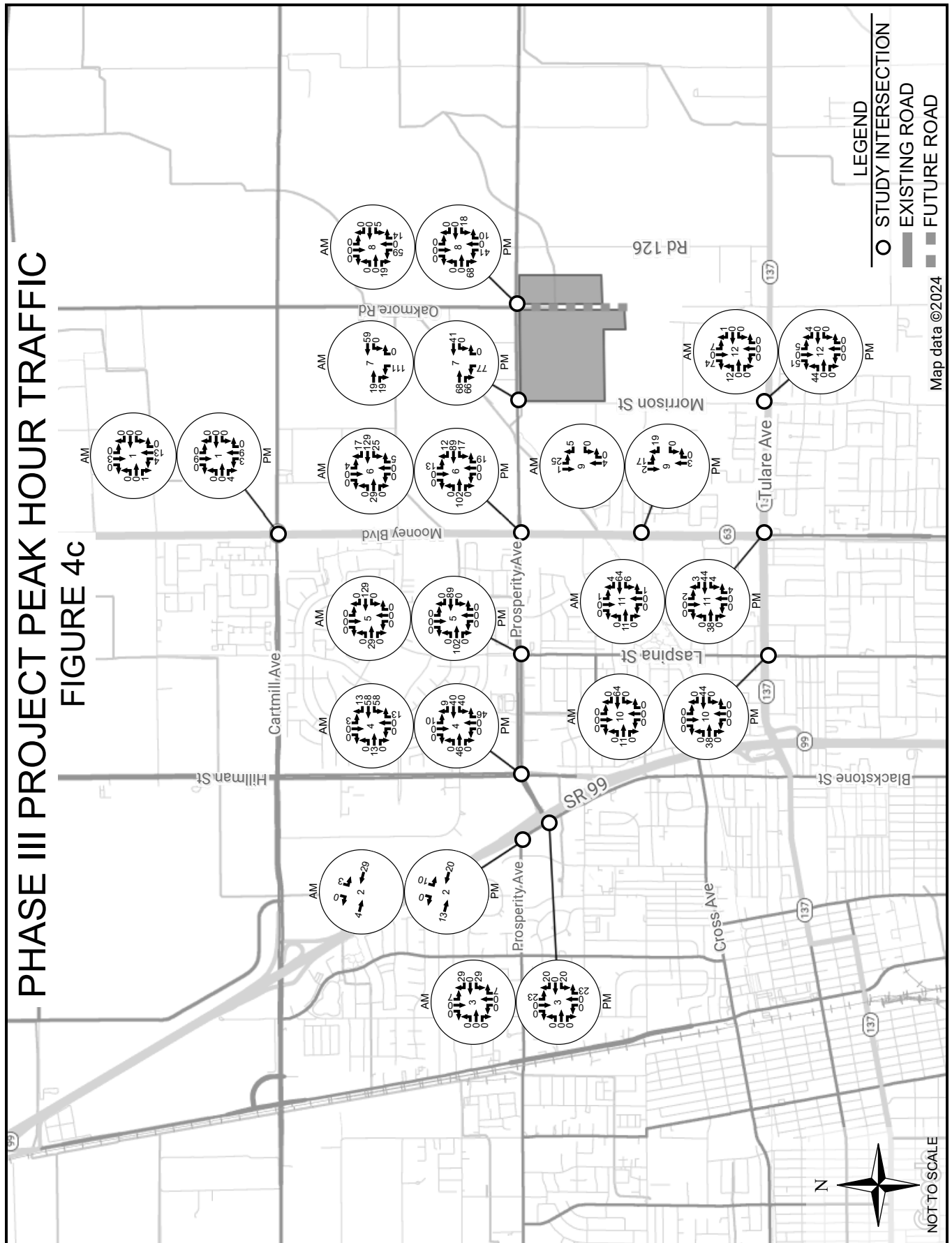


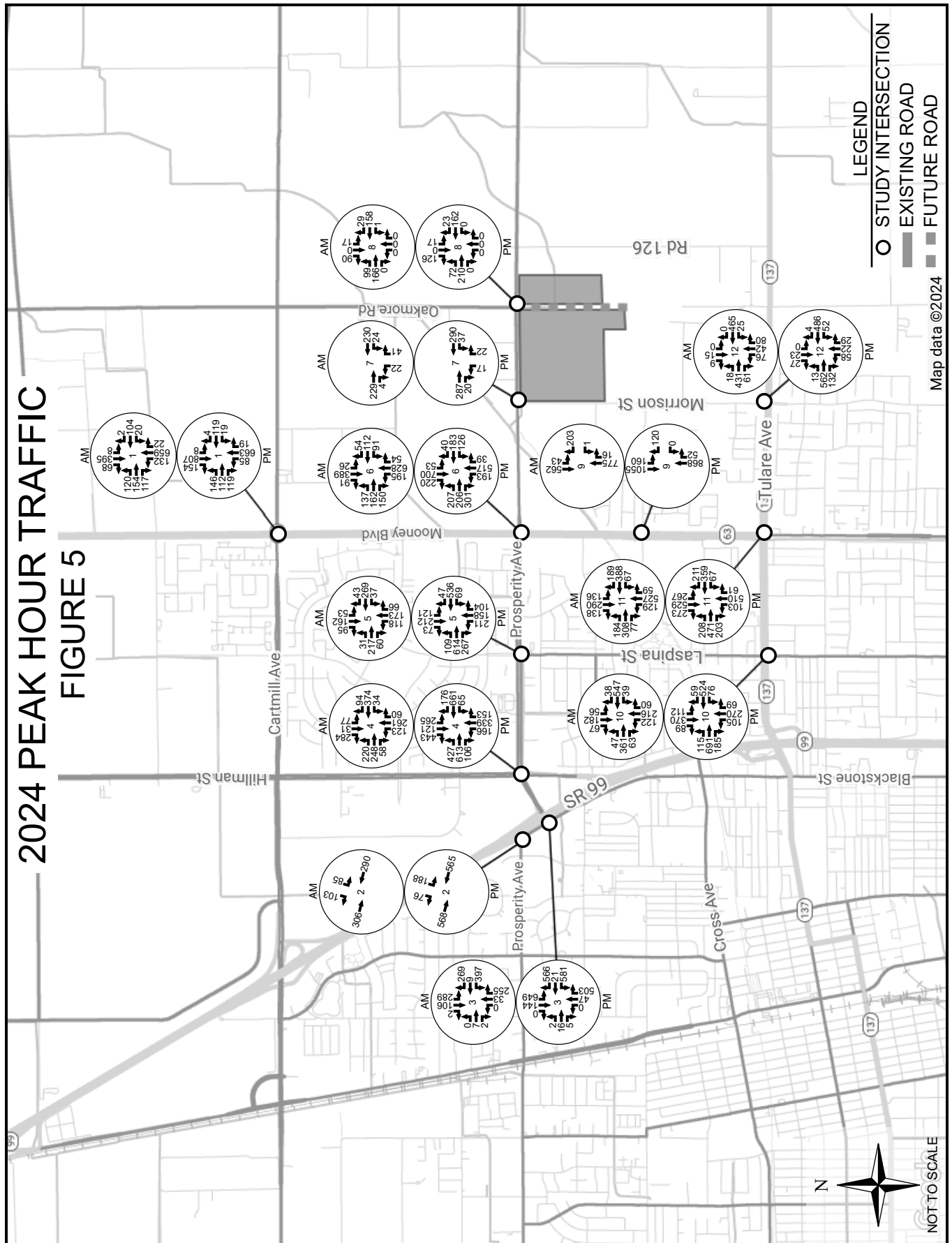
intersections was approved by the City of Tulare Public Works Department. Existing + Project peak hour volumes are shown in Figure 6.

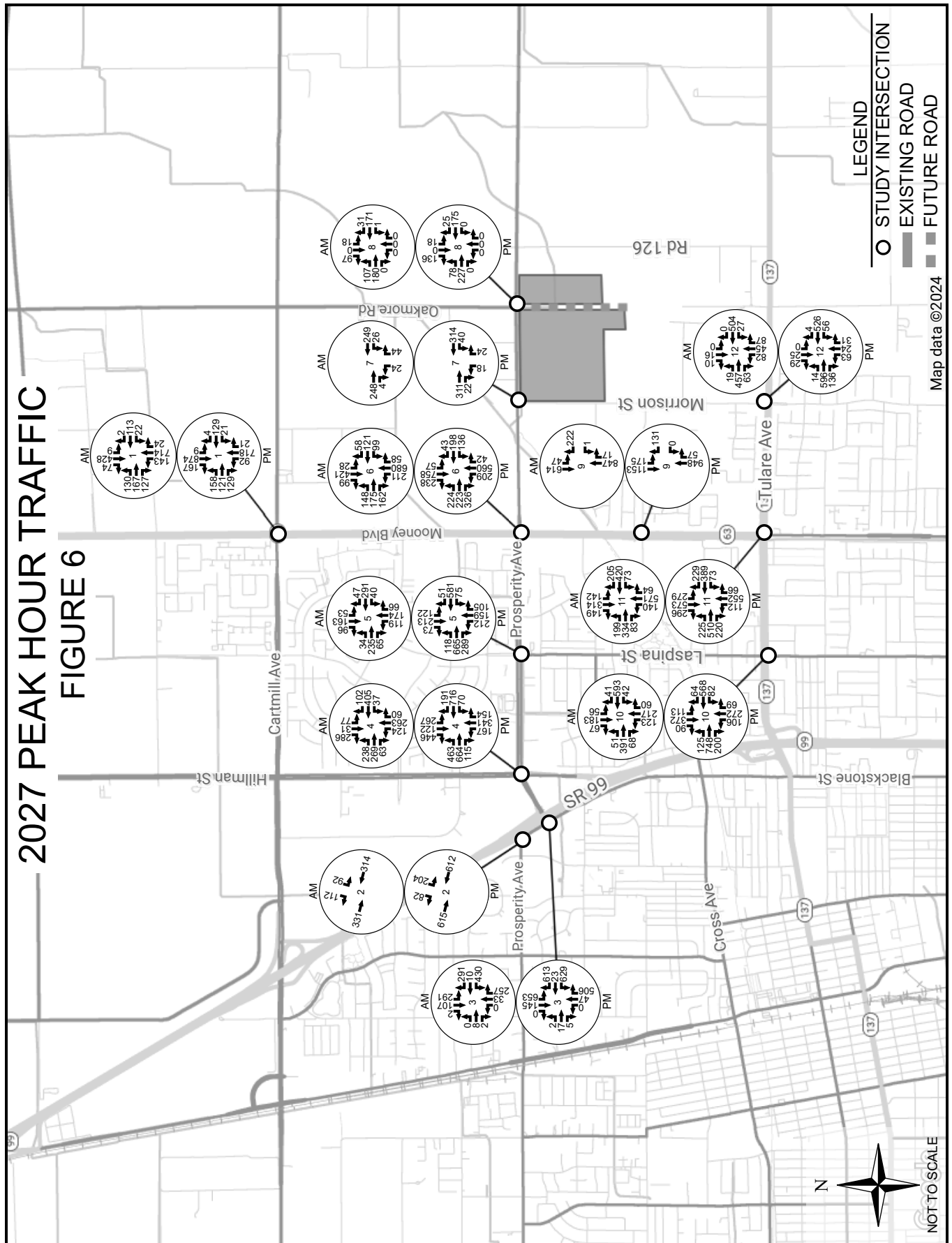
Annual growth rates ranging between 0.2% and 2.7% were applied to existing traffic volumes to estimate future traffic volumes for the year 2044. These growth rates were estimated based on TCAG traffic model data. Future peak hour volumes are shown in Figures 7 and 8.



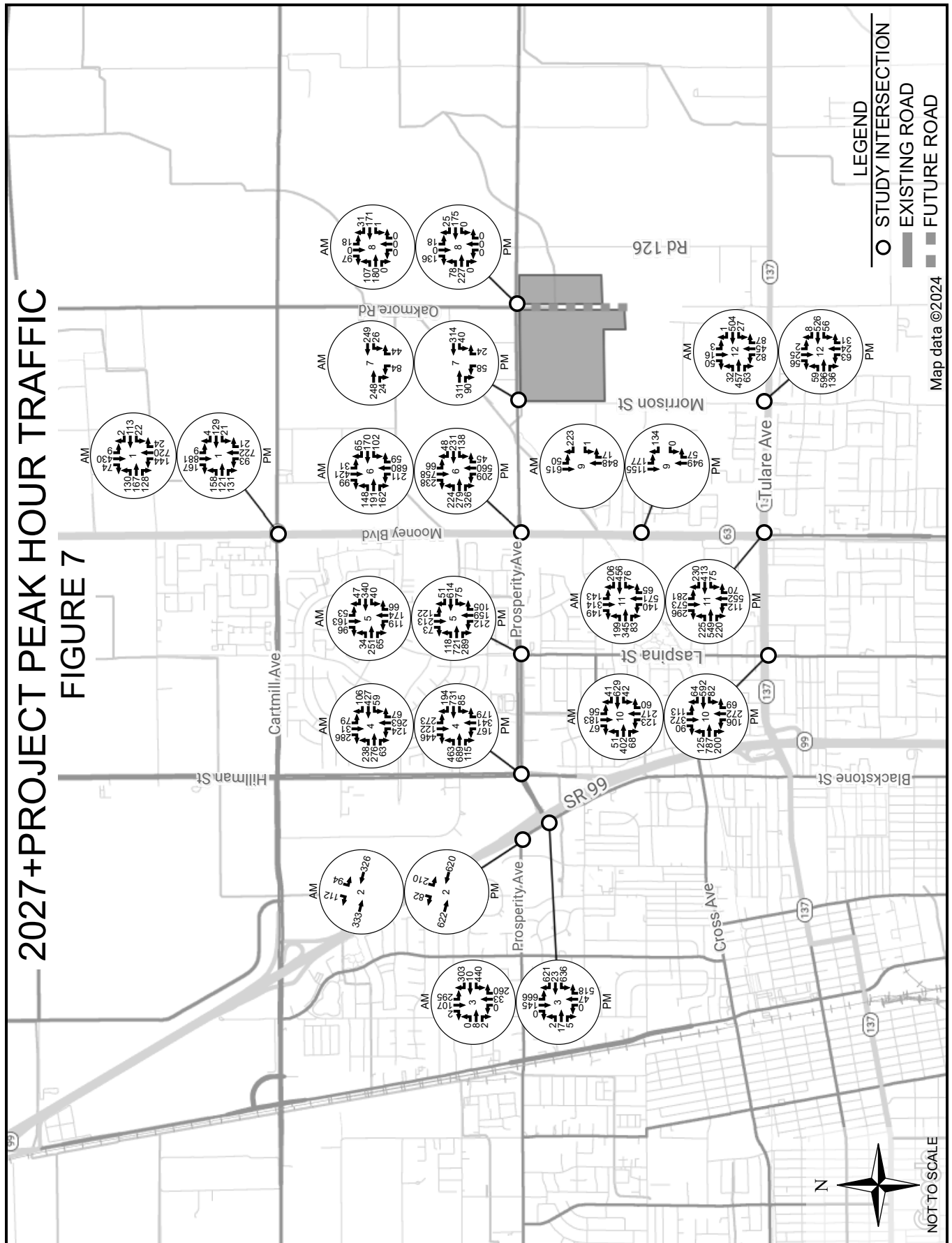




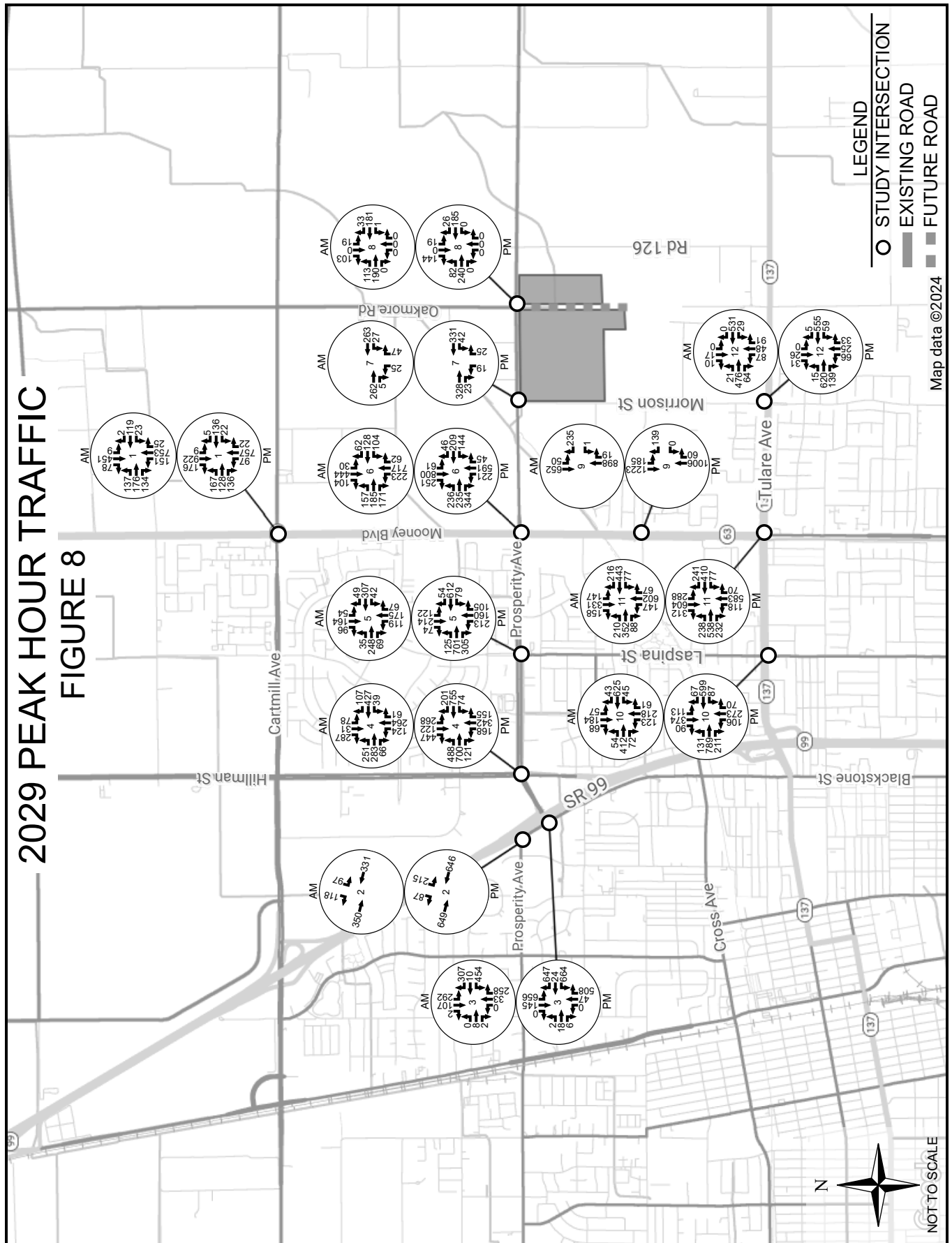


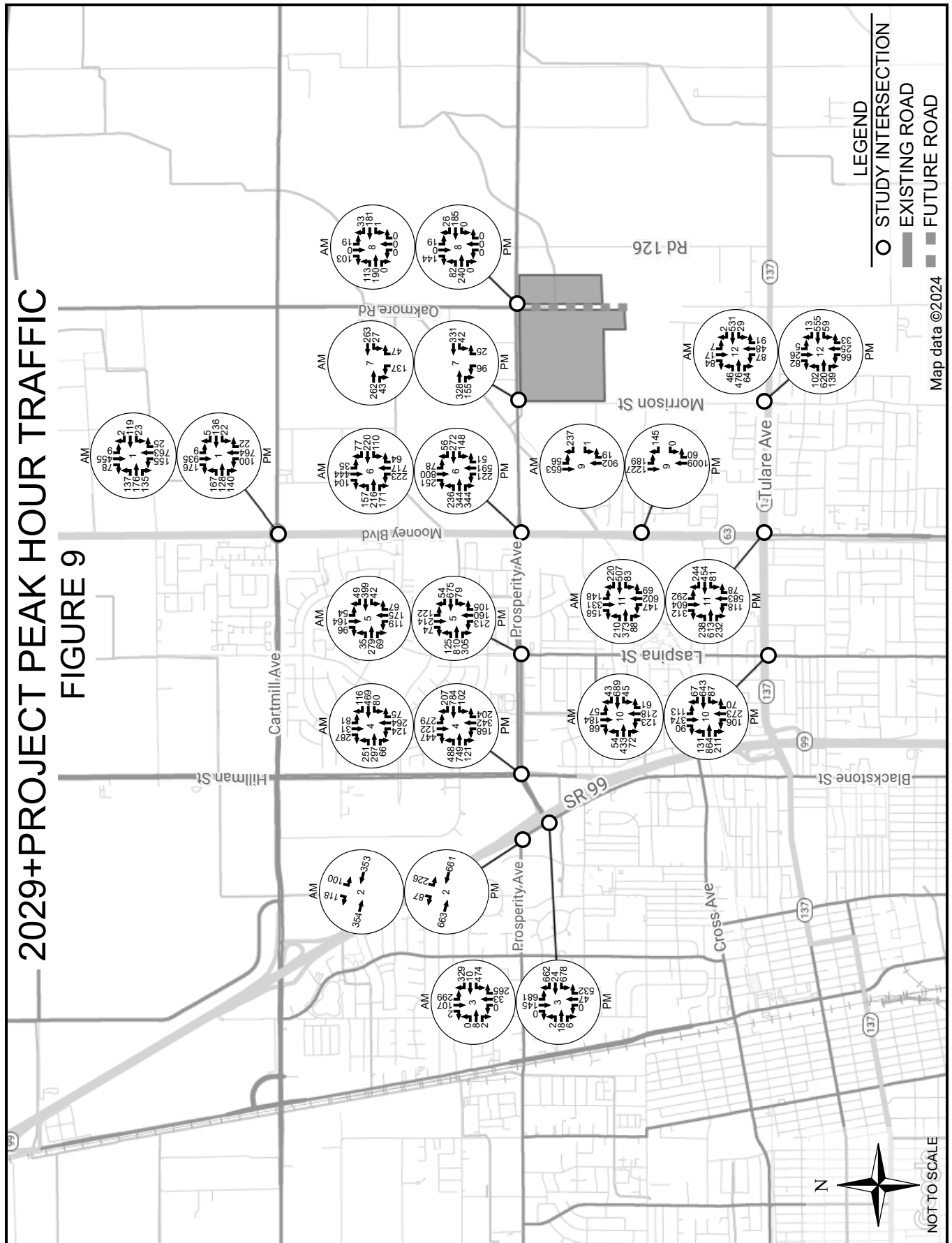


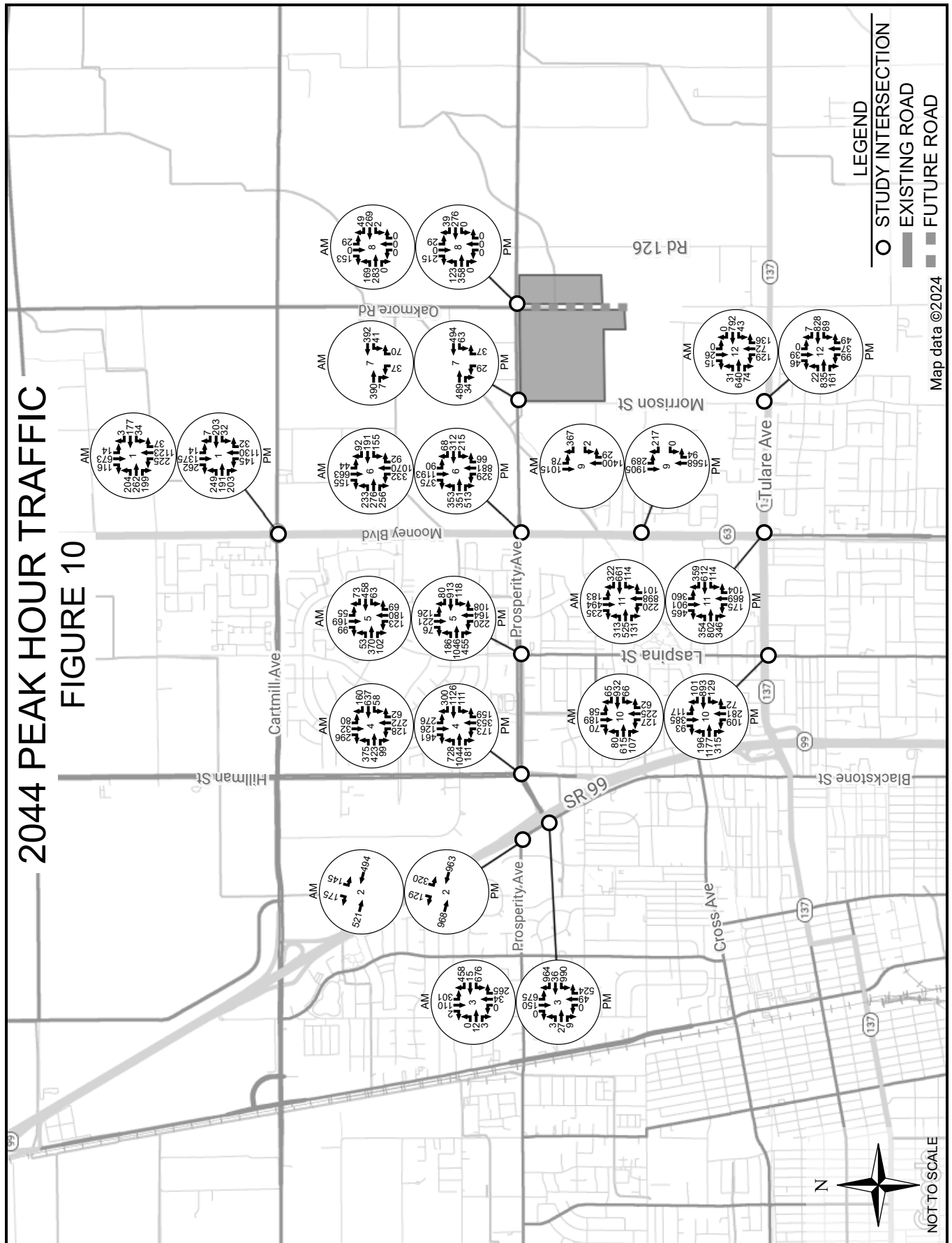


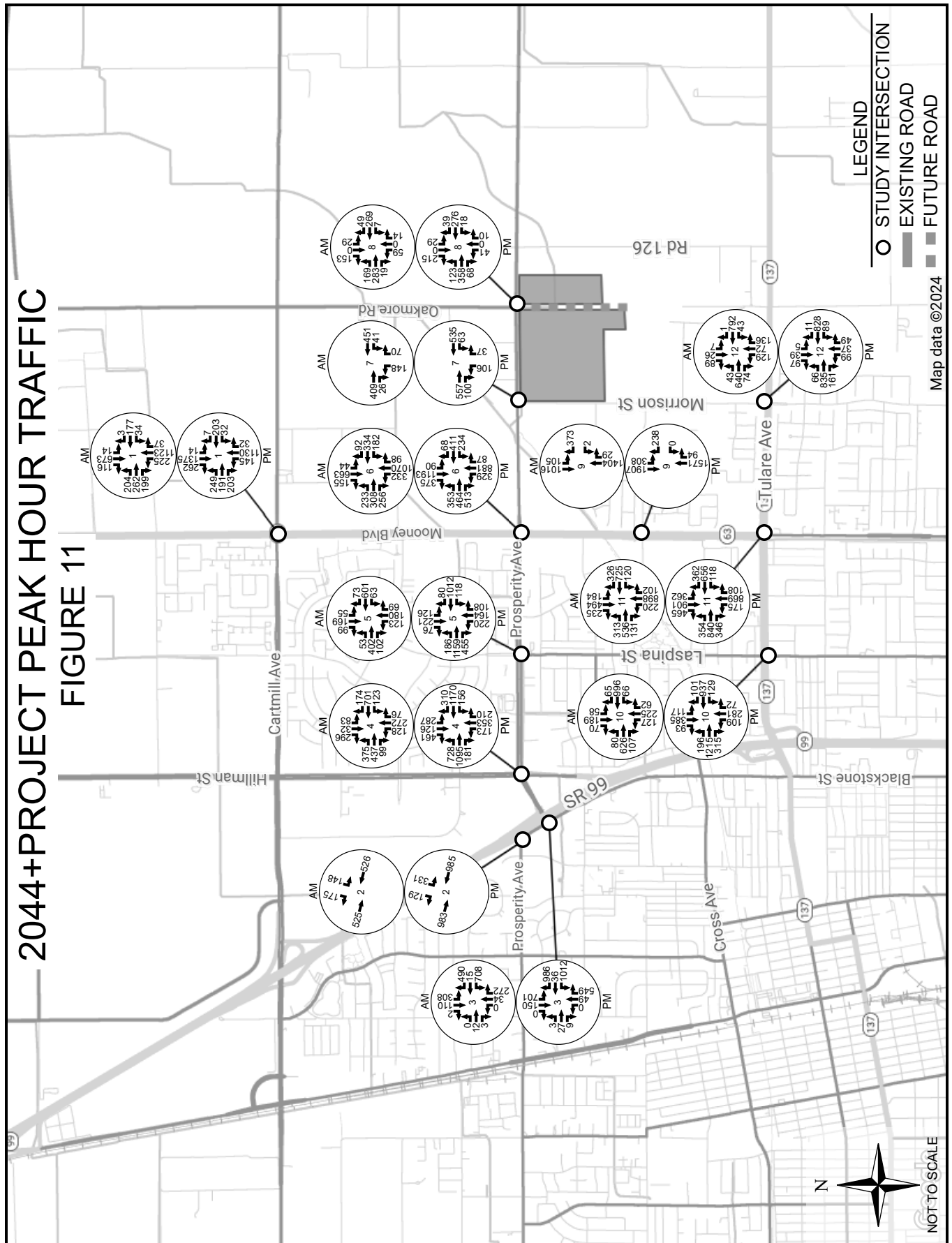












## **INTERSECTION ANALYSIS**

A capacity analysis of the study intersections was conducted using Synchro software from Trafficware.

- Existing (2024)
- Phase I (2027)
- Phase I (2027) + Project
- Phase II (2029)
- Phase II (2029) + Project
- Phase III Cumulative (2044)
- Phase III Cumulative (2044) + Project

Criteria for intersection level of service (LOS) are shown in the tables below.

### **LEVEL OF SERVICE CRITERIA UNSIGNALIZED INTERSECTION**

<b>Average Control Delay (sec/veh)</b>	<b>Level of Service</b>	<b>Expected Delay to Minor Street Traffic</b>
.. 10	A	Little or no delay
> 10 and ≤ 15	B	Short traffic delays
> 15 and ≤ 25	C	Average traffic delays
> 25 and ≤ 35	D	Long traffic delays
> 35 and ≤ 50	E	Very long traffic delays
> 50	F	Extreme delays

### **LEVEL OF SERVICE CRITERIA SIGNALIZED INTERSECTIONS**

<b>Volume/Capacity</b>	<b>Control Delay (sec/veh)</b>	<b>Level of Service</b>
< 0.60	≤ 10	A
0.61 - 0.70	> 10 and ≤ 20	B
0.71 - 0.80	> 20 and ≤ 35	C
0.81 - 0.90	> 35 and ≤ 55	D
0.91 - 1.00	> 55 and ≤ 80	E
> 1.0	> 80	F

Level of service for the study intersections is presented in Tables 3a and 3b. The level of service goal for roadway facilities in the City of Tulare is LOS “D.”

**Table 3a**  
**PM Intersection Level of Service**

#	Intersection	Control Type	2024	2027	2027+ Project	2029	2029+ Project	2044	2044+ Project	2044+ Project w/Mitigation <sup>1</sup>
1	Mooney Blvd & Cartmill Ave	Signal	C	C	C	C	C	F (89.3)	F (89.3)	D
2	Prosperity Ave/Blackstone St & SR 99 Offramp	Signal	A	A	A	A	A	A	A	-
3	Blackstone St & Prosperity Ave	Signal	F (127.0)	F (135.7)	F (142.7)	F (143.8)	F (157.7)	F (270.1)	F (288.3)	_ <sup>2</sup>
4	Hillman St & Prosperity Ave	Signal	D	D	D	D	E (55.3)	E (77.8)	F (81.8)	_ <sup>2</sup>
5	Laspina St & Prosperity Ave	Signal	C	C	C	C	C	D	D	-
6	Mooney Blvd & Prosperity Ave	Signal	C	D	D	D	D	F (129.2)	F (132.7)	D
7	Morrison St & Prosperity Ave	NB	B	B	C	B	C	C	F (98.6)	-
		Signal	-	-	-	-	-	-	-	B
8	Prosperity Ave & Oakmore Rd	SB	B	B	B	B	B	C	C	-
9	Mooney Blvd & Seminole Ave	WB	B	B	C	C	C	E (48.6)	F (59.67)	-
		Signal	-	-	-	-	-	-	-	C
10	Laspina St & Tulare Ave	Signal	C	C	C	C	C	D	D	-
11	Mooney Blvd & Tulare Ave	Signal	C	D	D	D	D	F (148.7)	F (148.4)	_ <sup>2</sup>
12	Morrison St & Tulare Ave	NB SB	F (56.4) D (27.6)	- -	- -	- -	- -	- -	- -	- -
		Roundabout	-	B	B	B	B	D	E (35.6)	C

<sup>1</sup>Mitigation shown in Table 6

<sup>2</sup>No feasible mitigation



**Table 3b**  
**AM Intersection Level of Service**

#	Intersection	Control Type	2024	2027	2027+ Project	2029	2029+ Project	2044	2044+ Project	2044+ Project w/Mitigation <sup>1</sup>
1	Mooney Blvd & Cartmill Ave	Signal	B	B	B	B	B	D	D	C
2	Prosperity Ave/Blackstone St & SR 99 Offramp	Signal	A	A	A	A	A	A	A	-
3	Blackstone St & Prosperity Ave	Signal	B	B	B	B	C	C	C	-
4	Hillman St & Prosperity Ave	Signal	B	C	C	C	C	C	C	-
5	Laspina St & Prosperity Ave	Signal	B	B	B	B	B	B	B	-
6	Mooney Blvd & Prosperity Ave	Signal	C	C	C	C	D	E (61.7)	E (72.7)	C
7	Morrison St & Prosperity Ave	NB SB	B	B	B	B	C	C	F (50.86)	-
		Signal	-	-	-	-	-	-	-	B
8	Prosperity Ave & Oakmore Rd	SB	B	B	B	B	B	C	C	-
9	Mooney Blvd & Seminole Ave	WB	B	C	C	C	C	F (128.32)	F (136.4)	-
		Signal	-	-	-	-	-	-	-	C
10	Laspina St & Tulare Ave	Signal	B	B	B	B	C	C	C	-
11	Mooney Blvd & Tulare Ave	Signal	C	C	C	C	C	F (80.1)	E (80.6)	- <sup>2</sup>
12	Morrison St & Tulare Ave	NB SB	D C	- -	- -	- -	- -	- -	- -	- -
		Roundabout	-	A	A	A	A	C	C	C <sup>3</sup>

<sup>1</sup>Mitigation shown in Table 6

<sup>2</sup>No feasible mitigation

<sup>3</sup>Mitigation necessary due to PM Peak Hour



## **TRAFFIC SIGNAL WARRANT ANALYSIS**

Peak hour signal warrants were evaluated for the unsignalized intersection within the study based on the California Manual on Uniform Traffic Control Devices (MUTCD). Peak hour signal warrants assess delay to traffic on the minor street approaches when entering or crossing a major street. Signal warrant analysis results for PM & AM peak hour are shown in Tables 4a and 4b, respectively.

**Table 4a**  
**PM Traffic Signal Warrants**

#	Intersection	2024			2027			2029			2044		
		Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met
7	Morrison St at Prosperity Ave	634	39	NO	687	42	NO	724	44	NO	1080	66	NO
8	Oakmore Rd at Prosperity Ave	467	143	NO	505	154	NO	533	163	NO	796	244	YES
9	Mooney Blvd at Seminole Ave	2135	120	YES	2333	131	YES	2474	139	YES	3856	217	YES
12	Morrison St at Tulare Ave	1249	109	YES	1332	118	YES	1393	124	YES	1942	185	YES

Intersection	2027+Project			2029+Project			2044+Project		
	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met
Morrison St at Prosperity Ave	755	82	NO	856	121	YES	1255	143	YES
Oakmore Rd at Prosperity Ave	505	154	NO	533	163	NO	882	244	YES
Mooney Blvd at Seminole Ave	2338	134	YES	2485	145	YES	3880	238	YES
Morrison St at Tulare Ave	1381	118	YES	1488	124	YES	1990	185	YES

**Table 4b**  
**AM Traffic Signal Warrants**

#	Intersection	2024			2027			2029			2044		
		Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met
7	Morrison St at Prosperity Ave	487	63	NO	527	68	NO	557	72	NO	830	107	NO
8	Oakmore Rd at Prosperity Ave	453	107	NO	490	115	NO	518	122	NO	772	182	YES
9	Mooney Blvd at Seminole Ave	1398	204	YES	1527	223	YES	1621	236	YES	2526	369	YES
12	Morrison St at Tulare Ave	1000	198	YES	1070	214	YES	1121	226	YES	1580	337	YES

#	Intersection	2027+Project			2029+Project			2044+Project		
		Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met
7	Morrison St at Prosperity Ave	547	128	NO	595	184	YES	927	218	YES
8	Oakmore Rd at Prosperity Ave	490	115	NO	518	122	NO	796	182	YES
9	Mooney Blvd at Seminole Ave	1532	224	YES	1632	238	YES	2558	375	YES
12	Morrison St at Tulare Ave	1084	214	YES	1148	226	YES	1593	337	YES

It is important to note that a signal warrant defines the minimum condition under which signalization of an intersection might be warranted. Meeting this threshold does not suggest traffic signals are required, but rather, that other traffic factors and conditions be considered in order to determine whether signals are truly justified.

It is also noted that signal warrants do not necessarily correlate with level of service. An intersection may satisfy a signal warrant condition and operate at or above an acceptable level of service or operate below an acceptable level of service and not meet signal warrant criteria.

## **ROADWAY ANALYSIS**

A capacity analysis of the study roadways was conducted using Table 4 in the State of Florida Department of Transportation *Quality/Level of Service Handbook* dated June 2020 (see Appendix). The level of service goal within the study limits is LOS “D”. The analysis was performed for the following AM and PM traffic scenarios:

- Existing (2024)
- Phase I (2027)
- Phase I (2027) + Project
- Phase II (2029)
- Phase II (2029) + Project
- Phase III Cumulative (2044)
- Phase III Cumulative (2044) + Project

**Table 5a**  
**PM Roadway Level of Service**

Roadway Segment	2024 Two-Way LOS		2027 Two-Way LOS		2027+Project Two-Way LOS		2029 Two-Way LOS		2029+Project Two-Way LOS		2044 Two-Way LOS		2044+Project Two-Way LOS	
	VOL	LOS	VOL	LOS	VOL	LOS	VOL	LOS	VOL	LOS	VOL	LOS	VOL	LOS
Blackstone St: SR 99 SB Offramp - Prosperity Ave	1408	C	1460	C	1583	C	1510	C	1633	C	2251	C	2374	C
Prosperity Ave: Blackstone St - Hillman St	2416	C	2571	C	2795	C	2679	C	2903	C	3713	D	3937	D
Prosperity Ave : Hillman St - Laspina St	1933	C	2062	C	2470	C	2153	C	2561	C	3016	C	3424	C
Prosperity Ave: Laspina St - Mooney Blvd	1491	C	1599	C	2017	C	1673	C	2091	C	2391	C	2809	C
Prosperity Ave: Mooney Blvd - Morrison St	647	C	699	C	1235	C	740	C	1276	C	1102	C	1638	C
Prosperity Ave: Morrison St - Oakmore Rd	636	C	689	C	988	C	726	C	1025	C	1083	C	1382	C
Morrison St: Prosperity Ave - Tulare Ave	96	C	104	C	341	C	109	C	346	C	151	C	388	C
Mooney Blvd: Cartmill Ave - Prosperity Ave	1737	C	1880	C	1959	C	1985	C	2064	C	2960	C	3039	C
Mooney Blvd: Prosperity Ave - Seminole Ave	1876	C	2031	C	2070	C	2145	C	2184	C	3467	D	3506	D
Mooney Blvd: Seminole Ave - Tulare Ave	1998	C	2158	C	2174	C	2289	C	2305	C	3467	D	3483	D
Laspina St: Prosperity Ave - Tulare Ave	1015	C	1053	C	1074	C	1076	C	1097	C	1286	C	1307	C
Tulare Ave: Laspina St - Mooney Blvd	1617	C	1752	C	1877	C	1848	C	1973	C	2754	C	2879	C
Tulare Ave: Mooney Blvd - Morrison St	1436	C	1546	C	1721	C	1624	C	1799	C	2446	C	2621	C

**Table 5b**  
**AM Roadway Level of Service**

Roadway Segment	2024 Two-Way LOS		2027 Two-Way LOS		2027+Project Two-Way LOS		2029 Two-Way LOS		2029+Project Two-Way LOS		2044 Two-Way LOS		2044+Project Two-Way LOS	
	VOL	LOS	VOL	LOS	VOL	LOS	VOL	LOS	VOL	LOS	VOL	LOS	VOL	LOS
Blackstone St: SR 99 SB Offramp - Prosperity Ave	699	C	737	C	860	C	778	C	901	C	1160	C	1230	C
Prosperity Ave: Blackstone St - Hillman St	1307	C	1385	C	1609	C	1438	C	1662	C	1958	C	2083	C
Prosperity Ave : Hillman St - Laspina St	887	C	950	C	1358	C	995	C	1403	C	1420	C	1632	C
Prosperity Ave: Laspina St - Mooney Blvd	847	C	916	C	1334	C	968	C	1386	C	1443	C	1661	C
Prosperity Ave: Mooney Blvd - Morrison St	499	C	539	C	1075	C	571	C	1107	C	850	C	1130	C
Prosperity Ave: Morrison St - Oakmore Rd	524	C	567	C	866	C	587	C	886	C	893	C	1053	C
Morrison St: Prosperity Ave - Tulare Ave	91	C	98	C	335	C	104	C	341	C	163	C	281	C
Mooney Blvd: Cartmill Ave - Prosperity Ave	1336	C	1458	C	1537	C	1537	C	1616	C	2291	C	2333	C
Mooney Blvd: Prosperity Ave - Seminole Ave	1507	C	1631	C	1670	C	1721	C	1760	C	2860	C	2887	C
Mooney Blvd: Seminole Ave - Tulare Ave	1507	C	1580	C	1596	C	1664	C	1680	C	2450	C	2458	C
Laspina St: Prosperity Ave - Tulare Ave	616	C	627	C	648	C	636	C	657	C	1286	C	1299	C
Tulare Ave: Laspina St - Mooney Blvd	1224	C	1325	C	1450	C	1398	C	1523	C	2085	C	2151	C
Tulare Ave: Mooney Blvd - Morrison St	1147	C	1238	C	1413	C	1302	C	1477	C	1955	C	2049	C

## **IMPROVEMENTS**

Intersection improvements needed by the year 2044 to maintain or improve the operational level of service of the street system in the vicinity of the project are presented in Table 6.

**Table 6  
Future Intersection Improvements**

#	Intersection	Total Improvements Required by 2044	Project Percent Share
1	Mooney Blvd & Cartmill Ave	Add NBT, SBT	1.55%
6	Mooney Blvd & Prosperity Ave	Add NBT, NBL, SBT, SBL EBT, EBL, WBT, WBL	11.39%
7	Morrison St & Prosperity Ave	Signal	37.76%
9	Mooney Blvd & Seminole Ave	Signal	2.21%
12	Morrison St & Tulare Ave	Add EBR	11.45%

Project percent share is calculated using the following formula:

$$\% \text{ Share} = \frac{\text{Project Traffic}}{(\text{Future+Project Traffic}) - \text{Existing Traffic}} \times 100\%$$

## **VMT ANALYSIS**

An analysis of project VMT (vehicle miles traveled) was conducted in accordance with *Implementing Vehicle Miles Traveled Thresholds in CEQA Analysis Required by SB 743*, a City of Tulare memorandum, dated June 26, 2020 (VMT Guidelines).

### **Project Screening**

The VMT Guidelines contain “screening thresholds” for identifying whether a land use project should be expected to result in a less than significant transportation impact under the California Environmental Quality Act (CEQA). Projects meeting one or more of these screening criteria are presumed to generate insignificant levels of VMT and would not be required to undergo a detailed VMT analysis.

One screening threshold applies to residential projects located in low VMT areas. The VMT Guidelines include a map generated by the TCAG regional travel model that identifies which areas satisfy the City’s VMT “reduction target” (at least 15 percent below the regional average). Since the project is shown to be in a low VMT area (see Appendix for map), this residential project is presumed to create a less than significant transportation impact.

## **SUMMARY AND CONCLUSIONS**

The purpose of this study is to evaluate the potential traffic impacts of a proposed residential development located on the south side of Prosperity Avenue east of Morrison Street in Tulare, CA. The study included both level of service (LOS) and vehicle miles traveled (VMT) analyses.

### **Level of Service Analysis**

The intersections of Blackstone Street & Prosperity Avenue and Morrison Street & Tulare Avenue currently operate below an acceptable level of service.

In 2029, with the addition of project traffic, the intersection of Hillman Street & Prosperity Avenue is anticipated to operate below an acceptable level of service.

In 2044, the intersections of Mooney Boulevard & Cartmill Avenue, Mooney Boulevard & Seminole Avenue, Morrison Street & Prosperity Avenue, and Mooney Boulevard & Tulare Avenue are anticipated to operate below an acceptable level of service prior to the addition of project traffic. With the addition of project traffic, the intersection of Morrison Street & Tulare Avenue is anticipated to operate below an acceptable level of service. The remaining four intersections are expected to operate at an acceptable level of service through 2044 prior to, and with the addition of project traffic.

Proposed improvements to improve the operational level of service are shown in Table 6. Due to right of way constraints, there is no feasible mitigation measures for the intersections of Blackstone Street & Prosperity Avenue, Hillman Street & Prosperity Avenue, and Mooney Boulevard & Tulare Avenue.

### **Roadway Capacity**

All roadway segments within the scope of the study currently operate at or above LOS D and are expected to continue to do so through the year 2044, both with and without the project. Therefore, no improvements are required.

### **VMT**

The project meets VMT screening criteria, and therefore, is presumed to have a less than significant transportation impact under CEQA.

























**REFERENCES**

1. Annual Traffic Census, TCAG
2. City of Tulare, California, Code of Ordinances, 2023 S-32 Supplement
3. Highway Capacity Manual, Special Report 209, Transportation Research Board
4. Implementing Vehicle Miles Traveled Thresholds in CEQA Analysis Required by SB 743, City of Tulare memorandum, dated June 26, 2020
5. California Manual on Uniform Traffic Control Devices for Streets and Highways, 2014 Edition, Federal Highway Administration (FHA)
6. Trip Generation, 11th Edition, Institute of Transportation Engineers (ITE)
7. Tulare General Plan, adopted October 7, 2014

## APPENDIX













Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

AM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	167	127	22	113	2	143	714	24	9	428	74
Future Volume (vph)	130	167	127	22	113	2	143	714	24	9	428	74
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.998			0.995			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1858	0	1630	3518	0	1630	3446	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1858	0	1630	3518	0	1630	3446	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			173		1			3			18	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	141	182	138	24	123	2	155	776	26	10	465	80
Shared Lane Traffic (%)												
Lane Group Flow (vph)	141	182	138	24	125	0	155	802	0	10	545	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

AM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	20.0	48.7	48.7	10.3	39.0		14.0	51.5		9.5	47.0	
Total Split (%)	16.7%	40.6%	40.6%	8.6%	32.5%		11.7%	42.9%		7.9%	39.2%	
Maximum Green (s)	14.5	43.2	43.2	4.8	33.5		8.5	46.0		4.0	41.5	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Don't Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effect Green (s)	13.2	25.8	25.8	9.1	14.3		10.5	33.0		6.0	19.7	
Actuated g/C Ratio	0.18	0.35	0.35	0.12	0.19		0.14	0.44		0.08	0.26	
v/c Ratio	0.49	0.28	0.23	0.12	0.35		0.67	0.52		0.08	0.59	
Control Delay (s/veh)	38.1	23.1	3.3	35.6	29.9		51.5	18.8		41.6	26.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	38.1	23.1	3.3	35.6	29.9		51.5	18.8		41.6	26.6	
LOS	D	C	A	D	C		D	B		D	C	
Approach Delay (s/veh)		21.8			30.8			24.1			26.8	
Approach LOS		C			C			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 74.6

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay (s/veh): 24.8

Intersection LOS: C

Intersection Capacity Utilization 55.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Mooney Blvd & Cartmill Ave

























# HCM 7th Signalized Intersection Summary

## 1: Mooney Blvd & Cartmill Ave

AM 2027

09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	167	127	22	113	2	143	714	24	9	428	74
Future Volume (veh/h)	130	167	127	22	113	2	143	714	24	9	428	74
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	141	182	138	24	123	2	155	776	26	10	465	80
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	222	382	292	157	303	5	234	1171	39	122	802	137
Arrive On Green	0.14	0.20	0.20	0.10	0.16	0.14	0.14	0.33	0.31	0.07	0.27	0.24
Sat Flow, veh/h	1641	1870	1429	1641	1834	30	1641	3504	117	1641	3018	516
Grp Volume(v), veh/h	141	182	138	24	0	125	155	393	409	10	272	273
Grp Sat Flow(s),veh/h/ln	1641	1870	1429	1641	0	1864	1641	1777	1845	1641	1777	1757
Q Serve(g_s), s	4.5	4.7	2.7	0.7	0.0	3.3	4.9	10.4	10.4	0.3	7.3	7.4
Cycle Q Clear(g_c), s	4.5	4.7	2.7	0.7	0.0	3.3	4.9	10.4	10.4	0.3	7.3	7.4
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.06	1.00		0.29
Lane Grp Cap(c), veh/h	222	382	292	157	0	307	234	594	616	122	472	467
V/C Ratio(X)	0.64	0.48	0.47	0.15	0.00	0.41	0.66	0.66	0.66	0.08	0.58	0.58
Avail Cap(c_a), veh/h	478	1523	1164	188	0	1189	299	1538	1597	164	1392	1376
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.5	19.2	6.2	22.8	0.0	20.5	22.3	15.6	15.7	23.7	17.5	17.7
Incr Delay (d2), s/veh	3.0	0.9	1.2	0.4	0.0	0.9	3.6	1.3	1.2	0.3	1.1	1.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	1.7	1.3	0.3	0.0	1.2	1.8	3.3	3.4	0.1	2.4	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	25.5	20.2	7.4	23.2	0.0	21.4	25.9	16.9	16.9	23.9	18.6	18.9
LnGrp LOS	C	C	A	C		C	C	B	B	C	B	B
Approach Vol, veh/h	461			149			957			555		
Approach Delay, s/veh	18.0			21.7			18.4			18.8		
Approach LOS	B			C			B			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.1	22.3	9.3	15.2	11.8	18.6	11.4	13.1				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	4.0	46.0	4.8	43.2	8.5	41.5	14.5	33.5				
Max Q Clear Time (g_c+I1), s	2.3	12.4	2.7	6.7	6.9	9.4	6.5	5.3				
Green Ext Time (p_c), s	0.0	3.0	0.0	1.2	0.1	2.0	0.2	0.4				
Intersection Summary												
HCM 7th Control Delay, s/veh	18.6											
HCM 7th LOS	B											



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (vph)	0	331	314	0	92	112
Future Volume (vph)	0	331	314	0	92	112
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Fr t						0.850
Fl t Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	1630	1458
Fl t Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	1630	1458
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						122
Link Speed (mph)		55	55		55	
Link Distance (ft)		349	727		300	
Travel Time (s)		4.3	9.0		3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	360	341	0	100	122
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	360	341	0	100	122
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors		1	1		1	1
Detector Template						
Leading Detector (ft)		50	50		50	50
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		50	50		50	50
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		4.0	4.0		4.0	4.0
Minimum Split (s)		24.0	24.0		24.0	24.0
Total Split (s)		53.0	53.0		47.0	47.0
Total Split (%)		53.0%	53.0%		47.0%	47.0%
Maximum Green (s)		47.0	47.0		41.0	41.0
Yellow Time (s)		5.0	5.0		5.0	5.0

Lanes, Volumes, Timings  
2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

AM 2027  
09/12/2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		None	None		Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effect Green (s)		10.3	10.3		9.3	9.3
Actuated g/C Ratio		0.37	0.37		0.34	0.34
v/c Ratio		0.27	0.26		0.18	0.21
Control Delay (s/veh)		6.8	6.7		7.7	3.0
Queue Delay		0.0	0.0		0.0	0.0
Total Delay (s/veh)		6.8	6.7		7.7	3.0
LOS		A	A		A	A
Approach Delay (s/veh)		6.8	6.7		5.1	
Approach LOS		A	A		A	

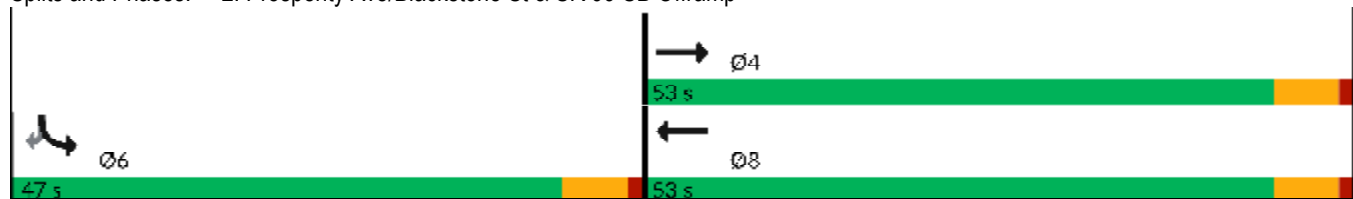
Intersection Summary

Area Type: Other  
Cycle Length: 100  
Actuated Cycle Length: 27.6  
Natural Cycle: 50  
Control Type: Actuated-Uncoordinated  
Maximum v/c Ratio: 0.27  
Intersection Signal Delay (s/veh): 6.4  
Intersection Capacity Utilization 22.9%  
Analysis Period (min) 15

Intersection LOS: A

ICU Level of Service A

Splits and Phases: 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

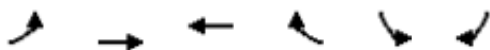




# HCM 7th Signalized Intersection Summary

## 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

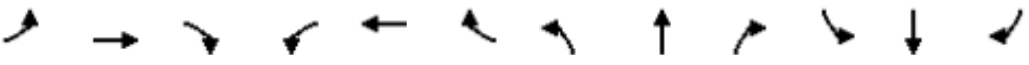











AM 2027  
09/12/2024



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (veh/h)	0	331	314	0	92	112
Future Volume (veh/h)	0	331	314	0	92	112
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1723	1723
Adj Flow Rate, veh/h	0	360	341	0	100	122
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	1174	1174	0	479	426
Arrive On Green	0.00	0.33	0.33	0.00	0.29	0.29
Sat Flow, veh/h	0	3741	3741	0	1641	1460
Grp Volume(v), veh/h	0	360	341	0	100	122
Grp Sat Flow(s),veh/h/ln	0	1777	1777	0	1641	1460
Q Serve(g_s), s	0.0	1.6	1.5	0.0	1.0	1.4
Cycle Q Clear(g_c), s	0.0	1.6	1.5	0.0	1.0	1.4
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1174	1174	0	479	426
V/C Ratio(X)	0.00	0.31	0.29	0.00	0.21	0.29
Avail Cap(c_a), veh/h	0	8222	8222	0	3331	2964
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	5.3	5.3	0.0	5.7	5.8
Incr Delay (d2), s/veh	0.0	0.1	0.1	0.0	0.2	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.0	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	0.0	5.4	5.4	0.0	5.9	6.2
LnGrp LOS		A	A		A	A
Approach Vol, veh/h		360	341		222	
Approach Delay, s/veh		5.4	5.4		6.0	
Approach LOS		A	A		A	
Timer - Assigned Phs				4	6	8
Phs Duration (G+Y+Rc), s				11.0	10.2	11.0
Change Period (Y+Rc), s				6.0	6.0	6.0
Max Green Setting (Gmax), s				47.0	41.0	47.0
Max Q Clear Time (g_c+I1), s				3.6	3.4	3.5
Green Ext Time (p_c), s				1.5	0.8	1.4
Intersection Summary						
HCM 7th Control Delay, s/veh			5.6			
HCM 7th LOS			A			

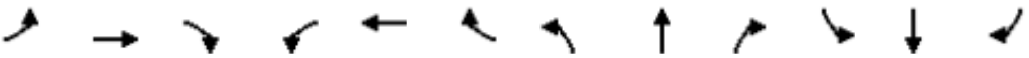
Lanes, Volumes, Timings  
3: Blackstone Ave/Blackstone St & Prosperity Ave

AM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	8	2	430	10	291	0	33	257	291	107	2
Future Volume (vph)	0	8	2	430	10	291	0	33	257	291	107	2
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	30		0	335		310	55		90	240		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor		1.00				0.98						
Frt		0.973				0.850			0.850		0.997	
Flt Protected				0.950	0.954					0.950		
Satd. Flow (prot)	1716	1805	0	1548	1688	1458	1716	1863	1458	3162	1857	0
Flt Permitted				0.950	0.728					0.950		
Satd. Flow (perm)	1716	1805	0	1548	1288	1427	1716	1863	1458	3162	1857	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				316			279		1	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		98			1229			643			727	
Travel Time (s)		1.2			15.2			8.0			9.0	
Confl. Peds. (#/hr)			5			5						
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	9	2	467	11	316	0	36	279	316	116	2
Shared Lane Traffic (%)				49%								
Lane Group Flow (vph)	0	11	0	238	240	316	0	36	279	316	118	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												

Lanes, Volumes, Timings  
3: Blackstone Ave/Blackstone St & Prosperity Ave

AM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	24.1		10.0	24.1	24.1	10.0	24.0	24.0	10.0	24.0	
Total Split (s)	13.0	27.1		26.9	41.0	41.0	10.0	24.0	24.0	22.0	36.0	
Total Split (%)	13.0%	27.1%		26.9%	41.0%	41.0%	10.0%	24.0%	24.0%	22.0%	36.0%	
Maximum Green (s)	7.0	21.1		20.9	35.0	35.0	4.0	18.0	18.0	16.0	30.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Don't Walk (s)		11.1			11.1	11.1		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		5			5	5		0	0		0	
Act Effect Green (s)		9.8		35.2	35.2	39.1		10.3	10.3	14.5	28.8	
Actuated g/C Ratio		0.13		0.46	0.46	0.51		0.14	0.14	0.19	0.38	
v/c Ratio		0.05		0.33	0.31	0.36		0.14	0.64	0.53	0.17	
Control Delay (s/veh)		27.8		19.3	18.7	2.8		31.6	11.6	32.1	16.3	
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay (s/veh)		27.8		19.3	18.7	2.8		31.6	11.6	32.1	16.3	
LOS		C		B	B	A		C	B	C	B	
Approach Delay (s/veh)		27.8			12.5			13.9			27.8	
Approach LOS		C			B			B			C	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 76

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay (s/veh): 17.2

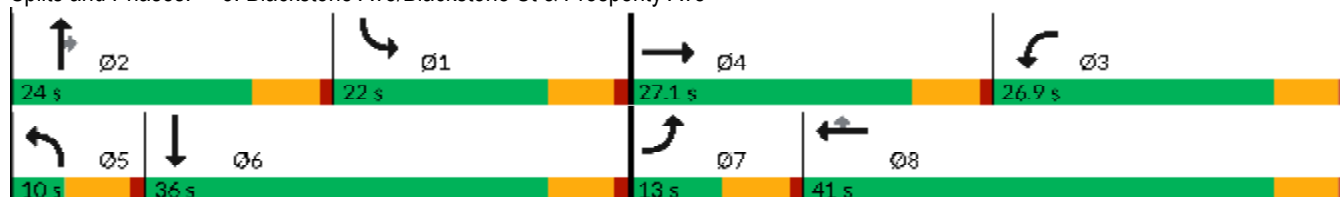
Intersection LOS: B

Intersection Capacity Utilization 41.9%

ICU Level of Service A

Analysis Period (min) 15
























Splits and Phases: 3: Blackstone Ave/Blackstone St & Prosperity Ave



# HCM 7th Signalized Intersection Summary
























## 3: Blackstone Ave/Blackstone St & Prosperity Ave

AM 2027  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	8	2	430	10	291	0	33	257	291	107	2
Future Volume (veh/h)	0	8	2	430	10	291	0	33	257	291	107	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	0	9	2	475	0	316	0	36	279	316	116	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	3	167	37	718	0	567	3	465	363	531	877	15
Arrive On Green	0.00	0.11	0.08	0.22	0.00	0.40	0.00	0.25	0.25	0.17	0.48	0.45
Sat Flow, veh/h	1641	1471	327	3281	0	1435	1641	1870	1460	3183	1833	32
Grp Volume(v), veh/h	0	0	11	475	0	316	0	36	279	316	0	118
Grp Sat Flow(s),veh/h/ln	1641	0	1797	1641	0	1435	1641	1870	1460	1591	0	1865
Q Serve(g_s), s	0.0	0.0	0.3	8.4	0.0	4.5	0.0	0.9	11.3	5.8	0.0	2.2
Cycle Q Clear(g_c), s	0.0	0.0	0.3	8.4	0.0	4.5	0.0	0.9	11.3	5.8	0.0	2.2
Prop In Lane	1.00		0.18	1.00		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	3	0	204	718	0	567	3	465	363	531	0	893
V/C Ratio(X)	0.00	0.00	0.05	0.66	0.00	0.56	0.00	0.08	0.77	0.59	0.00	0.13
Avail Cap(c_a), veh/h	233	0	654	1183	0	836	155	589	460	902	0	940
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	25.3	22.6	0.0	3.0	0.0	18.3	22.2	24.5	0.0	9.2
Incr Delay (d2), s/veh	0.0	0.0	0.1	1.0	0.0	0.9	0.0	0.1	6.0	1.1	0.0	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.1	2.8	0.0	2.3	0.0	0.3	3.8	2.0	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	25.4	23.7	0.0	3.9	0.0	18.3	28.1	25.5	0.0	9.3
LnGrp LOS			C	C		A		B	C	C		A
Approach Vol, veh/h	11			791			315			434		
Approach Delay, s/veh	25.4			15.8			27.0			21.1		
Approach LOS	C			B			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.6	19.8	17.9	11.2	0.0	34.4	0.0	29.1				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	16.0	18.0	20.9	21.1	4.0	30.0	7.0	35.0				
Max Q Clear Time (g_c+I1), s	7.8	13.3	10.4	2.3	0.0	4.2	0.0	6.5				
Green Ext Time (p_c), s	0.8	0.5	1.5	0.0	0.0	0.3	0.0	1.3				
Intersection Summary												
HCM 7th Control Delay, s/veh				19.6								
HCM 7th LOS				B								
Notes												
User approved volume balancing among the lanes for turning movement.												













Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

AM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	238	269	63	37	405	102	124	263	60	77	31	286
Future Volume (vph)	238	269	63	37	405	102	124	263	60	77	31	286
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	270		0	155		85	155		0	200		205
Storage Lanes	2		1	1		1	1		0	2		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	0.88
Ped Bike Factor			0.97			0.98		1.00				0.97
Fr't			0.850			0.850		0.972				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	1630	5085	1458	1630	3428	0	3162	1863	2567
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1410	1630	5085	1433	1630	3428	0	3162	1863	2489
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			136		21				311
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1229			2636			362			5336	
Travel Time (s)		15.2			32.7			4.5			66.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	259	292	68	40	440	111	135	286	65	84	34	311
Shared Lane Traffic (%)												
Lane Group Flow (vph)	259	292	68	40	440	111	135	351	0	84	34	311
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

AM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	32.7	32.7	10.0	45.6	45.6	10.0	47.0		10.0	49.9	49.9
Total Split (s)	31.9	43.1	43.1	35.9	47.1	47.1	11.0	31.0		10.0	30.0	30.0
Total Split (%)	26.6%	35.9%	35.9%	29.9%	39.3%	39.3%	9.2%	25.8%		8.3%	25.0%	25.0%
Maximum Green (s)	25.9	37.1	37.1	29.9	41.1	41.1	5.0	25.0		4.0	24.0	24.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Don't Walk (s)		19.7	19.7		32.6	32.6		34.0			36.9	36.9
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effect Green (s)	14.5	27.8	27.8	10.3	17.1	17.1	7.9	20.4		6.7	16.4	16.4
Actuated g/C Ratio	0.20	0.38	0.38	0.14	0.23	0.23	0.11	0.28		0.09	0.22	0.22
v/c Ratio	0.42	0.22	0.11	0.18	0.37	0.25	0.78	0.36		0.29	0.08	0.39
Control Delay (s/veh)	32.2	19.4	0.4	38.6	25.5	4.9	67.6	23.0		42.6	24.7	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	32.2	19.4	0.4	38.6	25.5	4.9	67.6	23.0		42.6	24.7	4.8
LOS	C	B	A	D	C	A	E	C		D	C	A
Approach Delay (s/veh)		22.7			22.5			35.4			13.8	
Approach LOS		C			C			D			B	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 73.8

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay (s/veh): 23.7

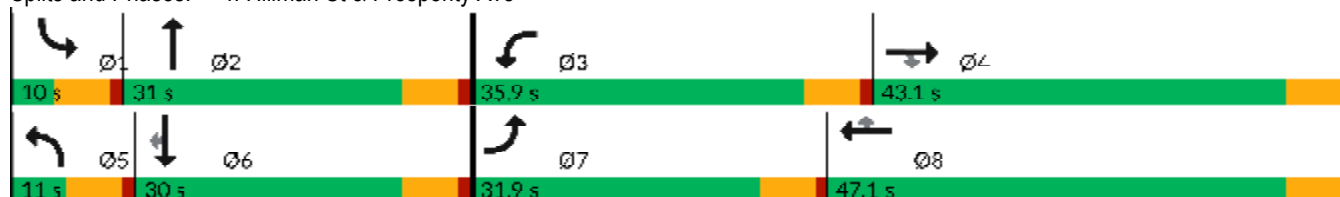
Intersection LOS: C

Intersection Capacity Utilization 48.8%

ICU Level of Service A

Analysis Period (min) 15

























Splits and Phases: 4: Hillman St & Prosperity Ave



# HCM 7th Signalized Intersection Summary

## 4: Hillman St & Prosperity Ave





























AM 2027  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	238	269	63	37	405	102	124	263	60	77	31	286
Future Volume (veh/h)	238	269	63	37	405	102	124	263	60	77	31	286
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	259	292	68	40	440	111	135	286	65	84	34	311
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	502	1121	447	110	1148	322	197	740	165	272	417	553
Arrive On Green	0.16	0.32	0.32	0.07	0.22	0.22	0.12	0.26	0.22	0.09	0.22	0.22
Sat Flow, veh/h	3183	3554	1416	1641	5106	1430	1641	2874	642	3183	1870	2481
Grp Volume(v), veh/h	259	292	68	40	440	111	135	175	176	84	34	311
Grp Sat Flow(s),veh/h/ln	1591	1777	1416	1641	1702	1430	1641	1777	1739	1591	1870	1241
Q Serve(g_s), s	4.3	3.6	2.0	1.4	4.3	3.8	4.6	4.7	4.9	1.4	0.8	6.5
Cycle Q Clear(g_c), s	4.3	3.6	2.0	1.4	4.3	3.8	4.6	4.7	4.9	1.4	0.8	6.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.37	1.00		1.00
Lane Grp Cap(c), veh/h	502	1121	447	110	1148	322	197	457	448	272	417	553
V/C Ratio(X)	0.52	0.26	0.15	0.36	0.38	0.35	0.68	0.38	0.39	0.31	0.08	0.56
Avail Cap(c_a), veh/h	1524	2385	950	898	3777	1058	197	823	806	328	835	1107
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.5	14.9	14.3	26.0	19.2	19.0	24.6	17.8	18.2	25.0	17.9	20.1
Incr Delay (d2), s/veh	0.8	0.1	0.2	2.0	0.2	0.6	9.4	0.5	0.6	0.6	0.1	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	1.1	0.5	0.5	1.4	1.1	2.0	1.6	1.7	0.5	0.3	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	23.3	15.0	14.5	28.0	19.4	19.6	34.0	18.3	18.8	25.7	18.0	21.0
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	C
Approach Vol, veh/h	619				591		486				429	
Approach Delay, s/veh	18.4				20.0		22.8				21.7	
Approach LOS	B				B		C				C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	19.0	7.9	22.4	11.0	17.0	13.2	17.1				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	4.0	25.0	29.9	37.1	5.0	24.0	25.9	41.1				
Max Q Clear Time (g_c+I1), s	3.4	6.9	3.4	5.6	6.6	8.5	6.3	6.3				
Green Ext Time (p_c), s	0.0	1.1	0.1	1.4	0.0	1.4	1.0	2.4				
Intersection Summary												
HCM 7th Control Delay, s/veh	20.5											
HCM 7th LOS	C											
Notes												
User approved pedestrian interval to be less than phase max green.												















Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

AM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  						 	
Traffic Volume (vph)	34	235	65	40	291	47	119	174	66	53	163	96
Future Volume (vph)	34	235	65	40	291	47	119	174	66	53	163	96
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	235		115	230		100	100		100	160		100
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96			0.97			0.97			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	5085	1458	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1405	1630	5085	1410	1630	1863	1415	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			191			191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2636			2650			5387			713	
Travel Time (s)		32.7			32.9			66.8			8.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	37	255	71	43	316	51	129	189	72	58	177	104
Shared Lane Traffic (%)												
Lane Group Flow (vph)	37	255	71	43	316	51	129	189	72	58	177	104
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

AM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	27.0	27.0	10.0	34.1	34.1	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (s)	16.0	38.4	38.4	13.0	35.4	35.4	23.0	47.6	47.6	21.0	45.6	45.6
Total Split (%)	13.3%	32.0%	32.0%	10.8%	29.5%	29.5%	19.2%	39.7%	39.7%	17.5%	38.0%	38.0%
Maximum Green (s)	10.0	32.4	32.4	7.0	29.4	29.4	17.0	41.6	41.6	15.0	39.6	39.6
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		14.0	14.0		21.1	21.1		32.6	32.6		32.6	32.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effect Green (s)	11.0	15.2	15.2	11.7	18.5	18.5	14.8	22.7	22.7	13.3	18.3	18.3
Actuated g/C Ratio	0.17	0.23	0.23	0.18	0.29	0.29	0.23	0.35	0.35	0.20	0.28	0.28
v/c Ratio	0.13	0.31	0.15	0.15	0.22	0.09	0.35	0.29	0.12	0.17	0.34	0.19
Control Delay (s/veh)	36.8	28.2	0.7	34.1	22.9	0.3	33.5	22.8	0.4	32.1	25.0	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	36.8	28.2	0.7	34.1	22.9	0.3	33.5	22.8	0.4	32.1	25.0	0.8
LOS	D	C	A	C	C	A	C	C	A	C	C	A
Approach Delay (s/veh)		23.7			21.3			22.2			18.8	
Approach LOS		C			C			C			B	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 64.9

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.35

Intersection Signal Delay (s/veh): 21.5

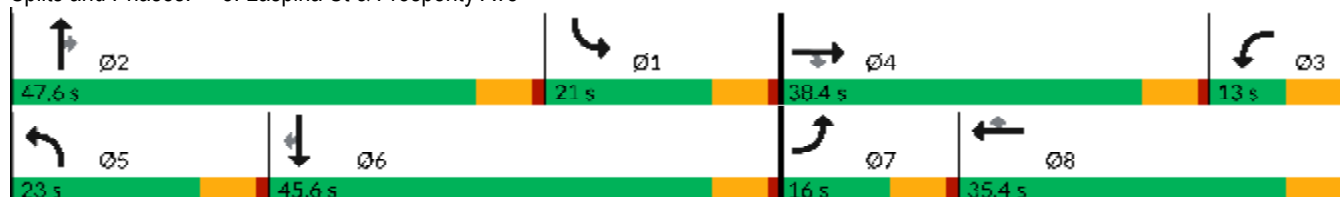
Intersection LOS: C

Intersection Capacity Utilization 44.5%

ICU Level of Service A

Analysis Period (min) 15



























Splits and Phases: 5: Laspina St & Prosperity Ave



# HCM 7th Signalized Intersection Summary
























## 5: Laspina St & Prosperity Ave

AM 2027  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  							
Traffic Volume (veh/h)	34	235	65	40	291	47	119	174	66	53	163	96
Future Volume (veh/h)	34	235	65	40	291	47	119	174	66	53	163	96
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	37	255	71	43	316	51	129	189	72	58	177	104
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	125	699	277	133	1031	284	233	443	335	227	437	334
Arrive On Green	0.08	0.20	0.20	0.08	0.20	0.20	0.14	0.24	0.24	0.14	0.23	0.23
Sat Flow, veh/h	1641	3554	1407	1641	5106	1408	1641	1870	1411	1641	1870	1430
Grp Volume(v), veh/h	37	255	71	43	316	51	129	189	72	58	177	104
Grp Sat Flow(s),veh/h/ln	1641	1777	1407	1641	1702	1408	1641	1870	1411	1641	1870	1430
Q Serve(g_s), s	1.0	2.9	1.0	1.1	2.4	0.7	3.4	4.0	1.9	1.5	3.7	2.8
Cycle Q Clear(g_c), s	1.0	2.9	1.0	1.1	2.4	0.7	3.4	4.0	1.9	1.5	3.7	2.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	125	699	277	133	1031	284	233	443	335	227	437	334
V/C Ratio(X)	0.30	0.37	0.26	0.32	0.31	0.18	0.55	0.43	0.22	0.26	0.41	0.31
Avail Cap(c_a), veh/h	426	2647	1048	320	3471	957	675	1766	1332	604	1685	1288
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.2	16.1	3.9	20.0	15.7	3.8	18.4	15.0	14.2	17.8	15.0	14.6
Incr Delay (d2), s/veh	1.3	0.3	0.5	1.4	0.2	0.3	2.0	0.7	0.3	0.6	0.6	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.9	0.5	0.4	0.7	0.3	1.1	1.3	0.5	0.5	1.2	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	21.5	16.4	4.4	21.4	15.8	4.1	20.5	15.6	14.5	18.3	15.6	15.2
LnGrp LOS	C	B	A	C	B	A	C	B	B	B	B	B
Approach Vol, veh/h	363				410				390		339	
Approach Delay, s/veh	14.6				15.0				17.0		15.9	
Approach LOS	B				B				B		B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.4	14.9	7.8	13.1	10.6	14.8	7.5	13.3				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	41.6	7.0	32.4	17.0	39.6	10.0	29.4				
Max Q Clear Time (g_c+I1), s	3.5	6.0	3.1	4.9	5.4	5.7	3.0	4.4				
Green Ext Time (p_c), s	0.1	0.9	0.0	1.3	0.3	1.0	0.0	1.5				
Intersection Summary												
HCM 7th Control Delay, s/veh			15.6									
HCM 7th LOS			B									

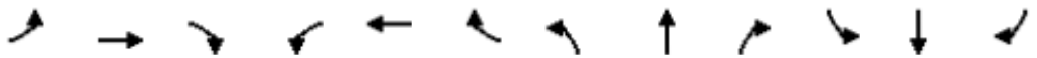
Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

AM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	148	175	162	99	121	58	211	680	58	28	421	99
Future Volume (vph)	148	175	162	99	121	58	211	680	58	28	421	99
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98		0.99				0.97			0.98
Frt			0.850		0.952				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1762	0	1630	3539	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1432	1630	1762	0	1630	3539	1409	1630	3539	1426
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191		19				191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2617			5285	
Travel Time (s)		32.9			36.1			32.4			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	161	190	176	108	132	63	229	739	63	30	458	108
Shared Lane Traffic (%)												
Lane Group Flow (vph)	161	190	176	108	195	0	229	739	63	30	458	108
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

AM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	24.0	39.7	39.7	17.0	32.7		23.0	46.3	46.3	17.0	40.3	40.3
Total Split (%)	20.0%	33.1%	33.1%	14.2%	27.3%		19.2%	38.6%	38.6%	14.2%	33.6%	33.6%
Maximum Green (s)	18.0	33.7	33.7	11.0	26.7		17.0	40.3	40.3	11.0	34.3	34.3
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Don't Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effect Green (s)	16.7	20.5	20.5	15.3	19.1		18.6	49.7	49.7	10.8	36.6	36.6
Actuated g/C Ratio	0.16	0.19	0.19	0.14	0.18		0.17	0.46	0.46	0.10	0.34	0.34
v/c Ratio	0.63	0.53	0.41	0.47	0.59		0.81	0.45	0.08	0.18	0.38	0.18
Control Delay (s/veh)	55.8	44.2	6.7	51.8	44.2		66.8	24.4	0.2	49.5	29.6	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	55.8	44.2	6.7	51.8	44.2		66.8	24.4	0.2	49.5	29.6	0.6
LOS	E	D	A	D	D		E	C	A	D	C	A
Approach Delay (s/veh)		35.2			46.9			32.3			25.3	
Approach LOS		D			D			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 107.2

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay (s/veh): 33.1

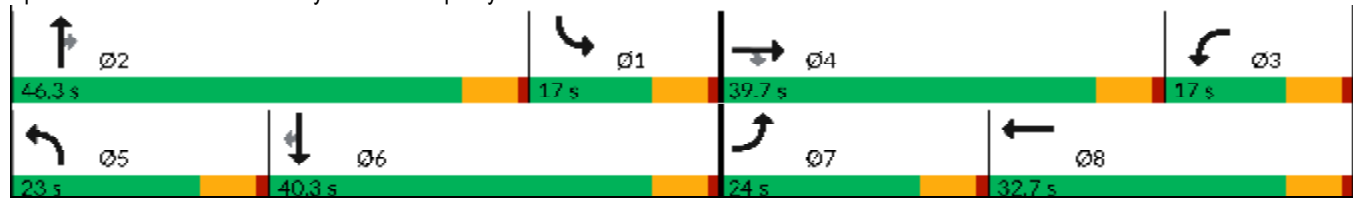
Intersection LOS: C

Intersection Capacity Utilization 63.2%

ICU Level of Service B

Analysis Period (min) 15
























Splits and Phases: 6: Mooney Blvd & Prosperity Ave



# HCM 7th Signalized Intersection Summary










## 6: Mooney Blvd & Prosperity Ave

AM 2027  
09/12/2024




												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	148	175	162	99	121	58	211	680	58	28	421	99
Future Volume (veh/h)	148	175	162	99	121	58	211	680	58	28	421	99
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	161	190	176	108	132	63	229	739	63	30	458	108
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	222	325	248	212	199	95	287	1501	600	188	1288	520
Arrive On Green	0.14	0.17	0.17	0.13	0.17	0.15	0.17	0.42	0.42	0.11	0.36	0.36
Sat Flow, veh/h	1641	1870	1426	1641	1186	566	1641	3554	1420	1641	3554	1435
Grp Volume(v), veh/h	161	190	176	108	0	195	229	739	63	30	458	108
Grp Sat Flow(s),veh/h/ln	1641	1870	1426	1641	0	1751	1641	1777	1420	1641	1777	1435
Q Serve(g_s), s	9.4	9.4	7.5	6.1	0.0	10.5	13.4	15.2	2.7	1.7	9.4	5.2
Cycle Q Clear(g_c), s	9.4	9.4	7.5	6.1	0.0	10.5	13.4	15.2	2.7	1.7	9.4	5.2
Prop In Lane	1.00		1.00	1.00		0.32	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	222	325	248	212	0	294	287	1501	600	188	1288	520
V/C Ratio(X)	0.73	0.58	0.71	0.51	0.00	0.66	0.80	0.49	0.11	0.16	0.36	0.21
Avail Cap(c_a), veh/h	328	667	508	213	0	502	311	1501	600	213	1288	520
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.5	38.0	16.1	40.7	0.0	39.3	39.6	21.1	17.5	40.0	23.4	22.0
Incr Delay (d2), s/veh	4.5	1.7	3.7	2.0	0.0	2.6	12.8	1.2	0.4	0.4	0.8	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	4.2	3.9	2.5	0.0	4.4	6.1	5.9	0.9	0.6	3.7	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	46.0	39.7	19.8	42.7	0.0	41.9	52.4	22.3	17.8	40.4	24.1	22.9
LnGrp LOS	D	D	B	D		D	D	C	B	D	C	C
Approach Vol, veh/h	527				303			1031			596	
Approach Delay, s/veh	35.0				42.2			28.7			24.7	
Approach LOS	C				D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.5	46.3	16.9	21.4	21.5	40.3	17.5	20.8				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	11.0	40.3	11.0	33.7	17.0	34.3	18.0	26.7				
Max Q Clear Time (g_c+I1), s	3.7	17.2	8.1	11.4	15.4	11.4	11.4	12.5				
Green Ext Time (p_c), s	0.0	3.5	0.1	1.3	0.1	2.3	0.2	0.5				
Intersection Summary												
HCM 7th Control Delay, s/veh	30.7											
HCM 7th LOS	C											
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
7: Morrison St & Prosperity Ave

AM 2027  
09/12/2024
















						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	248	4	26	249	24	44
Future Volume (vph)	248	4	26	249	24	44
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.998				0.912	
Flt Protected				0.995	0.983	
Satd. Flow (prot)	1859	0	0	1853	1538	0
Flt Permitted				0.995	0.983	
Satd. Flow (perm)	1859	0	0	1853	1538	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	270	4	28	271	26	48
Shared Lane Traffic (%)						
Lane Group Flow (vph)	274	0	0	299	74	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	42.2%			ICU Level of Service A		
Analysis Period (min)	15					



Intersection						
Int Delay, s/veh	1.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	248	4	26	249	24	44
Future Vol, veh/h	248	4	26	249	24	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	270	4	28	271	26	48
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	274	0	599	272
Stage 1	-	-	-	-	272	-
Stage 2	-	-	-	-	327	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1289	-	465	767
Stage 1	-	-	-	-	774	-
Stage 2	-	-	-	-	731	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1289	-	453	767
Mov Cap-2 Maneuver	-	-	-	-	453	-
Stage 1	-	-	-	-	774	-
Stage 2	-	-	-	-	712	-
Approach	EB	WB		NB		
HCM Control Delay, s/v	0	0.74		11.64		
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	616	-	-	170	-	
HCM Lane V/C Ratio	0.12	-	-	0.022	-	
HCM Control Delay (s/veh)	11.6	-	-	7.9	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-	

Lanes, Volumes, Timings  
8: Prosperity Ave & Oakmore Rd












AM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	180	0	1	171	31	0	0	0	18	0	97
Future Volume (vph)	107	180	0	1	171	31	0	0	0	18	0	97
Ideal Flow (vphpl)	1750	1900	1900	1900	1900	1750	1900	1900	1900	1750	1900	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.979					0.865						
Flt Protected	0.982					0.950						
Satd. Flow (prot)	0	1829	0	0	1824	0	0	0	0	1630	0	0
Flt Permitted	0.982					0.950						
Satd. Flow (perm)	0	1829	0	0	1824	0	0	0	0	1630	0	0
Link Speed (mph)	55					55						
Link Distance (ft)	2108					329						
Travel Time (s)	26.1					4.1						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	116	196	0	1	186	34	0	0	0	20	0	105
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	312	0	0	221	0	0	0	0	20	105	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)	0					12						
Link Offset(ft)	0					0						
Crosswalk Width(ft)	16					16						
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.00	1.00	1.00	1.11	1.00	1.00	1.00	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control	Free					Stop						
Intersection Summary												
Area Type:	Other											
Control Type: Unsignalized												
Intersection Capacity Utilization Err%					ICU Level of Service H							
Analysis Period (min) 15												

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			2					1		
Traffic Vol, veh/h	107	180	0	1	171	31	0	0	0	18	0	97
Future Vol, veh/h	107	180	0	1	171	31	0	0	0	18	0	97
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	116	196	0	1	186	34	0	0	0	20	0	105
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	220	0	-	196	0	0	633			-	203	
Stage 1	-	-	-	-	-	-	205			-	-	
Stage 2	-	-	-	-	-	-	428			-	-	
Critical Hdwy	4.12	-	-	4.12	-	-	6.42			-	6.22	
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42			-	-	
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42			-	-	
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518			-	3.318	
Pot Cap-1 Maneuver	1350	-	0	1377	-	-	444			0	838	
Stage 1	-	-	0	-	-	-	829			0	-	
Stage 2	-	-	0	-	-	-	657			0	-	
Platoon blocked, %	-			-								
Mov Cap-1 Maneuver	1350	-	-	1377	-	-	400			0	838	
Mov Cap-2 Maneuver	-	-	-	-	-	-	400			0	-	
Stage 1	-	-	-	-	-	-	749			0	-	
Stage 2	-	-	-	-	-	-	657			0	-	
Approach	EB			WB			SB					
HCM Control Delay, s/v	2.95			0.04			11.09					
HCM LOS							B					
Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1						
Capacity (veh/h)	671	-	1377	-	-	716						
HCM Lane V/C Ratio	0.086	-	0.001	-	-	0.175						
HCM Control Delay (s/veh)	7.9	0	7.6	-	-	11.1						
HCM Lane LOS	A	A	A	-	-	B						
HCM 95th %tile Q(veh)	0.3	-	0	-	-	0.6						

Lanes, Volumes, Timings  
9: Mooney Blvd & Seminole Ave



























AM 2027  
09/12/2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	222	847	17	47	614
Future Volume (vph)	1	222	847	17	47	614
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	540	0		0	80	
Storage Lanes	0	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.865		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	0	1484	3539	1458	1630	3539
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	0	1484	3539	1458	1630	3539
Link Speed (mph)	55		55			55
Link Distance (ft)	1719		2673			2617
Travel Time (s)	21.3		33.1			32.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	241	921	18	51	667
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1	241	921	18	51	667
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization Err%	ICU Level of Service H					
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	2.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗	↗	↗	↗↗
Traffic Vol, veh/h	1	222	847	17	47	614
Future Vol, veh/h	1	222	847	17	47	614
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	0	80	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	241	921	18	51	667
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1357	460	0	0	939	0
Stage 1	921	-	-	-	-	-
Stage 2	436	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	140	548	-	-	725	-
Stage 1	348	-	-	-	-	-
Stage 2	619	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	130	548	-	-	725	-
Mov Cap-2 Maneuver	130	-	-	-	-	-
Stage 1	348	-	-	-	-	-
Stage 2	576	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s/v16.64		0		0.74		
HCM LOS	C					
Minor Lane/Major Mvmt		NBT	NBRWBLn1	SBL	SBT	
Capacity (veh/h)		-	-	548	725	-
HCM Lane V/C Ratio		-	-	0.44	0.07	-
HCM Control Delay (s/veh)		-	-	16.6	10.3	-
HCM Lane LOS		-	-	C	B	-
HCM 95th %tile Q(veh)		-	-	2.2	0.2	-













Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

AM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Traffic Volume (vph)	51	391	68	42	593	41	123	217	60	56	183	67
Future Volume (vph)	51	391	68	42	593	41	123	217	60	56	183	67
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		135	110		0	90		90	80		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97		1.00				0.98			0.98
Fr't			0.850		0.990				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3496	0	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1408	1630	3496	0	1630	1863	1431	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191		6				191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		841			2671			726			5387	
Travel Time (s)		10.4			33.1			9.0			66.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	55	425	74	46	645	45	134	236	65	61	199	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	55	425	74	46	690	0	134	236	65	61	199	73
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

AM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.9	29.9	10.0	28.4		10.0	39.9	39.9	10.0	44.1	44.1
Total Split (s)	20.0	41.9	41.9	16.0	37.9		18.0	41.1	41.1	21.0	44.1	44.1
Total Split (%)	16.7%	34.9%	34.9%	13.3%	31.6%		15.0%	34.3%	34.3%	17.5%	36.8%	36.8%
Maximum Green (s)	14.0	35.9	35.9	10.0	31.9		12.0	35.1	35.1	15.0	38.1	38.1
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Don't Walk (s)		16.9	16.9		15.4			26.9	26.9		31.1	31.1
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effect Green (s)	11.1	27.7	27.7	10.3	24.1		13.6	25.6	25.6	11.4	19.3	19.3
Actuated g/C Ratio	0.14	0.34	0.34	0.13	0.30		0.17	0.31	0.31	0.14	0.24	0.24
v/c Ratio	0.25	0.35	0.12	0.22	0.67		0.49	0.40	0.11	0.27	0.45	0.15
Control Delay (s/veh)	41.8	24.0	0.4	43.0	30.8		45.4	29.9	0.4	41.7	32.3	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	41.8	24.0	0.4	43.0	30.8		45.4	29.9	0.4	41.7	32.3	0.7
LOS	D	C	A	D	C		D	C	A	D	C	A
Approach Delay (s/veh)		22.6			31.6			30.3			27.1	
Approach LOS		C			C			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 81.5

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay (s/veh): 28.2

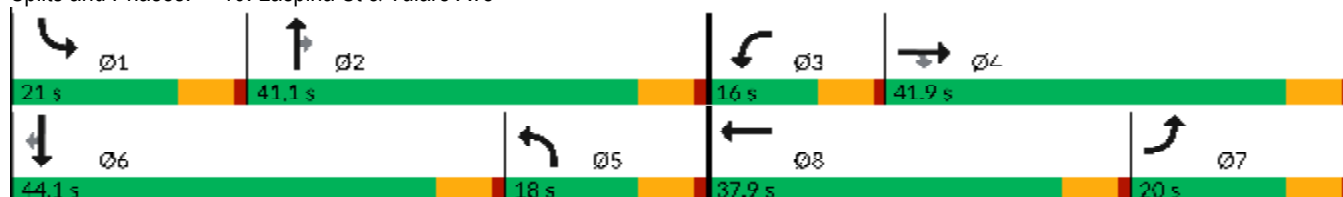
Intersection LOS: C

Intersection Capacity Utilization 55.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 10: Laspina St & Tulare Ave




























# HCM 7th Signalized Intersection Summary





























## 10: Laspina St & Tulare Ave

AM 2027  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	391	68	42	593	41	123	217	60	56	183	67
Future Volume (veh/h)	51	391	68	42	593	41	123	217	60	56	183	67
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	55	425	74	46	645	45	134	236	65	61	199	73
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	124	1052	419	116	980	68	223	516	395	130	410	314
Arrive On Green	0.08	0.30	0.30	0.07	0.29	0.26	0.14	0.28	0.28	0.08	0.22	0.22
Sat Flow, veh/h	1641	3554	1415	1641	3362	234	1641	1870	1432	1641	1870	1430
Grp Volume(v), veh/h	55	425	74	46	341	349	134	236	65	61	199	73
Grp Sat Flow(s),veh/h/ln	1641	1777	1415	1641	1777	1819	1641	1870	1432	1641	1870	1430
Q Serve(g_s), s	1.8	5.5	1.1	1.5	9.7	9.7	4.4	6.0	2.0	2.0	5.4	2.4
Cycle Q Clear(g_c), s	1.8	5.5	1.1	1.5	9.7	9.7	4.4	6.0	2.0	2.0	5.4	2.4
Prop In Lane	1.00		1.00	1.00		0.13	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	124	1052	419	116	518	530	223	516	395	130	410	314
V/C Ratio(X)	0.44	0.40	0.18	0.40	0.66	0.66	0.60	0.46	0.16	0.47	0.49	0.23
Avail Cap(c_a), veh/h	456	2340	932	342	1047	1071	399	1206	923	485	1303	996
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.5	16.2	3.9	25.6	17.9	18.0	23.4	17.3	15.8	25.3	19.6	18.5
Incr Delay (d2), s/veh	2.5	0.3	0.2	2.2	1.4	1.4	2.6	0.6	0.2	2.6	0.9	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.8	0.6	0.6	3.3	3.4	1.6	2.1	0.5	0.8	2.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	27.9	16.5	4.1	27.7	19.3	19.4	26.0	17.9	16.0	27.9	20.5	18.9
LnGrp LOS	C	B	A	C	B	B	C	B	B	C	C	B
Approach Vol, veh/h	554		736			435			333			
Approach Delay, s/veh	15.9		19.9			20.1			21.5			
Approach LOS	B		B			C			C			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.6	19.9	8.1	21.0	11.8	16.6	8.3	20.8				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	35.1	10.0	35.9	12.0	38.1	14.0	31.9				
Max Q Clear Time (g_c+I1), s	4.0	8.0	3.5	7.5	6.4	7.4	3.8	11.7				
Green Ext Time (p_c), s	0.1	1.0	0.0	2.0	0.2	0.9	0.1	2.4				
Intersection Summary												
HCM 7th Control Delay, s/veh			19.1									
HCM 7th LOS			B									













Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

AM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	199	334	83	73	420	205	140	571	64	142	314	149
Future Volume (vph)	199	334	83	73	420	205	140	571	64	142	314	149
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	420		185	125		125	80		0	475		475
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98		1.00				0.98
Fr't			0.850			0.850		0.985				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3539	1458	1630	3475	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1412	1630	3539	1430	1630	3475	0	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			223			9			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2671			2887			1662			2673	
Travel Time (s)		33.1			35.8			20.6			33.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	216	363	90	79	457	223	152	621	70	154	341	162
Shared Lane Traffic (%)												
Lane Group Flow (vph)	216	363	90	79	457	223	152	691	0	154	341	162
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

AM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	37.0	37.0	10.0	37.0	37.0	10.0	39.9		10.0	42.7	42.7
Total Split (s)	20.0	40.0	40.0	17.0	37.0	37.0	19.0	32.0		31.0	44.0	44.0
Total Split (%)	16.7%	33.3%	33.3%	14.2%	30.8%	30.8%	15.8%	26.7%		25.8%	36.7%	36.7%
Maximum Green (s)	14.0	34.0	34.0	11.0	31.0	31.0	13.0	26.0		25.0	38.0	38.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Don't Walk (s)		24.0	24.0		24.0	24.0		26.9			29.7	29.7
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effect Green (s)	16.5	24.5	24.5	16.2	21.1	21.1	17.8	26.5		16.8	25.5	25.5
Actuated g/C Ratio	0.17	0.25	0.25	0.17	0.22	0.22	0.18	0.27		0.17	0.26	0.26
v/c Ratio	0.78	0.41	0.18	0.29	0.60	0.46	0.51	0.73		0.55	0.70	0.31
Control Delay (s/veh)	62.7	35.6	0.8	43.2	38.7	8.1	45.6	37.8		46.7	41.6	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	62.7	35.6	0.8	43.2	38.7	8.1	45.6	37.8		46.7	41.6	4.3
LOS	E	D	A	D	D	A	D	D		D	D	A
Approach Delay (s/veh)		39.7			30.2			39.2			33.6	
Approach LOS		D			C			D			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 97.3

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay (s/veh): 35.7

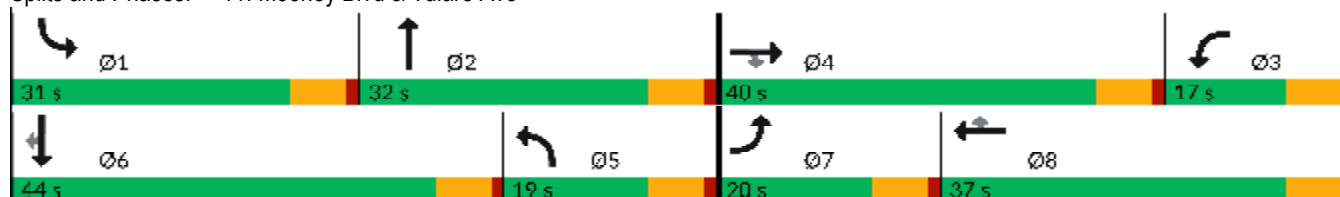
Intersection LOS: D

Intersection Capacity Utilization 67.1%

ICU Level of Service C

Analysis Period (min) 15



























Splits and Phases: 11: Mooney Blvd & Tulare Ave



# HCM 7th Signalized Intersection Summary

















## 11: Mooney Blvd & Tulare Ave

AM 2027  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (veh/h)	199	334	83	73	420	205	140	571	64	142	314	149
Future Volume (veh/h)	199	334	83	73	420	205	140	571	64	142	314	149
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	216	363	90	79	457	223	152	621	70	154	341	162
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	284	667	264	369	849	342	224	828	93	227	486	372
Arrive On Green	0.17	0.19	0.19	0.22	0.24	0.24	0.14	0.26	0.23	0.14	0.26	0.26
Sat Flow, veh/h	1641	3554	1406	1641	3554	1431	1641	3207	361	1641	1870	1432
Grp Volume(v), veh/h	216	363	90	79	457	223	152	344	347	154	341	162
Grp Sat Flow(s),veh/h/ln	1641	1777	1406	1641	1777	1431	1641	1777	1791	1641	1870	1432
Q Serve(g_s), s	10.5	7.7	4.7	3.3	9.4	11.8	7.4	14.9	15.0	7.5	13.8	4.5
Cycle Q Clear(g_c), s	10.5	7.7	4.7	3.3	9.4	11.8	7.4	14.9	15.0	7.5	13.8	4.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	284	667	264	369	849	342	224	459	462	227	486	372
V/C Ratio(X)	0.76	0.54	0.34	0.21	0.54	0.65	0.68	0.75	0.75	0.68	0.70	0.44
Avail Cap(c_a), veh/h	313	1528	604	369	1400	564	294	594	599	529	893	684
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.0	30.8	29.5	26.4	27.8	28.7	34.4	28.6	28.8	34.3	28.1	8.5
Incr Delay (d2), s/veh	9.4	0.7	0.8	0.3	0.5	2.1	4.0	3.8	3.9	3.5	1.9	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	3.1	1.5	1.2	3.6	3.8	2.9	6.1	6.3	2.9	5.8	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	42.4	31.5	30.3	26.7	28.4	30.8	38.4	32.4	32.7	37.8	29.9	9.3
LnGrp LOS	D	C	C	C	C	C	D	C	C	D	C	A
Approach Vol, veh/h	669		759				843		657			
Approach Delay, s/veh	34.8		28.9				33.6		26.7			
Approach LOS	C		C				C		C			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.6	25.6	22.8	19.7	15.5	25.8	18.5	24.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	25.0	26.0	11.0	34.0	13.0	38.0	14.0	31.0				
Max Q Clear Time (g_c+I1), s	9.5	17.0	5.3	9.7	9.4	15.8	12.5	13.8				
Green Ext Time (p_c), s	0.4	1.8	0.1	1.8	0.1	1.8	0.1	2.6				
Intersection Summary												
HCM 7th Control Delay, s/veh	31.1											
HCM 7th LOS	C											
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
12: Morrison St & Tulare Ave

AM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	457	63	27	504	0	82	45	87	0	16	10
Future Volume (vph)	19	457	63	27	504	0	82	45	87	0	16	10
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.984						0.945			0.947	
Flt Protected		0.998			0.997			0.981				
Satd. Flow (prot)	0	1829	0	0	1857	0	0	1727	0	0	1764	0
Flt Permitted		0.998			0.997			0.981				
Satd. Flow (perm)	0	1829	0	0	1857	0	0	1727	0	0	1764	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	497	68	29	548	0	89	49	95	0	17	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	586	0	0	577	0	0	233	0	0	28	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	
Intersection Summary												
Area Type:	Other											
Control Type:	Roundabout											
Intersection Capacity Utilization	63.1%						ICU Level of Service B					
Analysis Period (min)	15											























Intersection				
Intersection Delay, s/veh	8.0			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	586	577	233	28
Demand Flow Rate, veh/h	597	589	238	28
Vehicles Circulating, veh/h	47	162	528	680
Vehicles Exiting, veh/h	661	604	116	71
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	7.4	8.8	7.9	5.7
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	597	589	238	28
Cap Entry Lane, veh/h	1315	1170	805	690
Entry HV Adj Factor	0.982	0.980	0.979	0.988
Flow Entry, veh/h	586	577	233	28
Cap Entry, veh/h	1291	1146	788	681
V/C Ratio	0.454	0.504	0.296	0.041
Control Delay, s/veh	7.4	8.8	7.9	5.7
LOS	A	A	A	A
95th %tile Queue, veh	2	3	1	0

















Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

AM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	167	128	22	113	2	144	720	24	9	430	74
Future Volume (vph)	130	167	128	22	113	2	144	720	24	9	430	74
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.998			0.995			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1858	0	1630	3518	0	1630	3446	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1858	0	1630	3518	0	1630	3446	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			173		1			3			18	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	141	182	139	24	123	2	157	783	26	10	467	80
Shared Lane Traffic (%)												
Lane Group Flow (vph)	141	182	139	24	125	0	157	809	0	10	547	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

AM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	20.0	48.7	48.7	10.3	39.0		14.0	51.5		9.5	47.0	
Total Split (%)	16.7%	40.6%	40.6%	8.6%	32.5%		11.7%	42.9%		7.9%	39.2%	
Maximum Green (s)	14.5	43.2	43.2	4.8	33.5		8.5	46.0		4.0	41.5	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Don't Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effect Green (s)	13.2	25.8	25.8	9.1	14.3		10.5	33.0		6.0	19.7	
Actuated g/C Ratio	0.18	0.35	0.35	0.12	0.19		0.14	0.44		0.08	0.26	
v/c Ratio	0.49	0.28	0.23	0.12	0.35		0.68	0.52		0.08	0.59	
Control Delay (s/veh)	38.1	23.1	3.4	35.6	29.9		52.1	18.8		41.8	26.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	38.1	23.1	3.4	35.6	29.9		52.1	18.8		41.8	26.6	
LOS	D	C	A	D	C		D	B		D	C	
Approach Delay (s/veh)		21.8			30.8			24.2			26.9	
Approach LOS		C			C			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 74.6

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay (s/veh): 24.8

Intersection LOS: C

Intersection Capacity Utilization 55.4%

ICU Level of Service B

Analysis Period (min) 15























Splits and Phases: 1: Mooney Blvd & Cartmill Ave



# HCM 7th Signalized Intersection Summary

## 1: Mooney Blvd & Cartmill Ave

AM 2027+Project  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	167	128	22	113	2	144	720	24	9	430	74
Future Volume (veh/h)	130	167	128	22	113	2	144	720	24	9	430	74
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	141	182	139	24	123	2	157	783	26	10	467	80
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	222	382	291	157	302	5	236	1177	39	122	804	137
Arrive On Green	0.14	0.20	0.20	0.10	0.16	0.14	0.14	0.34	0.31	0.07	0.27	0.24
Sat Flow, veh/h	1641	1870	1429	1641	1834	30	1641	3506	116	1641	3020	514
Grp Volume(v), veh/h	141	182	139	24	0	125	157	397	412	10	273	274
Grp Sat Flow(s),veh/h/ln	1641	1870	1429	1641	0	1864	1641	1777	1845	1641	1777	1757
Q Serve(g_s), s	4.5	4.7	2.7	0.7	0.0	3.3	5.0	10.5	10.5	0.3	7.4	7.5
Cycle Q Clear(g_c), s	4.5	4.7	2.7	0.7	0.0	3.3	5.0	10.5	10.5	0.3	7.4	7.5
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.06	1.00		0.29
Lane Grp Cap(c), veh/h	222	382	291	157	0	307	236	596	619	122	473	468
V/C Ratio(X)	0.64	0.48	0.48	0.15	0.00	0.41	0.67	0.67	0.67	0.08	0.58	0.59
Avail Cap(c_a), veh/h	477	1518	1159	188	0	1184	298	1532	1591	164	1387	1371
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.5	19.3	6.2	22.9	0.0	20.6	22.3	15.7	15.7	23.8	17.5	17.8
Incr Delay (d2), s/veh	3.0	0.9	1.2	0.4	0.0	0.9	3.8	1.3	1.2	0.3	1.1	1.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	1.7	1.3	0.3	0.0	1.2	1.8	3.3	3.5	0.1	2.5	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	25.6	20.3	7.5	23.3	0.0	21.5	26.2	16.9	16.9	24.0	18.7	18.9
LnGrp LOS	C	C	A	C		C	C	B	B	C	B	B
Approach Vol, veh/h	462			149			966			557		
Approach Delay, s/veh	18.0			21.8			18.4			18.9		
Approach LOS	B			C			B			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.1	22.5	9.3	15.2	11.9	18.7	11.4	13.1				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	4.0	46.0	4.8	43.2	8.5	41.5	14.5	33.5				
Max Q Clear Time (g_c+I1), s	2.3	12.5	2.7	6.7	7.0	9.5	6.5	5.3				
Green Ext Time (p_c), s	0.0	3.1	0.0	1.2	0.1	2.0	0.2	0.4				
Intersection Summary												
HCM 7th Control Delay, s/veh	18.7											
HCM 7th LOS	B											

Lanes, Volumes, Timings  
2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

AM 2027+Project

09/12/2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (vph)	0	333	326	0	94	112
Future Volume (vph)	0	333	326	0	94	112
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Fr <sub>t</sub>						0.850
Fl <sub>t</sub> Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	1630	1458
Fl <sub>t</sub> Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	1630	1458
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						122
Link Speed (mph)		55	55		55	
Link Distance (ft)		349	727		300	
Travel Time (s)		4.3	9.0		3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	362	354	0	102	122
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	362	354	0	102	122
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors		1	1		1	1
Detector Template						
Leading Detector (ft)		50	50		50	50
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		50	50		50	50
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		4.0	4.0		4.0	4.0
Minimum Split (s)		24.0	24.0		24.0	24.0
Total Split (s)		53.0	53.0		47.0	47.0
Total Split (%)		53.0%	53.0%		47.0%	47.0%
Maximum Green (s)		47.0	47.0		41.0	41.0
Yellow Time (s)		5.0	5.0		5.0	5.0

Lanes, Volumes, Timings  
2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

AM 2027+Project  
09/12/2024

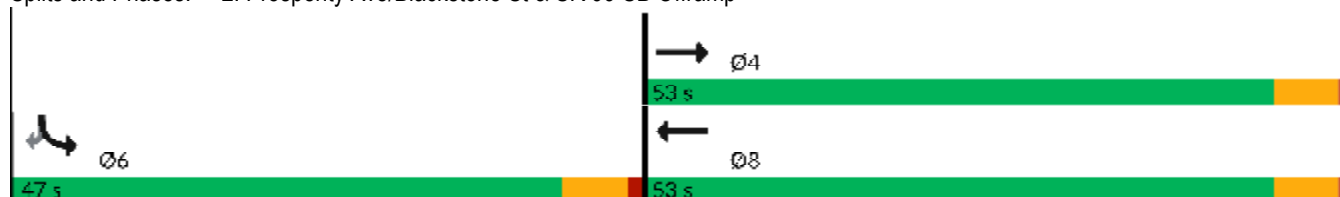


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		None	None		Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effect Green (s)		10.3	10.3		9.3	9.3
Actuated g/C Ratio		0.37	0.37		0.34	0.34
v/c Ratio		0.27	0.27		0.19	0.21
Control Delay (s/veh)		6.8	6.8		7.7	3.0
Queue Delay		0.0	0.0		0.0	0.0
Total Delay (s/veh)		6.8	6.8		7.7	3.0
LOS		A	A		A	A
Approach Delay (s/veh)		6.8	6.8		5.1	
Approach LOS		A	A		A	

Intersection Summary

Area Type: Other  
Cycle Length: 100  
Actuated Cycle Length: 27.6  
Natural Cycle: 50  
Control Type: Actuated-Uncoordinated  
Maximum v/c Ratio: 0.27  
Intersection Signal Delay (s/veh): 6.4 Intersection LOS: A  
Intersection Capacity Utilization 23.2% ICU Level of Service A  
Analysis Period (min) 15

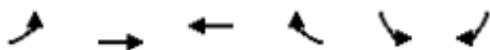
Splits and Phases: 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp



# HCM 7th Signalized Intersection Summary

## 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

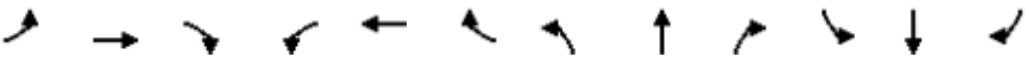
AM 2027+Project  
09/12/2024



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (veh/h)	0	333	326	0	94	112
Future Volume (veh/h)	0	333	326	0	94	112
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1723	1723
Adj Flow Rate, veh/h	0	362	354	0	102	122
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	1176	1176	0	479	426
Arrive On Green	0.00	0.33	0.33	0.00	0.29	0.29
Sat Flow, veh/h	0	3741	3741	0	1641	1460
Grp Volume(v), veh/h	0	362	354	0	102	122
Grp Sat Flow(s),veh/h/ln	0	1777	1777	0	1641	1460
Q Serve(g_s), s	0.0	1.6	1.6	0.0	1.0	1.4
Cycle Q Clear(g_c), s	0.0	1.6	1.6	0.0	1.0	1.4
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1176	1176	0	479	426
V/C Ratio(X)	0.00	0.31	0.30	0.00	0.21	0.29
Avail Cap(c_a), veh/h	0	8207	8207	0	3325	2959
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	5.3	5.3	0.0	5.7	5.8
Incr Delay (d2), s/veh	0.0	0.1	0.1	0.0	0.2	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.0	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	0.0	5.4	5.4	0.0	5.9	6.2
LnGrp LOS		A	A		A	A
Approach Vol, veh/h		362	354		224	
Approach Delay, s/veh		5.4	5.4		6.0	
Approach LOS		A	A		A	
Timer - Assigned Phs				4	6	8
Phs Duration (G+Y+Rc), s				11.0	10.2	11.0
Change Period (Y+Rc), s				6.0	6.0	6.0
Max Green Setting (Gmax), s				47.0	41.0	47.0
Max Q Clear Time (g_c+l1), s				3.6	3.4	3.6
Green Ext Time (p_c), s				1.5	0.8	1.5
Intersection Summary						
HCM 7th Control Delay, s/veh			5.6			
HCM 7th LOS			A			

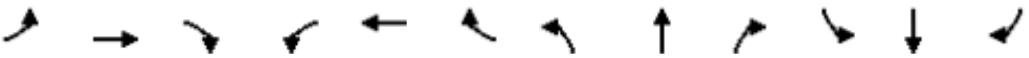
Lanes, Volumes, Timings  
3: Blackstone Ave/Blackstone St & Prosperity Ave

AM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	8	2	440	10	303	0	33	260	295	107	2
Future Volume (vph)	0	8	2	440	10	303	0	33	260	295	107	2
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	30		0	335		310	55		90	240		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor		1.00				0.98						
Frt		0.973				0.850			0.850		0.997	
Flt Protected				0.950	0.954					0.950		
Satd. Flow (prot)	1716	1805	0	1548	1688	1458	1716	1863	1458	3162	1857	0
Flt Permitted				0.950	0.728					0.950		
Satd. Flow (perm)	1716	1805	0	1548	1288	1427	1716	1863	1458	3162	1857	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				329			283		1	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		98			1229			643			727	
Travel Time (s)		1.2			15.2			8.0			9.0	
Confl. Peds. (#/hr)			5			5						
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	9	2	478	11	329	0	36	283	321	116	2
Shared Lane Traffic (%)				49%								
Lane Group Flow (vph)	0	11	0	244	245	329	0	36	283	321	118	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												

Lanes, Volumes, Timings  
3: Blackstone Ave/Blackstone St & Prosperity Ave

AM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	24.1		10.0	24.1	24.1	10.0	24.0	24.0	10.0	24.0	
Total Split (s)	13.0	27.1		26.9	41.0	41.0	10.0	24.0	24.0	22.0	36.0	
Total Split (%)	13.0%	27.1%		26.9%	41.0%	41.0%	10.0%	24.0%	24.0%	22.0%	36.0%	
Maximum Green (s)	7.0	21.1		20.9	35.0	35.0	4.0	18.0	18.0	16.0	30.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Don't Walk (s)		11.1			11.1	11.1		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		5			5	5		0	0		0	
Act Effect Green (s)		9.8		35.2	35.2	39.1		10.3	10.3	14.6	28.9	
Actuated g/C Ratio		0.13		0.46	0.46	0.51		0.14	0.14	0.19	0.38	
v/c Ratio		0.05		0.34	0.31	0.37		0.14	0.64	0.53	0.17	
Control Delay (s/veh)		27.8		19.4	18.8	2.8		31.6	11.7	32.2	16.3	
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay (s/veh)		27.8		19.4	18.8	2.8		31.6	11.7	32.2	16.3	
LOS		C		B	B	A		C	B	C	B	
Approach Delay (s/veh)		27.8			12.6			13.9			27.9	
Approach LOS		C			B			B			C	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 76.1

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay (s/veh): 17.2

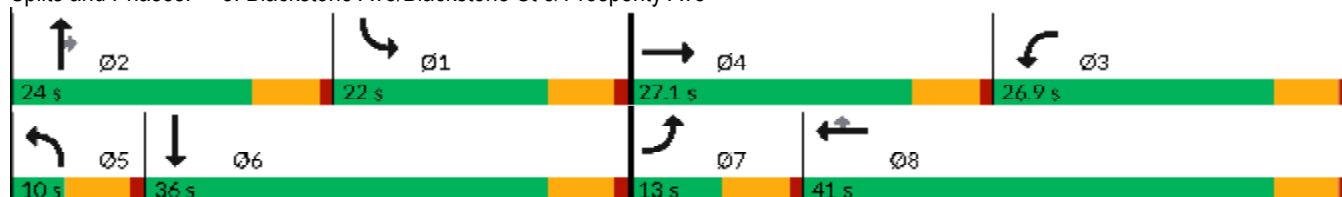
Intersection LOS: B

Intersection Capacity Utilization 42.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Blackstone Ave/Blackstone St & Prosperity Ave




























# HCM 7th Signalized Intersection Summary

























## 3: Blackstone Ave/Blackstone St & Prosperity Ave

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09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	8	2	440	10	303	0	33	260	295	107	2
Future Volume (veh/h)	0	8	2	440	10	303	0	33	260	295	107	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	0	9	2	486	0	329	0	36	283	321	116	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	3	165	37	726	0	568	3	468	365	533	880	15
Arrive On Green	0.00	0.11	0.08	0.22	0.00	0.40	0.00	0.25	0.25	0.17	0.48	0.45
Sat Flow, veh/h	1641	1471	327	3281	0	1435	1641	1870	1460	3183	1833	32
Grp Volume(v), veh/h	0	0	11	486	0	329	0	36	283	321	0	118
Grp Sat Flow(s),veh/h/ln	1641	0	1797	1641	0	1435	1641	1870	1460	1591	0	1865
Q Serve(g_s), s	0.0	0.0	0.4	8.7	0.0	4.8	0.0	0.9	11.6	6.0	0.0	2.3
Cycle Q Clear(g_c), s	0.0	0.0	0.4	8.7	0.0	4.8	0.0	0.9	11.6	6.0	0.0	2.3
Prop In Lane	1.00		0.18	1.00		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	3	0	202	726	0	568	3	468	365	533	0	895
V/C Ratio(X)	0.00	0.00	0.05	0.67	0.00	0.58	0.00	0.08	0.77	0.60	0.00	0.13
Avail Cap(c_a), veh/h	229	0	645	1168	0	825	153	581	454	890	0	927
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	25.7	22.9	0.0	3.1	0.0	18.4	22.4	24.8	0.0	9.3
Incr Delay (d2), s/veh	0.0	0.0	0.1	1.1	0.0	0.9	0.0	0.1	6.5	1.1	0.0	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.1	2.9	0.0	2.4	0.0	0.4	4.0	2.0	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	25.8	24.0	0.0	4.1	0.0	18.5	28.9	25.9	0.0	9.4
LnGrp LOS	C			C	A			B	C	C	A	
Approach Vol, veh/h	11			815			319			439		
Approach Delay, s/veh	25.8			15.9			27.8			21.4		
Approach LOS	C			B			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.8	20.1	18.2	11.2	0.0	34.9	0.0	29.5				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	16.0	18.0	20.9	21.1	4.0	30.0	7.0	35.0				
Max Q Clear Time (g_c+I1), s	8.0	13.6	10.7	2.4	0.0	4.3	0.0	6.8				
Green Ext Time (p_c), s	0.8	0.5	1.5	0.0	0.0	0.3	0.0	1.4				
Intersection Summary												
HCM 7th Control Delay, s/veh	19.9											
HCM 7th LOS	B											
Notes												
User approved volume balancing among the lanes for turning movement.												













Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

AM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	238	276	63	59	427	106	124	263	67	79	31	286
Future Volume (vph)	238	276	63	59	427	106	124	263	67	79	31	286
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	270		0	155		85	155		0	200		205
Storage Lanes	2		1	1		1	1		0	2		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	0.88
Ped Bike Factor			0.97			0.98		1.00				0.97
Fr't			0.850			0.850		0.969				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	1630	5085	1458	1630	3417	0	3162	1863	2567
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1410	1630	5085	1433	1630	3417	0	3162	1863	2489
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			136			24			311
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1229			2636			362			5336	
Travel Time (s)		15.2			32.7			4.5			66.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	259	300	68	64	464	115	135	286	73	86	34	311
Shared Lane Traffic (%)												
Lane Group Flow (vph)	259	300	68	64	464	115	135	359	0	86	34	311
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

AM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	32.7	32.7	10.0	45.6	45.6	10.0	47.0		10.0	49.9	49.9
Total Split (s)	31.9	43.1	43.1	35.9	47.1	47.1	11.0	31.0		10.0	30.0	30.0
Total Split (%)	26.6%	35.9%	35.9%	29.9%	39.3%	39.3%	9.2%	25.8%		8.3%	25.0%	25.0%
Maximum Green (s)	25.9	37.1	37.1	29.9	41.1	41.1	5.0	25.0		4.0	24.0	24.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Don't Walk (s)		19.7	19.7		32.6	32.6		34.0			36.9	36.9
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effect Green (s)	14.6	27.3	27.3	11.4	17.4	17.4	7.8	20.5		6.7	16.5	16.5
Actuated g/C Ratio	0.20	0.37	0.37	0.15	0.23	0.23	0.11	0.28		0.09	0.22	0.22
v/c Ratio	0.42	0.23	0.11	0.26	0.39	0.26	0.78	0.37		0.30	0.08	0.39
Control Delay (s/veh)	32.4	20.5	0.4	37.7	25.6	5.3	68.8	23.0		42.9	24.8	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	32.4	20.5	0.4	37.7	25.6	5.3	68.8	23.0		42.9	24.8	4.8
LOS	C	C	A	D	C	A	E	C		D	C	A
Approach Delay (s/veh)		23.2			23.2			35.5			14.0	
Approach LOS		C			C			D			B	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 74.2

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay (s/veh): 24.2

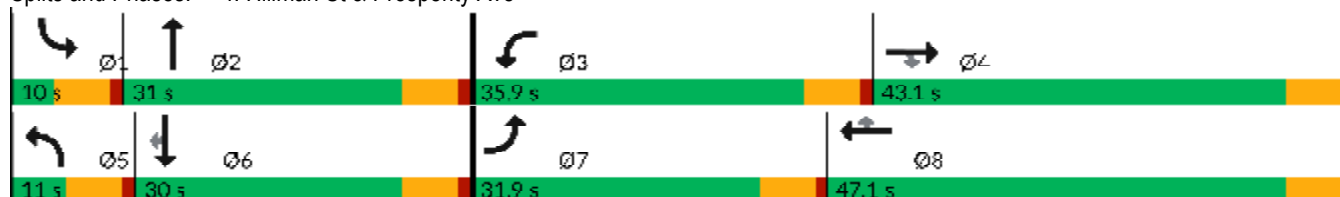
Intersection LOS: C

Intersection Capacity Utilization 49.4%

ICU Level of Service A

Analysis Period (min) 15

























Splits and Phases: 4: Hillman St & Prosperity Ave



# HCM 7th Signalized Intersection Summary




























## 4: Hillman St & Prosperity Ave

AM 2027+Project  
09/12/2024

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	238	276	63	59	427	106	124	263	67	79	31	286	
Future Volume (veh/h)	238	276	63	59	427	106	124	263	67	79	31	286	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach	No			No			No			No			
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723	
Adj Flow Rate, veh/h	259	300	68	64	464	115	135	286	73	86	34	311	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2	
Cap, veh/h	500	1083	431	135	1172	328	195	716	179	272	415	551	
Arrive On Green	0.16	0.30	0.30	0.08	0.23	0.23	0.12	0.26	0.22	0.09	0.22	0.22	
Sat Flow, veh/h	3183	3554	1415	1641	5106	1430	1641	2802	701	3183	1870	2481	
Grp Volume(v), veh/h	259	300	68	64	464	115	135	179	180	86	34	311	
Grp Sat Flow(s),veh/h/ln	1591	1777	1415	1641	1702	1430	1641	1777	1727	1591	1870	1241	
Q Serve(g_s), s	4.4	3.8	2.1	2.2	4.5	4.0	4.6	4.9	5.1	1.5	0.8	6.6	
Cycle Q Clear(g_c), s	4.4	3.8	2.1	2.2	4.5	4.0	4.6	4.9	5.1	1.5	0.8	6.6	
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.41	1.00		1.00	
Lane Grp Cap(c), veh/h	500	1083	431	135	1172	328	195	454	441	272	415	551	
V/C Ratio(X)	0.52	0.28	0.16	0.48	0.40	0.35	0.69	0.39	0.41	0.32	0.08	0.56	
Avail Cap(c_a), veh/h	1511	2365	942	891	3745	1049	195	816	793	325	828	1098	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	22.7	15.5	14.9	25.8	19.2	19.0	24.8	18.1	18.5	25.3	18.1	20.3	
Incr Delay (d2), s/veh	0.8	0.1	0.2	2.6	0.2	0.6	9.9	0.6	0.6	0.7	0.1	0.9	
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	1.4	1.2	0.5	0.8	1.5	1.1	2.1	1.7	1.7	0.5	0.3	1.6	
Unsig. Movement Delay, s/veh													
LnGrp Delay(d), s/veh	23.6	15.7	15.1	28.4	19.4	19.6	34.7	18.7	19.1	25.9	18.2	21.2	
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	C	
Approach Vol, veh/h	627				643				494				431
Approach Delay, s/veh	18.9				20.3				23.2				21.9
Approach LOS	B				C				C				C
Timer - Assigned Phs	1	2	3	4	5	6	7	8					
Phs Duration (G+Y+Rc), s	9.0	19.0	8.8	21.9	11.0	17.0	13.2	17.5					
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0					
Max Green Setting (Gmax), s	4.0	25.0	29.9	37.1	5.0	24.0	25.9	41.1					
Max Q Clear Time (g_c+I1), s	3.5	7.1	4.2	5.8	6.6	8.6	6.4	6.5					
Green Ext Time (p_c), s	0.0	1.1	0.2	1.5	0.0	1.4	1.0	2.5					
Intersection Summary													
HCM 7th Control Delay, s/veh			20.9										
HCM 7th LOS			C										
Notes													
User approved pedestrian interval to be less than phase max green.													













Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

AM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  							
Traffic Volume (vph)	34	251	65	40	340	47	119	174	66	53	163	96
Future Volume (vph)	34	251	65	40	340	47	119	174	66	53	163	96
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	235		115	230		100	100		100	160		100
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96			0.97			0.97			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	5085	1458	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1405	1630	5085	1410	1630	1863	1415	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			191			191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2636			2650			5387			713	
Travel Time (s)		32.7			32.9			66.8			8.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	37	273	71	43	370	51	129	189	72	58	177	104
Shared Lane Traffic (%)												
Lane Group Flow (vph)	37	273	71	43	370	51	129	189	72	58	177	104
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

AM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	27.0	27.0	10.0	34.1	34.1	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (s)	16.0	38.4	38.4	13.0	35.4	35.4	23.0	47.6	47.6	21.0	45.6	45.6
Total Split (%)	13.3%	32.0%	32.0%	10.8%	29.5%	29.5%	19.2%	39.7%	39.7%	17.5%	38.0%	38.0%
Maximum Green (s)	10.0	32.4	32.4	7.0	29.4	29.4	17.0	41.6	41.6	15.0	39.6	39.6
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		14.0	14.0		21.1	21.1		32.6	32.6		32.6	32.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effect Green (s)	11.0	15.5	15.5	11.7	18.9	18.9	14.8	22.8	22.8	13.4	18.4	18.4
Actuated g/C Ratio	0.17	0.24	0.24	0.18	0.29	0.29	0.23	0.35	0.35	0.20	0.28	0.28
v/c Ratio	0.14	0.33	0.15	0.15	0.25	0.09	0.35	0.29	0.12	0.17	0.34	0.19
Control Delay (s/veh)	37.0	28.3	0.6	34.2	22.9	0.3	33.8	23.0	0.4	32.3	25.2	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	37.0	28.3	0.6	34.2	22.9	0.3	33.8	23.0	0.4	32.3	25.2	0.8
LOS	D	C	A	C	C	A	C	C	A	C	C	A
Approach Delay (s/veh)		24.0			21.5			22.4			18.9	
Approach LOS		C			C			C			B	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 65.4

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.35

Intersection Signal Delay (s/veh): 21.8

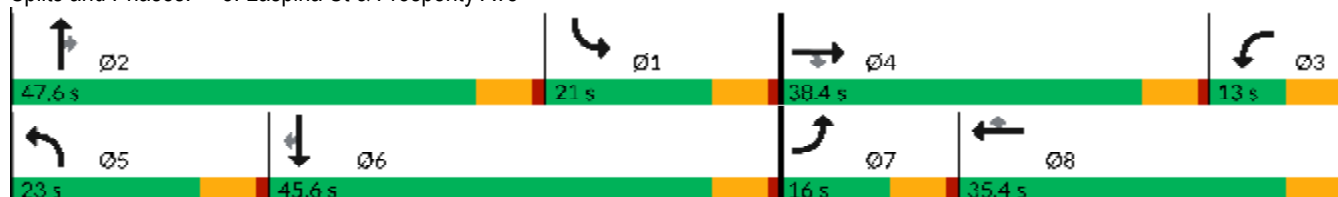
Intersection LOS: C

Intersection Capacity Utilization 45.3%

ICU Level of Service A

























Analysis Period (min) 15

Splits and Phases: 5: Laspina St & Prosperity Ave



# HCM 7th Signalized Intersection Summary 5: Laspina St & Prosperity Ave
























AM 2027+Project  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	251	65	40	340	47	119	174	66	53	163	96
Future Volume (veh/h)	34	251	65	40	340	47	119	174	66	53	163	96
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	37	273	71	43	370	51	129	189	72	58	177	104
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	123	711	281	144	1085	299	232	440	332	226	433	331
Arrive On Green	0.08	0.20	0.20	0.09	0.21	0.21	0.14	0.24	0.24	0.14	0.23	0.23
Sat Flow, veh/h	1641	3554	1407	1641	5106	1409	1641	1870	1411	1641	1870	1430
Grp Volume(v), veh/h	37	273	71	43	370	51	129	189	72	58	177	104
Grp Sat Flow(s),veh/h/ln	1641	1777	1407	1641	1702	1409	1641	1870	1411	1641	1870	1430
Q Serve(g_s), s	1.0	3.1	1.0	1.2	2.9	0.7	3.5	4.1	1.9	1.5	3.8	2.8
Cycle Q Clear(g_c), s	1.0	3.1	1.0	1.2	2.9	0.7	3.5	4.1	1.9	1.5	3.8	2.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	123	711	281	144	1085	299	232	440	332	226	433	331
V/C Ratio(X)	0.30	0.38	0.25	0.30	0.34	0.17	0.56	0.43	0.22	0.26	0.41	0.31
Avail Cap(c_a), veh/h	418	2595	1028	313	3404	939	662	1731	1306	592	1652	1263
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.6	16.3	4.0	20.1	15.7	3.8	18.8	15.3	14.5	18.2	15.4	15.0
Incr Delay (d2), s/veh	1.4	0.3	0.5	1.2	0.2	0.3	2.1	0.7	0.3	0.6	0.6	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.0	0.5	0.4	0.9	0.3	1.1	1.3	0.5	0.5	1.3	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	22.0	16.7	4.5	21.3	15.9	4.1	20.9	16.0	14.8	18.7	16.0	15.5
LnGrp LOS	C	B	A	C	B	A	C	B	B	B	B	B
Approach Vol, veh/h	381			464			390			339		
Approach Delay, s/veh	14.9			15.1			17.4			16.3		
Approach LOS	B			B			B			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.5	15.1	8.1	13.4	10.7	14.9	7.5	14.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	41.6	7.0	32.4	17.0	39.6	10.0	29.4				
Max Q Clear Time (g_c+I1), s	3.5	6.1	3.2	5.1	5.5	5.8	3.0	4.9				
Green Ext Time (p_c), s	0.1	0.9	0.0	1.3	0.3	1.0	0.0	1.7				
Intersection Summary												
HCM 7th Control Delay, s/veh	15.9											
HCM 7th LOS	B											



Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave


AM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	148	191	162	102	170	65	211	680	59	31	421	99
Future Volume (vph)	148	191	162	102	170	65	211	680	59	31	421	99
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98		0.99				0.97			0.98
Frt			0.850		0.958				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1774	0	1630	3539	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1432	1630	1774	0	1630	3539	1409	1630	3539	1426
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191		15				191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2617			5285	
Travel Time (s)		32.9			36.1			32.4			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	161	208	176	111	185	71	229	739	64	34	458	108
Shared Lane Traffic (%)												
Lane Group Flow (vph)	161	208	176	111	256	0	229	739	64	34	458	108
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												



Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

AM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	24.0	39.7	39.7	17.0	32.7		23.0	46.3	46.3	17.0	40.3	40.3
Total Split (%)	20.0%	33.1%	33.1%	14.2%	27.3%		19.2%	38.6%	38.6%	14.2%	33.6%	33.6%
Maximum Green (s)	18.0	33.7	33.7	11.0	26.7		17.0	40.3	40.3	11.0	34.3	34.3
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Don't Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effect Green (s)	16.9	21.7	21.7	17.5	22.4		18.6	49.6	49.6	10.9	36.6	36.6
Actuated g/C Ratio	0.15	0.20	0.20	0.16	0.20		0.17	0.45	0.45	0.10	0.33	0.33
v/c Ratio	0.65	0.57	0.40	0.43	0.69		0.84	0.47	0.09	0.21	0.39	0.18
Control Delay (s/veh)	58.1	46.0	6.6	50.3	48.9		71.9	26.0	0.2	51.5	31.3	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	58.1	46.0	6.6	50.3	48.9		71.9	26.0	0.2	51.5	31.3	0.7
LOS	E	D	A	D	D		E	C	A	D	C	A
Approach Delay (s/veh)		36.9			49.3			34.6			26.9	
Approach LOS		D			D			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 110.6

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay (s/veh): 35.4

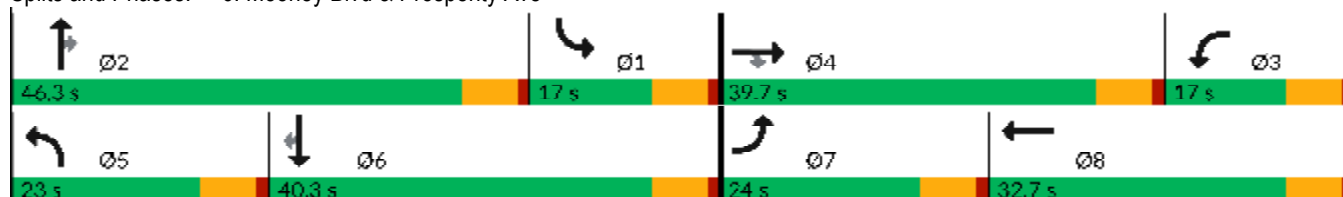
Intersection LOS: D

Intersection Capacity Utilization 65.7%

ICU Level of Service C

Analysis Period (min) 15
























Splits and Phases: 6: Mooney Blvd & Prosperity Ave



# HCM 7th Signalized Intersection Summary










## 6: Mooney Blvd & Prosperity Ave




AM 2027+Project  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	148	191	162	102	170	65	211	680	59	31	421	99
Future Volume (veh/h)	148	191	162	102	170	65	211	680	59	31	421	99
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	161	208	176	111	185	71	229	739	64	34	458	108
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	219	336	256	243	248	95	284	1436	574	190	1232	497
Arrive On Green	0.13	0.18	0.18	0.15	0.19	0.17	0.17	0.40	0.40	0.12	0.35	0.35
Sat Flow, veh/h	1641	1870	1427	1641	1278	490	1641	3554	1419	1641	3554	1434
Grp Volume(v), veh/h	161	208	176	111	0	256	229	739	64	34	458	108
Grp Sat Flow(s),veh/h/ln	1641	1870	1427	1641	0	1768	1641	1777	1419	1641	1777	1434
Q Serve(g_s), s	9.9	10.7	7.8	6.5	0.0	14.3	14.0	16.4	2.9	2.0	10.1	5.6
Cycle Q Clear(g_c), s	9.9	10.7	7.8	6.5	0.0	14.3	14.0	16.4	2.9	2.0	10.1	5.6
Prop In Lane	1.00		1.00	1.00		0.28	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	219	336	256	243	0	343	284	1436	574	190	1232	497
V/C Ratio(X)	0.73	0.62	0.69	0.46	0.00	0.75	0.81	0.51	0.11	0.18	0.37	0.22
Avail Cap(c_a), veh/h	313	638	487	243	0	485	298	1436	574	204	1232	497
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.6	39.6	17.0	40.8	0.0	40.0	41.6	23.5	19.5	41.8	25.6	24.1
Incr Delay (d2), s/veh	5.2	1.9	3.3	1.3	0.0	3.9	14.5	1.3	0.4	0.4	0.9	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	4.8	4.0	2.6	0.0	6.2	6.5	6.5	1.0	0.8	4.1	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	48.7	41.5	20.2	42.1	0.0	43.9	56.1	24.8	19.9	42.2	26.5	25.1
LnGrp LOS	D	D	C	D		D	E	C	B	D	C	C
Approach Vol, veh/h	545		367			1032			600			
Approach Delay, s/veh	36.8		43.4			31.4			27.1			
Approach LOS	D		D			C			C			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.1	46.3	19.5	22.8	22.1	40.3	18.0	24.3				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	11.0	40.3	11.0	33.7	17.0	34.3	18.0	26.7				
Max Q Clear Time (g_c+l1), s	4.0	18.4	8.5	12.7	16.0	12.1	11.9	16.3				
Green Ext Time (p_c), s	0.0	3.4	0.1	1.3	0.1	2.3	0.2	0.6				
Intersection Summary												
HCM 7th Control Delay, s/veh	33.3											
HCM 7th LOS	C											
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
7: Morrison St & Prosperity Ave
















AM 2027+Project  
09/12/2024

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	248	24	26	249	84	44
Future Volume (vph)	248	24	26	249	84	44
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.988				0.953	
Flt Protected				0.995	0.968	
Satd. Flow (prot)	1840	0	0	1853	1583	0
Flt Permitted				0.995	0.968	
Satd. Flow (perm)	1840	0	0	1853	1583	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	270	26	28	271	91	48
Shared Lane Traffic (%)						
Lane Group Flow (vph)	296	0	0	299	139	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	47.0%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	248	24	26	249	84	44
Future Vol, veh/h	248	24	26	249	84	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	270	26	28	271	91	48
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	296	0	610	283
Stage 1	-	-	-	-	283	-
Stage 2	-	-	-	-	327	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1266	-	458	756
Stage 1	-	-	-	-	765	-
Stage 2	-	-	-	-	731	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1266	-	446	756
Mov Cap-2 Maneuver	-	-	-	-	446	-
Stage 1	-	-	-	-	765	-
Stage 2	-	-	-	-	711	-
Approach	EB	WB		NB		
HCM Control Delay, s/v	0	0.75		14.46		
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	519	-	-	170	-	
HCM Lane V/C Ratio	0.268	-	-	0.022	-	
HCM Control Delay (s/veh)	14.5	-	-	7.9	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	1.1	-	-	0.1	-	

Lanes, Volumes, Timings  
8: Prosperity Ave & Oakmore Rd












AM 2027+Project  
09/12/2024

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	107	180	0	1	171	31	0	0	0	18	0	97	
Future Volume (vph)	107	180	0	1	171	31	0	0	0	18	0	97	
Ideal Flow (vphpl)	1750	1900	1900	1900	1900	1750	1900	1900	1900	1750	1900	1750	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.979					0.865							
Flt Protected	0.982					0.950							
Satd. Flow (prot)	0	1829	0	0	1824	0	0	0	0	1630	0	0	
Flt Permitted	0.982					0.950							
Satd. Flow (perm)	0	1829	0	0	1824	0	0	0	0	1630	0	0	
Link Speed (mph)	55					55					55		
Link Distance (ft)	2108					5202					329		
Travel Time (s)	26.1					64.5					4.1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	116	196	0	1	186	34	0	0	0	20	0	105	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	312	0	0	221	0	0	0	0	20	105	0	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No	
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(ft)	0					0					12		
Link Offset(ft)	0					0					0		
Crosswalk Width(ft)	16					16					16		
Two way Left Turn Lane													
Headway Factor	1.11	1.00	1.00	1.00	1.00	1.11	1.00	1.00	1.00	1.11	1.00	1.11	
Turning Speed (mph)	15		9	15		9	15		9	15		9	
Sign Control	Free					Free					Stop		
Intersection Summary													
Area Type:	Other												
Control Type: Unsignalized													
Intersection Capacity Utilization Err%					ICU Level of Service H								
Analysis Period (min) 15													

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			2					2		
Traffic Vol, veh/h	107	180	0	1	171	31	0	0	0	18	0	97
Future Vol, veh/h	107	180	0	1	171	31	0	0	0	18	0	97
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	116	196	0	1	186	34	0	0	0	20	0	105
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	220	0	-	196	0	0	633			-	203	
Stage 1	-	-	-	-	-	-	205			-	-	
Stage 2	-	-	-	-	-	-	428			-	-	
Critical Hdwy	4.12	-	-	4.12	-	-	6.42			-	6.22	
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42			-	-	
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42			-	-	
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518			-	3.318	
Pot Cap-1 Maneuver	1350	-	0	1377	-	-	444			0	838	
Stage 1	-	-	0	-	-	-	829			0	-	
Stage 2	-	-	0	-	-	-	657			0	-	
Platoon blocked, %	-			-								
Mov Cap-1 Maneuver	1350	-	-	1377	-	-	400			0	838	
Mov Cap-2 Maneuver	-	-	-	-	-	-	400			0	-	
Stage 1	-	-	-	-	-	-	749			0	-	
Stage 2	-	-	-	-	-	-	657			0	-	
Approach	EB			WB			SB					
HCM Control Delay, s/v	2.95			0.04			11.09					
HCM LOS							B					
Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1						
Capacity (veh/h)	671	-	1377	-	-	716						
HCM Lane V/C Ratio	0.086	-	0.001	-	-	0.175						
HCM Control Delay (s/veh)	7.9	0	7.6	-	-	11.1						
HCM Lane LOS	A	A	A	-	-	B						
HCM 95th %tile Q(veh)	0.3	-	0	-	-	0.6						






Lanes, Volumes, Timings  
9: Mooney Blvd & Seminole Ave

AM 2027+Project  
09/12/2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	223	848	17	50	615
Future Volume (vph)	1	223	848	17	50	615
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	540	0		0	80	
Storage Lanes	0	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.865		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	0	1484	3539	1458	1630	3539
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	0	1484	3539	1458	1630	3539
Link Speed (mph)	55		55			55
Link Distance (ft)	1719		2673			2617
Travel Time (s)	21.3		33.1			32.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	242	922	18	54	668
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1	242	922	18	54	668
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization Err%	ICU Level of Service H					
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	223	848	17	50	615
Future Vol, veh/h	1	223	848	17	50	615
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	0	80	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	242	922	18	54	668

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1365	461	0
Stage 1	922	-	-
Stage 2	443	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	139	547	-
Stage 1	348	-	-
Stage 2	614	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	128	547	-
Mov Cap-2 Maneuver	128	-	-
Stage 1	348	-	-
Stage 2	568	-	-



























Approach	WB	NB	SB
HCM Control Delay, s/v	16.7	0	0.78
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	547	725
HCM Lane V/C Ratio	-	-	0.443	0.075
HCM Control Delay (s/veh)	-	-	16.7	10.4
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	2.3	0.2















Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

AM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Traffic Volume (vph)	51	402	68	42	629	41	123	217	60	56	183	67
Future Volume (vph)	51	402	68	42	629	41	123	217	60	56	183	67
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		135	110		0	90		90	80		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97		1.00				0.98			0.98
Frt			0.850		0.991				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3500	0	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1408	1630	3500	0	1630	1863	1431	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191		6				191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		841			2671			726			5387	
Travel Time (s)		10.4			33.1			9.0			66.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	55	437	74	46	684	45	134	236	65	61	199	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	55	437	74	46	729	0	134	236	65	61	199	73
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

AM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.9	29.9	10.0	28.4		10.0	39.9	39.9	10.0	44.1	44.1
Total Split (s)	20.0	41.9	41.9	16.0	37.9		18.0	41.1	41.1	21.0	44.1	44.1
Total Split (%)	16.7%	34.9%	34.9%	13.3%	31.6%		15.0%	34.3%	34.3%	17.5%	36.8%	36.8%
Maximum Green (s)	14.0	35.9	35.9	10.0	31.9		12.0	35.1	35.1	15.0	38.1	38.1
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Don't Walk (s)		16.9	16.9		15.4			26.9	26.9		31.1	31.1
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effect Green (s)	11.1	28.5	28.5	10.3	24.9		13.6	25.7	25.7	11.4	19.4	19.4
Actuated g/C Ratio	0.13	0.35	0.35	0.13	0.30		0.17	0.31	0.31	0.14	0.24	0.24
v/c Ratio	0.25	0.36	0.12	0.23	0.69		0.50	0.41	0.11	0.27	0.46	0.15
Control Delay (s/veh)	42.3	23.9	0.4	43.5	31.3		45.9	30.3	0.4	42.2	32.8	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	42.3	23.9	0.4	43.5	31.3		45.9	30.3	0.4	42.2	32.8	0.7
LOS	D	C	A	D	C		D	C	A	D	C	A
Approach Delay (s/veh)		22.6			32.0			30.7			27.5	
Approach LOS		C			C			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 82.4

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay (s/veh): 28.5

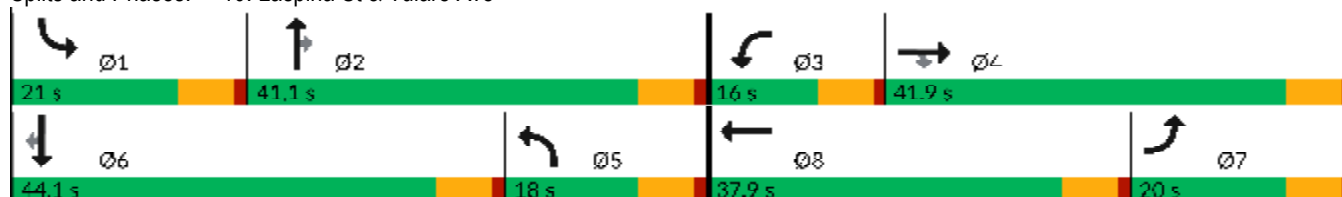
Intersection LOS: C

Intersection Capacity Utilization 55.8%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 10: Laspina St & Tulare Ave



























# HCM 7th Signalized Intersection Summary

## 10: Laspina St & Tulare Ave





























AM 2027+Project

09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	402	68	42	629	41	123	217	60	56	183	67
Future Volume (veh/h)	51	402	68	42	629	41	123	217	60	56	183	67
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	55	437	74	46	684	45	134	236	65	61	199	73
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	122	1082	431	115	1013	67	222	512	392	129	407	311
Arrive On Green	0.07	0.30	0.30	0.07	0.30	0.27	0.14	0.27	0.27	0.08	0.22	0.22
Sat Flow, veh/h	1641	3554	1415	1641	3377	222	1641	1870	1432	1641	1870	1430
Grp Volume(v), veh/h	55	437	74	46	360	369	134	236	65	61	199	73
Grp Sat Flow(s),veh/h/ln	1641	1777	1415	1641	1777	1822	1641	1870	1432	1641	1870	1430
Q Serve(g_s), s	1.9	5.7	1.2	1.6	10.4	10.5	4.5	6.2	2.0	2.1	5.5	2.5
Cycle Q Clear(g_c), s	1.9	5.7	1.2	1.6	10.4	10.5	4.5	6.2	2.0	2.1	5.5	2.5
Prop In Lane	1.00		1.00	1.00		0.12	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	122	1082	431	115	533	547	222	512	392	129	407	311
V/C Ratio(X)	0.45	0.40	0.17	0.40	0.67	0.68	0.60	0.46	0.17	0.47	0.49	0.23
Avail Cap(c_a), veh/h	447	2296	914	336	1027	1053	391	1183	906	475	1278	977
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.0	16.2	3.9	26.1	18.0	18.1	23.9	17.7	16.2	25.9	20.1	18.9
Incr Delay (d2), s/veh	2.6	0.2	0.2	2.2	1.5	1.5	2.6	0.6	0.2	2.6	0.9	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.9	0.6	0.6	3.5	3.7	1.6	2.2	0.6	0.8	2.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.6	16.4	4.1	28.3	19.5	19.6	26.5	18.3	16.4	28.5	21.0	19.3
LnGrp LOS	C	B	A	C	B	B	C	B	B	C	C	B
Approach Vol, veh/h	566			775			435			333		
Approach Delay, s/veh	16.0			20.1			20.6			22.0		
Approach LOS	B			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.6	20.1	8.1	21.9	11.9	16.8	8.4	21.6				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	35.1	10.0	35.9	12.0	38.1	14.0	31.9				
Max Q Clear Time (g_c+I1), s	4.1	8.2	3.6	7.7	6.5	7.5	3.9	12.5				
Green Ext Time (p_c), s	0.1	1.0	0.0	2.1	0.2	0.9	0.1	2.6				
Intersection Summary												
HCM 7th Control Delay, s/veh				19.4								
HCM 7th LOS				B								













Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

AM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	199	345	83	76	456	206	140	571	65	143	314	149
Future Volume (vph)	199	345	83	76	456	206	140	571	65	143	314	149
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	420		185	125		125	80		0	475		475
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98		1.00				0.98
Frt			0.850			0.850		0.985				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3539	1458	1630	3475	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1412	1630	3539	1430	1630	3475	0	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			213		9				191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2671			2887			1662			2673	
Travel Time (s)		33.1			35.8			20.6			33.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	216	375	90	83	496	224	152	621	71	155	341	162
Shared Lane Traffic (%)												
Lane Group Flow (vph)	216	375	90	83	496	224	152	692	0	155	341	162
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

AM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	37.0	37.0	10.0	37.0	37.0	10.0	39.9		10.0	42.7	42.7
Total Split (s)	20.0	40.0	40.0	17.0	37.0	37.0	19.0	32.0		31.0	44.0	44.0
Total Split (%)	16.7%	33.3%	33.3%	14.2%	30.8%	30.8%	15.8%	26.7%		25.8%	36.7%	36.7%
Maximum Green (s)	14.0	34.0	34.0	11.0	31.0	31.0	13.0	26.0		25.0	38.0	38.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Don't Walk (s)		24.0	24.0		24.0	24.0		26.9			29.7	29.7
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effect Green (s)	16.5	25.1	25.1	16.8	22.2	22.2	17.9	26.7		17.0	25.8	25.8
Actuated g/C Ratio	0.17	0.25	0.25	0.17	0.22	0.22	0.18	0.27		0.17	0.26	0.26
v/c Ratio	0.80	0.42	0.18	0.30	0.62	0.46	0.52	0.73		0.55	0.70	0.32
Control Delay (s/veh)	65.0	36.2	0.8	43.3	39.2	9.1	46.5	38.6		47.5	42.3	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	65.0	36.2	0.8	43.3	39.2	9.1	46.5	38.6		47.5	42.3	4.3
LOS	E	D	A	D	D	A	D	D		D	D	A
Approach Delay (s/veh)		40.6			31.2			40.0			34.2	
Approach LOS		D			C			D			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 98.8

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay (s/veh): 36.5

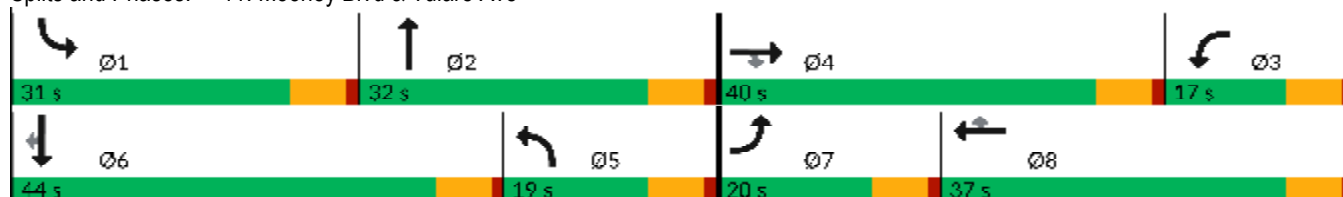
Intersection LOS: D

Intersection Capacity Utilization 68.0%

ICU Level of Service C

Analysis Period (min) 15

























Splits and Phases: 11: Mooney Blvd & Tulare Ave



# HCM 7th Signalized Intersection Summary

















## 11: Mooney Blvd & Tulare Ave

AM 2027+Project  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	199	345	83	76	456	206	140	571	65	143	314	149
Future Volume (veh/h)	199	345	83	76	456	206	140	571	65	143	314	149
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	216	375	90	83	496	224	152	621	71	155	341	162
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	284	676	268	366	855	344	225	825	94	228	485	371
Arrive On Green	0.17	0.19	0.19	0.22	0.24	0.24	0.14	0.26	0.23	0.14	0.26	0.26
Sat Flow, veh/h	1641	3554	1406	1641	3554	1431	1641	3201	365	1641	1870	1432
Grp Volume(v), veh/h	216	375	90	83	496	224	152	344	348	155	341	162
Grp Sat Flow(s),veh/h/ln	1641	1777	1406	1641	1777	1431	1641	1777	1790	1641	1870	1432
Q Serve(g_s), s	10.6	8.1	4.7	3.5	10.4	11.9	7.4	15.0	15.1	7.6	13.9	4.6
Cycle Q Clear(g_c), s	10.6	8.1	4.7	3.5	10.4	11.9	7.4	15.0	15.1	7.6	13.9	4.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	284	676	268	366	855	344	225	458	461	228	485	371
V/C Ratio(X)	0.76	0.55	0.34	0.23	0.58	0.65	0.67	0.75	0.75	0.68	0.70	0.44
Avail Cap(c_a), veh/h	311	1517	600	366	1391	560	292	590	594	525	887	679
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.2	30.9	29.5	26.8	28.3	28.8	34.6	28.8	29.0	34.5	28.3	8.6
Incr Delay (d2), s/veh	9.6	0.7	0.7	0.3	0.6	2.1	4.0	4.0	4.0	3.5	1.9	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	3.2	1.5	1.3	4.0	3.9	3.0	6.2	6.3	3.0	5.8	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	42.8	31.6	30.3	27.1	28.9	30.9	38.6	32.8	33.1	38.1	30.2	9.4
LnGrp LOS	D	C	C	C	C	C	D	C	C	D	C	A
Approach Vol, veh/h	681				803				844		658	
Approach Delay, s/veh	35.0				29.3				33.9		26.9	
Approach LOS	C				C				C		C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.7	25.7	22.8	20.0	15.6	25.9	18.6	24.3				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	25.0	26.0	11.0	34.0	13.0	38.0	14.0	31.0				
Max Q Clear Time (g_c+l1), s	9.6	17.1	5.5	10.1	9.4	15.9	12.6	13.9				
Green Ext Time (p_c), s	0.4	1.8	0.1	1.8	0.1	1.8	0.1	2.8				
Intersection Summary												
HCM 7th Control Delay, s/veh	31.4											
HCM 7th LOS	C											
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
12: Morrison St & Tulare Ave

AM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	457	63	27	504	1	82	45	87	3	16	50
Future Volume (vph)	32	457	63	27	504	1	82	45	87	3	16	50
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985						0.945			0.901	
Flt Protected		0.997			0.997			0.981			0.998	
Satd. Flow (prot)	0	1829	0	0	1857	0	0	1727	0	0	1675	0
Flt Permitted		0.997			0.997			0.981			0.998	
Satd. Flow (perm)	0	1829	0	0	1857	0	0	1727	0	0	1675	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	35	497	68	29	548	1	89	49	95	3	17	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	600	0	0	578	0	0	233	0	0	74	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	
Intersection Summary												
Area Type:	Other											
Control Type:	Roundabout											
Intersection Capacity Utilization	64.4%											
Analysis Period (min)	15											
ICU Level of Service C												























Intersection				
Intersection Delay, s/veh	8.2			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	600	578	233	74
Demand Flow Rate, veh/h	612	590	238	75
Vehicles Circulating, veh/h	50	177	546	680
Vehicles Exiting, veh/h	705	607	116	87
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	7.6	9.1	8.1	6.5
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	612	590	238	75
Cap Entry Lane, veh/h	1311	1152	791	690
Entry HV Adj Factor	0.980	0.980	0.979	0.982
Flow Entry, veh/h	600	578	233	74
Cap Entry, veh/h	1286	1129	774	677
V/C Ratio	0.467	0.512	0.301	0.109
Control Delay, s/veh	7.6	9.1	8.1	6.5
LOS	A	A	A	A
95th %tile Queue, veh	3	3	1	0

















Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

AM 2029  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	176	134	23	119	2	151	753	25	9	451	78
Future Volume (vph)	137	176	134	23	119	2	151	753	25	9	451	78
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.998			0.995			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1858	0	1630	3518	0	1630	3446	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1858	0	1630	3518	0	1630	3446	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			173		1			3			18	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	149	191	146	25	129	2	164	818	27	10	490	85
Shared Lane Traffic (%)												
Lane Group Flow (vph)	149	191	146	25	131	0	164	845	0	10	575	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

AM 2029  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	20.0	48.7	48.7	10.3	39.0		14.0	51.5		9.5	47.0	
Total Split (%)	16.7%	40.6%	40.6%	8.6%	32.5%		11.7%	42.9%		7.9%	39.2%	
Maximum Green (s)	14.5	43.2	43.2	4.8	33.5		8.5	46.0		4.0	41.5	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Don't Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effect Green (s)	13.7	26.5	26.5	9.1	14.6		10.5	33.8		5.8	20.4	
Actuated g/C Ratio	0.18	0.35	0.35	0.12	0.19		0.14	0.44		0.08	0.27	
v/c Ratio	0.51	0.29	0.24	0.13	0.37		0.73	0.54		0.08	0.61	
Control Delay (s/veh)	38.7	23.5	3.9	36.2	30.7		56.4	19.0		43.1	27.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	38.7	23.5	3.9	36.2	30.7		56.4	19.0		43.1	27.2	
LOS	D	C	A	D	C		E	B		D	C	
Approach Delay (s/veh)		22.3			31.6			25.1			27.5	
Approach LOS		C			C			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 76

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay (s/veh): 25.6

Intersection LOS: C

Intersection Capacity Utilization 57.1%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Mooney Blvd & Cartmill Ave

























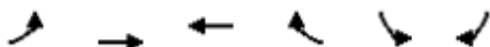
# HCM 7th Signalized Intersection Summary

AM 2029

## 1: Mooney Blvd & Cartmill Ave

09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	137	176	134	23	119	2	151	753	25	9	451	78
Future Volume (veh/h)	137	176	134	23	119	2	151	753	25	9	451	78
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	149	191	146	25	129	2	164	818	27	10	490	85
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	229	384	294	162	302	5	241	1197	40	124	814	140
Arrive On Green	0.14	0.21	0.21	0.10	0.16	0.14	0.15	0.34	0.32	0.08	0.27	0.24
Sat Flow, veh/h	1641	1870	1429	1641	1836	28	1641	3506	116	1641	3013	520
Grp Volume(v), veh/h	149	191	146	25	0	131	164	414	431	10	288	287
Grp Sat Flow(s),veh/h/ln	1641	1870	1429	1641	0	1864	1641	1777	1845	1641	1777	1756
Q Serve(g_s), s	4.9	5.2	3.0	0.8	0.0	3.6	5.4	11.5	11.5	0.3	8.1	8.2
Cycle Q Clear(g_c), s	4.9	5.2	3.0	0.8	0.0	3.6	5.4	11.5	11.5	0.3	8.1	8.2
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.06	1.00		0.30
Lane Grp Cap(c), veh/h	229	384	294	162	0	307	241	607	630	124	480	474
V/C Ratio(X)	0.65	0.50	0.50	0.15	0.00	0.43	0.68	0.68	0.68	0.08	0.60	0.61
Avail Cap(c_a), veh/h	457	1455	1112	180	0	1136	286	1469	1526	157	1330	1314
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.4	20.2	6.7	23.7	0.0	21.6	23.2	16.2	16.3	24.7	18.3	18.5
Incr Delay (d2), s/veh	3.1	1.0	1.3	0.4	0.0	0.9	5.1	1.4	1.3	0.3	1.2	1.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	1.9	1.4	0.3	0.0	1.4	2.1	3.7	3.9	0.1	2.8	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	26.5	21.2	8.0	24.1	0.0	22.5	28.3	17.6	17.6	25.0	19.5	19.7
LnGrp LOS	C	C	A	C		C	C	B	B	C	B	B
Approach Vol, veh/h	486			156			1009			585		
Approach Delay, s/veh	18.8			22.8			19.4			19.7		
Approach LOS	B			C			B			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.4	23.6	9.7	15.8	12.4	19.5	12.0	13.5				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	4.0	46.0	4.8	43.2	8.5	41.5	14.5	33.5				
Max Q Clear Time (g_c+I1), s	2.3	13.5	2.8	7.2	7.4	10.2	6.9	5.6				
Green Ext Time (p_c), s	0.0	3.2	0.0	1.2	0.1	2.1	0.2	0.4				
Intersection Summary												
HCM 7th Control Delay, s/veh	19.6											
HCM 7th LOS	B											

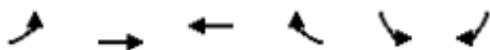


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (vph)	0	350	331	0	97	118
Future Volume (vph)	0	350	331	0	97	118
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Fr t						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	1630	1458
Flt Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	1630	1458
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						128
Link Speed (mph)		55	55		55	
Link Distance (ft)		349	727		300	
Travel Time (s)		4.3	9.0		3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	380	360	0	105	128
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	380	360	0	105	128
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors		1	1		1	1
Detector Template						
Leading Detector (ft)		50	50		50	50
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		50	50		50	50
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		4.0	4.0		4.0	4.0
Minimum Split (s)		24.0	24.0		24.0	24.0
Total Split (s)		53.0	53.0		47.0	47.0
Total Split (%)		53.0%	53.0%		47.0%	47.0%
Maximum Green (s)		47.0	47.0		41.0	41.0
Yellow Time (s)		5.0	5.0		5.0	5.0

# Lanes, Volumes, Timings

## 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

AM 2029  
09/12/2024



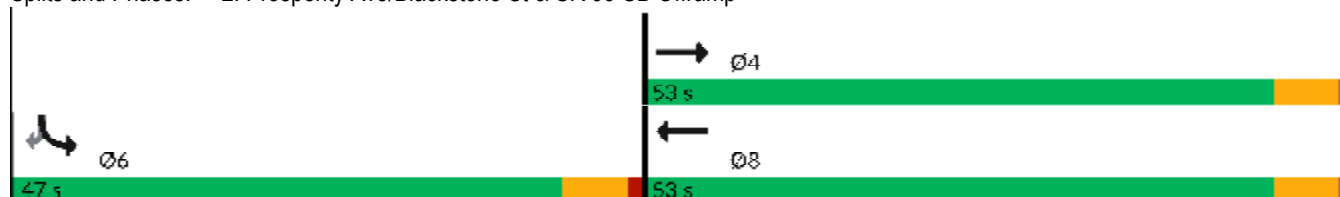
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		None	None		Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effect Green (s)		10.5	10.5		9.4	9.4
Actuated g/C Ratio		0.38	0.38		0.34	0.34
v/c Ratio		0.29	0.27		0.19	0.22
Control Delay (s/veh)		6.9	6.8		7.8	3.0
Queue Delay		0.0	0.0		0.0	0.0
Total Delay (s/veh)		6.9	6.8		7.8	3.0
LOS		A	A		A	A
Approach Delay (s/veh)		6.9	6.8		5.2	
Approach LOS		A	A		A	

### Intersection Summary

Area Type: Other  
Cycle Length: 100  
Actuated Cycle Length: 27.9  
Natural Cycle: 50  
Control Type: Actuated-Uncoordinated  
Maximum v/c Ratio: 0.29  
Intersection Signal Delay (s/veh): 6.5  
Intersection Capacity Utilization 23.7%  
Analysis Period (min) 15

Intersection LOS: A  
ICU Level of Service A

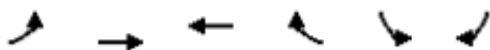
Splits and Phases: 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp



# HCM 7th Signalized Intersection Summary

## 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

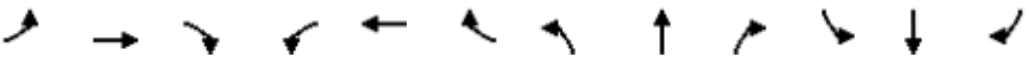











AM 2029  
09/12/2024



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (veh/h)	0	350	331	0	97	118
Future Volume (veh/h)	0	350	331	0	97	118
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1723	1723
Adj Flow Rate, veh/h	0	380	360	0	105	128
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	1191	1191	0	482	428
Arrive On Green	0.00	0.34	0.34	0.00	0.29	0.29
Sat Flow, veh/h	0	3741	3741	0	1641	1460
Grp Volume(v), veh/h	0	380	360	0	105	128
Grp Sat Flow(s),veh/h/ln	0	1777	1777	0	1641	1460
Q Serve(g_s), s	0.0	1.7	1.6	0.0	1.0	1.5
Cycle Q Clear(g_c), s	0.0	1.7	1.6	0.0	1.0	1.5
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1191	1191	0	482	428
V/C Ratio(X)	0.00	0.32	0.30	0.00	0.22	0.30
Avail Cap(c_a), veh/h	0	8083	8083	0	3275	2914
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	5.3	5.3	0.0	5.7	5.9
Incr Delay (d2), s/veh	0.0	0.2	0.1	0.0	0.2	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	0.0	5.5	5.4	0.0	6.0	6.3
LnGrp LOS		A	A		A	A
Approach Vol, veh/h		380	360		233	
Approach Delay, s/veh		5.5	5.4		6.1	
Approach LOS		A	A		A	
Timer - Assigned Phs				4	6	8
Phs Duration (G+Y+Rc), s				11.2	10.3	11.2
Change Period (Y+Rc), s				6.0	6.0	6.0
Max Green Setting (Gmax), s				47.0	41.0	47.0
Max Q Clear Time (g_c+I1), s				3.7	3.5	3.6
Green Ext Time (p_c), s				1.6	0.9	1.5
Intersection Summary						
HCM 7th Control Delay, s/veh			5.6			
HCM 7th LOS			A			

Lanes, Volumes, Timings  
3: Blackstone Ave/Blackstone St & Prosperity Ave

AM 2029  
09/12/2024

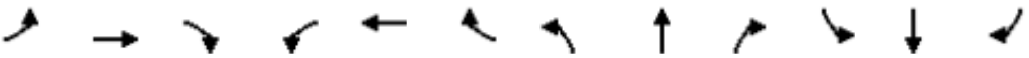
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	8	2	454	10	307	0	33	258	292	107	2
Future Volume (vph)	0	8	2	454	10	307	0	33	258	292	107	2
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	30		0	335		310	55		90	240		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor		1.00				0.98						
Frt		0.973				0.850			0.850		0.997	
Flt Protected				0.950	0.954					0.950		
Satd. Flow (prot)	1716	1805	0	1548	1688	1458	1716	1863	1458	3162	1857	0
Flt Permitted				0.950	0.728					0.950		
Satd. Flow (perm)	1716	1805	0	1548	1288	1427	1716	1863	1458	3162	1857	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				334			280		1	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		98			1229			643			727	
Travel Time (s)		1.2			15.2			8.0			9.0	
Confl. Peds. (#/hr)			5			5						
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	9	2	493	11	334	0	36	280	317	116	2
Shared Lane Traffic (%)				49%								
Lane Group Flow (vph)	0	11	0	251	253	334	0	36	280	317	118	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												



# Lanes, Volumes, Timings

## 3: Blackstone Ave/Blackstone St & Prosperity Ave

AM 2029  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	24.1		10.0	24.1	24.1	10.0	24.0	24.0	10.0	24.0	
Total Split (s)	13.0	27.1		26.9	41.0	41.0	10.0	24.0	24.0	22.0	36.0	
Total Split (%)	13.0%	27.1%		26.9%	41.0%	41.0%	10.0%	24.0%	24.0%	22.0%	36.0%	
Maximum Green (s)	7.0	21.1		20.9	35.0	35.0	4.0	18.0	18.0	16.0	30.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Don't Walk (s)		11.1			11.1	11.1		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		5			5	5		0	0		0	
Act Effect Green (s)		9.8		35.3	35.3	39.2		10.3	10.3	14.5	28.8	
Actuated g/C Ratio		0.13		0.46	0.46	0.52		0.14	0.14	0.19	0.38	
v/c Ratio		0.05		0.35	0.32	0.37		0.14	0.64	0.53	0.17	
Control Delay (s/veh)		27.8		19.5	18.9	2.8		31.6	11.6	32.2	16.3	
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay (s/veh)		27.8		19.5	18.9	2.8		31.6	11.6	32.2	16.3	
LOS		C		B	B	A		C	B	C	B	
Approach Delay (s/veh)		27.8			12.7			13.9			27.9	
Approach LOS		C			B			B			C	

### Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 76.1

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay (s/veh): 17.2

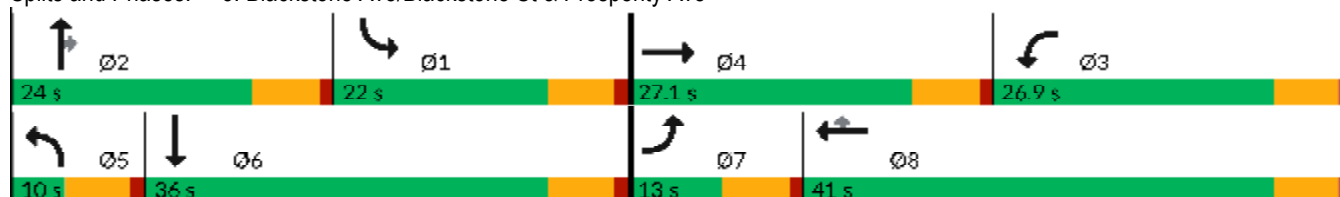
Intersection LOS: B

Intersection Capacity Utilization 42.7%

ICU Level of Service A

Analysis Period (min) 15
























### Splits and Phases: 3: Blackstone Ave/Blackstone St & Prosperity Ave



# HCM 7th Signalized Intersection Summary
























## 3: Blackstone Ave/Blackstone St & Prosperity Ave

AM 2029  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	8	2	454	10	307	0	33	258	292	107	2
Future Volume (veh/h)	0	8	2	454	10	307	0	33	258	292	107	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	0	9	2	501	0	334	0	36	280	317	116	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	3	165	37	741	0	574	3	464	362	529	873	15
Arrive On Green	0.00	0.11	0.08	0.23	0.00	0.40	0.00	0.25	0.25	0.17	0.48	0.45
Sat Flow, veh/h	1641	1471	327	3281	0	1435	1641	1870	1460	3183	1833	32
Grp Volume(v), veh/h	0	0	11	501	0	334	0	36	280	317	0	118
Grp Sat Flow(s),veh/h/ln	1641	0	1797	1641	0	1435	1641	1870	1460	1591	0	1865
Q Serve(g_s), s	0.0	0.0	0.4	9.0	0.0	4.9	0.0	1.0	11.5	6.0	0.0	2.3
Cycle Q Clear(g_c), s	0.0	0.0	0.4	9.0	0.0	4.9	0.0	1.0	11.5	6.0	0.0	2.3
Prop In Lane	1.00		0.18	1.00		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	3	0	201	741	0	574	3	464	362	529	0	888
V/C Ratio(X)	0.00	0.00	0.05	0.68	0.00	0.58	0.00	0.08	0.77	0.60	0.00	0.13
Avail Cap(c_a), veh/h	229	0	643	1165	0	823	153	580	453	888	0	925
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	25.8	22.8	0.0	3.1	0.0	18.6	22.6	24.9	0.0	9.5
Incr Delay (d2), s/veh	0.0	0.0	0.1	1.1	0.0	0.9	0.0	0.1	6.4	1.1	0.0	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.1	3.0	0.0	2.4	0.0	0.4	3.9	2.0	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	25.9	23.9	0.0	4.1	0.0	18.7	28.9	26.0	0.0	9.5
LnGrp LOS			C	C		A		B	C	C		A
Approach Vol, veh/h	11			835			316			435		
Approach Delay, s/veh	25.9			16.0			27.8			21.5		
Approach LOS	C			B			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.7	20.0	18.6	11.2	0.0	34.7	0.0	29.8				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	16.0	18.0	20.9	21.1	4.0	30.0	7.0	35.0				
Max Q Clear Time (g_c+I1), s	8.0	13.5	11.0	2.4	0.0	4.3	0.0	6.9				
Green Ext Time (p_c), s	0.8	0.5	1.6	0.0	0.0	0.3	0.0	1.4				
Intersection Summary												
HCM 7th Control Delay, s/veh				19.9								
HCM 7th LOS				B								
Notes												
User approved volume balancing among the lanes for turning movement.												













Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

AM 2029  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	251	283	66	39	427	107	124	264	61	78	31	287
Future Volume (vph)	251	283	66	39	427	107	124	264	61	78	31	287
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	270		0	155		85	155		0	200		205
Storage Lanes	2		1	1		1	1		0	2		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	0.88
Ped Bike Factor			0.97			0.98		1.00				0.97
Frt			0.850			0.850		0.972				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	1630	5085	1458	1630	3428	0	3162	1863	2567
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1410	1630	5085	1433	1630	3428	0	3162	1863	2489
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			136		21				312
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1229			2636			362			5336	
Travel Time (s)		15.2			32.7			4.5			66.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	273	308	72	42	464	116	135	287	66	85	34	312
Shared Lane Traffic (%)												
Lane Group Flow (vph)	273	308	72	42	464	116	135	353	0	85	34	312
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

AM 2029  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	32.7	32.7	10.0	45.6	45.6	10.0	47.0		10.0	49.9	49.9
Total Split (s)	31.9	43.1	43.1	35.9	47.1	47.1	11.0	31.0		10.0	30.0	30.0
Total Split (%)	26.6%	35.9%	35.9%	29.9%	39.3%	39.3%	9.2%	25.8%		8.3%	25.0%	25.0%
Maximum Green (s)	25.9	37.1	37.1	29.9	41.1	41.1	5.0	25.0		4.0	24.0	24.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Don't Walk (s)		19.7	19.7		32.6	32.6		34.0			36.9	36.9
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effect Green (s)	14.9	28.5	28.5	10.4	17.5	17.5	7.8	20.5		6.7	16.5	16.5
Actuated g/C Ratio	0.20	0.38	0.38	0.14	0.23	0.23	0.10	0.27		0.09	0.22	0.22
v/c Ratio	0.43	0.23	0.12	0.19	0.39	0.26	0.79	0.37		0.30	0.08	0.39
Control Delay (s/veh)	32.4	19.5	0.4	38.9	25.8	5.5	69.5	23.3		43.2	25.1	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	32.4	19.5	0.4	38.9	25.8	5.5	69.5	23.3		43.2	25.1	4.9
LOS	C	B	A	D	C	A	E	C		D	C	A
Approach Delay (s/veh)		22.7			22.9			36.1			14.0	
Approach LOS		C			C			D			B	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 74.6

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay (s/veh): 24.1

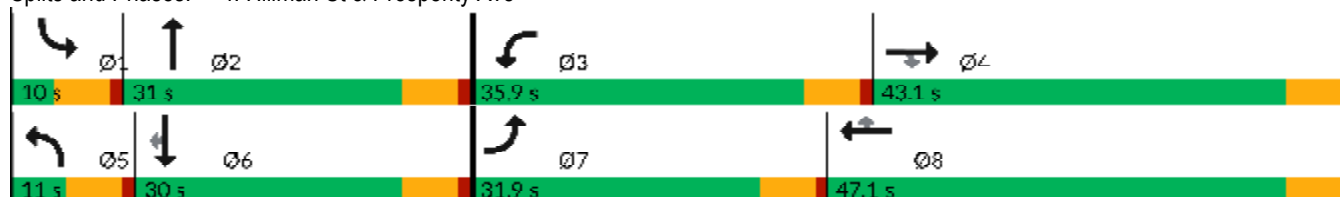
Intersection LOS: C

Intersection Capacity Utilization 49.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 4: Hillman St & Prosperity Ave



























# HCM 7th Signalized Intersection Summary

AM 2029

























## 4: Hillman St & Prosperity Ave

09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	251	283	66	39	427	107	124	264	61	78	31	287
Future Volume (veh/h)	251	283	66	39	427	107	124	264	61	78	31	287
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	273	308	72	42	464	116	135	287	66	85	34	312
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	515	1148	457	111	1168	327	194	731	165	269	414	550
Arrive On Green	0.16	0.32	0.32	0.07	0.23	0.23	0.12	0.26	0.22	0.08	0.22	0.22
Sat Flow, veh/h	3183	3554	1416	1641	5106	1430	1641	2867	648	3183	1870	2481
Grp Volume(v), veh/h	273	308	72	42	464	116	135	176	177	85	34	312
Grp Sat Flow(s),veh/h/ln	1591	1777	1416	1641	1702	1430	1641	1777	1738	1591	1870	1241
Q Serve(g_s), s	4.7	3.8	2.1	1.5	4.6	4.0	4.7	4.9	5.1	1.5	0.9	6.6
Cycle Q Clear(g_c), s	4.7	3.8	2.1	1.5	4.6	4.0	4.7	4.9	5.1	1.5	0.9	6.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.37	1.00		1.00
Lane Grp Cap(c), veh/h	515	1148	457	111	1168	327	194	453	443	269	414	550
V/C Ratio(X)	0.53	0.27	0.16	0.38	0.40	0.35	0.70	0.39	0.40	0.32	0.08	0.57
Avail Cap(c_a), veh/h	1499	2345	934	883	3714	1040	194	810	792	322	821	1089
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.8	14.9	14.3	26.4	19.4	19.2	25.1	18.3	18.6	25.5	18.3	20.5
Incr Delay (d2), s/veh	0.9	0.1	0.2	2.1	0.2	0.7	10.4	0.5	0.6	0.7	0.1	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	1.2	0.6	0.6	1.5	1.2	2.1	1.7	1.7	0.5	0.3	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	23.6	15.0	14.5	28.6	19.6	19.8	35.5	18.8	19.2	26.2	18.4	21.5
LnGrp LOS	C	B	B	C	B	B	D	B	B	C	B	C
Approach Vol, veh/h	653			622			488			431		
Approach Delay, s/veh	18.5			20.3			23.6			22.2		
Approach LOS	B			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	19.1	8.0	23.1	11.0	17.1	13.6	17.6				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	4.0	25.0	29.9	37.1	5.0	24.0	25.9	41.1				
Max Q Clear Time (g_c+l1), s	3.5	7.1	3.5	5.8	6.7	8.6	6.7	6.6				
Green Ext Time (p_c), s	0.0	1.1	0.1	1.5	0.0	1.4	1.0	2.5				
Intersection Summary												
HCM 7th Control Delay, s/veh				20.9								
HCM 7th LOS				C								
Notes												
User approved pedestrian interval to be less than phase max green.												













Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

AM 2029  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	248	69	42	307	49	119	175	67	54	164	96
Future Volume (vph)	35	248	69	42	307	49	119	175	67	54	164	96
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	235		115	230		100	100		100	160		100
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96			0.97			0.97			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	5085	1458	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1405	1630	5085	1410	1630	1863	1415	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			191			191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2636			2650			5387			713	
Travel Time (s)		32.7			32.9			66.8			8.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	270	75	46	334	53	129	190	73	59	178	104
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	270	75	46	334	53	129	190	73	59	178	104
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

AM 2029  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	27.0	27.0	10.0	34.1	34.1	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (s)	16.0	38.4	38.4	13.0	35.4	35.4	23.0	47.6	47.6	21.0	45.6	45.6
Total Split (%)	13.3%	32.0%	32.0%	10.8%	29.5%	29.5%	19.2%	39.7%	39.7%	17.5%	38.0%	38.0%
Maximum Green (s)	10.0	32.4	32.4	7.0	29.4	29.4	17.0	41.6	41.6	15.0	39.6	39.6
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		14.0	14.0		21.1	21.1		32.6	32.6		32.6	32.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effect Green (s)	11.0	15.4	15.4	11.7	18.7	18.7	14.8	22.8	22.8	13.4	18.4	18.4
Actuated g/C Ratio	0.17	0.24	0.24	0.18	0.29	0.29	0.23	0.35	0.35	0.21	0.28	0.28
v/c Ratio	0.14	0.32	0.16	0.16	0.23	0.10	0.35	0.29	0.12	0.18	0.34	0.19
Control Delay (s/veh)	37.0	28.2	0.7	34.3	22.9	0.4	33.7	22.9	0.4	32.2	25.1	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	37.0	28.2	0.7	34.3	22.9	0.4	33.7	22.9	0.4	32.2	25.1	0.8
LOS	D	C	A	C	C	A	C	C	A	C	C	A
Approach Delay (s/veh)		23.7			21.3			22.3			18.9	
Approach LOS		C			C			C			B	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 65.2

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.35

Intersection Signal Delay (s/veh): 21.6

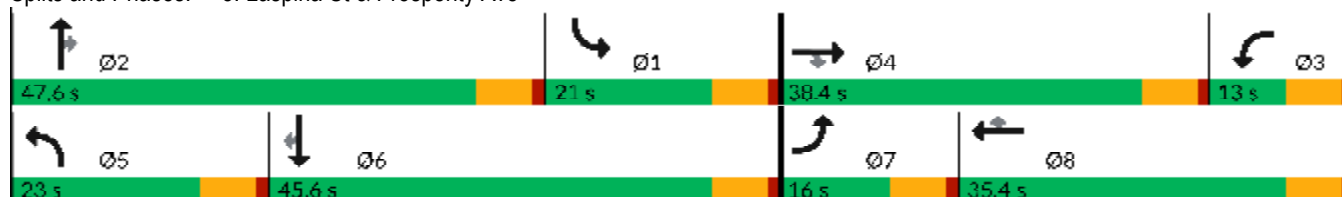
Intersection LOS: C

Intersection Capacity Utilization 44.8%

ICU Level of Service A

Analysis Period (min) 15




























Splits and Phases: 5: Laspina St & Prosperity Ave



# HCM 7th Signalized Intersection Summary

## 5: Laspina St & Prosperity Ave
























AM 2029  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  							
Traffic Volume (veh/h)	35	248	69	42	307	49	119	175	67	54	164	96
Future Volume (veh/h)	35	248	69	42	307	49	119	175	67	54	164	96
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	38	270	75	46	334	53	129	190	73	59	178	104
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	125	713	282	134	1050	290	233	443	334	227	436	333
Arrive On Green	0.08	0.20	0.20	0.08	0.21	0.21	0.14	0.24	0.24	0.14	0.23	0.23
Sat Flow, veh/h	1641	3554	1408	1641	5106	1408	1641	1870	1411	1641	1870	1430
Grp Volume(v), veh/h	38	270	75	46	334	53	129	190	73	59	178	104
Grp Sat Flow(s),veh/h/ln	1641	1777	1408	1641	1702	1408	1641	1870	1411	1641	1870	1430
Q Serve(g_s), s	1.0	3.1	1.0	1.2	2.6	0.7	3.4	4.0	1.9	1.5	3.8	2.8
Cycle Q Clear(g_c), s	1.0	3.1	1.0	1.2	2.6	0.7	3.4	4.0	1.9	1.5	3.8	2.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	125	713	282	134	1050	290	233	443	334	227	436	333
V/C Ratio(X)	0.30	0.38	0.27	0.34	0.32	0.18	0.55	0.43	0.22	0.26	0.41	0.31
Avail Cap(c_a), veh/h	422	2623	1039	317	3440	949	669	1750	1320	598	1669	1277
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.4	16.1	3.9	20.2	15.7	3.9	18.6	15.1	14.3	18.0	15.2	14.8
Incr Delay (d2), s/veh	1.4	0.3	0.5	1.5	0.2	0.3	2.1	0.7	0.3	0.6	0.6	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.0	0.5	0.4	0.8	0.4	1.1	1.3	0.5	0.5	1.2	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	21.7	16.5	4.4	21.8	15.9	4.2	20.7	15.8	14.6	18.6	15.8	15.3
LnGrp LOS	C	B	A	C	B	A	C	B	B	B	B	B
Approach Vol, veh/h	383			433			392			341		
Approach Delay, s/veh	14.6			15.1			17.2			16.1		
Approach LOS	B			B			B			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.4	15.0	7.8	13.3	10.6	14.9	7.6	13.6				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	41.6	7.0	32.4	17.0	39.6	10.0	29.4				
Max Q Clear Time (g_c+I1), s	3.5	6.0	3.2	5.1	5.4	5.8	3.0	4.6				
Green Ext Time (p_c), s	0.1	0.9	0.0	1.4	0.3	1.0	0.0	1.6				
Intersection Summary												
HCM 7th Control Delay, s/veh	15.7											
HCM 7th LOS	B											




Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

AM 2029  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	157	185	171	104	128	62	223	717	62	30	444	104
Future Volume (vph)	157	185	171	104	128	62	223	717	62	30	444	104
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98		0.99				0.97			0.98
Frt			0.850		0.951				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1760	0	1630	3539	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1432	1630	1760	0	1630	3539	1409	1630	3539	1426
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191		19				191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2617			5285	
Travel Time (s)		32.9			36.1			32.4			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	171	201	186	113	139	67	242	779	67	33	483	113
Shared Lane Traffic (%)												
Lane Group Flow (vph)	171	201	186	113	206	0	242	779	67	33	483	113
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

AM 2029  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	24.0	39.7	39.7	17.0	32.7		23.0	46.3	46.3	17.0	40.3	40.3
Total Split (%)	20.0%	33.1%	33.1%	14.2%	27.3%		19.2%	38.6%	38.6%	14.2%	33.6%	33.6%
Maximum Green (s)	18.0	33.7	33.7	11.0	26.7		17.0	40.3	40.3	11.0	34.3	34.3
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Don't Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effect Green (s)	17.1	21.1	21.1	15.7	19.7		19.1	50.1	50.1	10.9	36.6	36.6
Actuated g/C Ratio	0.16	0.19	0.19	0.14	0.18		0.18	0.46	0.46	0.10	0.34	0.34
v/c Ratio	0.67	0.56	0.43	0.48	0.62		0.84	0.48	0.09	0.20	0.41	0.19
Control Delay (s/veh)	57.8	45.0	7.6	52.5	45.4		70.9	25.2	0.2	50.3	30.5	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	57.8	45.0	7.6	52.5	45.4		70.9	25.2	0.2	50.3	30.5	0.7
LOS	E	D	A	D	D		E	C	A	D	C	A
Approach Delay (s/veh)		36.4			47.9			33.8			26.1	
Approach LOS		D			D			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 108.6

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay (s/veh): 34.3

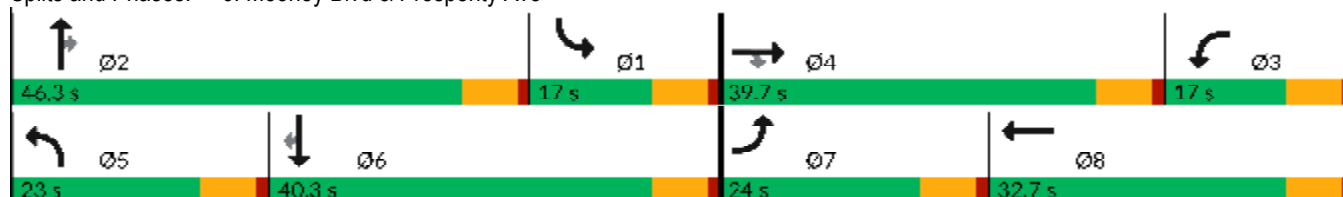
Intersection LOS: C

Intersection Capacity Utilization 65.0%

ICU Level of Service C

Analysis Period (min) 15
























Splits and Phases: 6: Mooney Blvd & Prosperity Ave



# HCM 7th Signalized Intersection Summary










## 6: Mooney Blvd & Prosperity Ave




AM 2029  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	157	185	171	104	128	62	223	717	62	30	444	104
Future Volume (veh/h)	157	185	171	104	128	62	223	717	62	30	444	104
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	171	201	186	113	139	67	242	779	67	33	483	113
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	230	332	253	220	203	98	297	1458	582	201	1251	505
Arrive On Green	0.14	0.18	0.18	0.13	0.17	0.15	0.18	0.41	0.41	0.12	0.35	0.35
Sat Flow, veh/h	1641	1870	1427	1641	1181	569	1641	3554	1419	1641	3554	1434
Grp Volume(v), veh/h	171	201	186	113	0	206	242	779	67	33	483	113
Grp Sat Flow(s),veh/h/ln	1641	1870	1427	1641	0	1751	1641	1777	1419	1641	1777	1434
Q Serve(g_s), s	10.3	10.2	8.1	6.6	0.0	11.4	14.6	17.1	3.0	1.9	10.5	5.7
Cycle Q Clear(g_c), s	10.3	10.2	8.1	6.6	0.0	11.4	14.6	17.1	3.0	1.9	10.5	5.7
Prop In Lane	1.00		1.00	1.00		0.33	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	230	332	253	220	0	301	297	1458	582	201	1251	505
V/C Ratio(X)	0.74	0.61	0.73	0.51	0.00	0.69	0.82	0.53	0.12	0.16	0.39	0.22
Avail Cap(c_a), veh/h	318	648	494	220	0	488	302	1458	582	207	1251	505
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.5	39.1	16.4	41.5	0.0	40.4	40.6	22.9	18.8	40.5	25.0	23.5
Incr Delay (d2), s/veh	5.9	1.8	4.1	2.0	0.0	2.8	15.6	1.4	0.4	0.4	0.9	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	4.6	4.2	2.6	0.0	4.9	6.8	6.7	1.0	0.7	4.2	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	48.4	40.8	20.4	43.5	0.0	43.2	56.1	24.4	19.2	40.9	25.9	24.5
LnGrp LOS	D	D	C	D		D	E	C	B	D	C	C
Approach Vol, veh/h	558		319			1088			629			
Approach Delay, s/veh	36.4		43.3			31.1			26.5			
Approach LOS	D		D			C			C			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.6	46.3	17.8	22.3	22.6	40.3	18.5	21.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	11.0	40.3	11.0	33.7	17.0	34.3	18.0	26.7				
Max Q Clear Time (g_c+I1), s	3.9	19.1	8.6	12.2	16.6	12.5	12.3	13.4				
Green Ext Time (p_c), s	0.0	3.6	0.1	1.4	0.0	2.4	0.2	0.5				
Intersection Summary												
HCM 7th Control Delay, s/veh			32.6									
HCM 7th LOS			C									
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
7: Morrison St & Prosperity Ave
















AM 2029  
09/12/2024

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	262	5	27	263	25	47
Future Volume (vph)	262	5	27	263	25	47
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.998				0.912	
Flt Protected				0.995	0.983	
Satd. Flow (prot)	1859	0	0	1853	1538	0
Flt Permitted				0.995	0.983	
Satd. Flow (perm)	1859	0	0	1853	1538	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	285	5	29	286	27	51
Shared Lane Traffic (%)						
Lane Group Flow (vph)	290	0	0	315	78	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	44.1%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	1.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	262	5	27	263	25	47
Future Vol, veh/h	262	5	27	263	25	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	285	5	29	286	27	51
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	290	0	632	288
Stage 1	-	-	-	-	288	-
Stage 2	-	-	-	-	345	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1272	-	444	752
Stage 1	-	-	-	-	761	-
Stage 2	-	-	-	-	717	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1272	-	432	752
Mov Cap-2 Maneuver	-	-	-	-	432	-
Stage 1	-	-	-	-	761	-
Stage 2	-	-	-	-	698	-
Approach	EB		WB		NB	
HCM Control Delay, s/v	0		0.74		11.92	
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	598	-	-	168	-	
HCM Lane V/C Ratio	0.131	-	-	0.023	-	
HCM Control Delay (s/veh)	11.9	-	-	7.9	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-	

Lanes, Volumes, Timings  
8: Prosperity Ave & Oakmore Rd

AM 2029  
09/12/2024

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	113	190	0	1	181	33	0	0	0	19	0	103	
Future Volume (vph)	113	190	0	1	181	33	0	0	0	19	0	103	
Ideal Flow (vphpl)	1750	1900	1900	1900	1900	1750	1900	1900	1900	1750	1900	1750	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.979					0.865							
Flt Protected	0.982					0.950							
Satd. Flow (prot)	0	1829	0	0	1824	0	0	0	0	1630	0	0	
Flt Permitted	0.982					0.950							
Satd. Flow (perm)	0	1829	0	0	1824	0	0	0	0	1630	0	0	
Link Speed (mph)	55					55							
Link Distance (ft)	2108					329							
Travel Time (s)	26.1					4.1							
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	123	207	0	1	197	36	0	0	0	21	0	112	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	330	0	0	234	0	0	0	0	21	112	0	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No	
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(ft)	0					12							
Link Offset(ft)	0					0							
Crosswalk Width(ft)	16					16							
Two way Left Turn Lane													
Headway Factor	1.11	1.00	1.00	1.00	1.00	1.11	1.00	1.00	1.00	1.11	1.00	1.11	
Turning Speed (mph)	15		9	15		9	15		9	15		9	
Sign Control	Free					Free					Stop		Stop
Intersection Summary													
Area Type:	Other												
Control Type: Unsignalized													
Intersection Capacity Utilization Err%					ICU Level of Service H								
Analysis Period (min) 15													






Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			2					2		
Traffic Vol, veh/h	113	190	0	1	181	33	0	0	0	19	0	103
Future Vol, veh/h	113	190	0	1	181	33	0	0	0	19	0	103
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	123	207	0	1	197	36	0	0	0	21	0	112
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	233	0	-	207	0	0				669	-	215
Stage 1	-	-	-	-	-	-				217	-	-
Stage 2	-	-	-	-	-	-				452	-	-
Critical Hdwy	4.12	-	-	4.12	-	-				6.42	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-				5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.42	-	-
Follow-up Hdwy	2.218	-	-	2.218	-	-				3.518	-	3.318
Pot Cap-1 Maneuver	1335	-	0	1365	-	-				423	0	825
Stage 1	-	-	0	-	-	-				819	0	-
Stage 2	-	-	0	-	-	-				641	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1335	-	-	1365	-	-				378	0	825
Mov Cap-2 Maneuver	-	-	-	-	-	-				378	0	-
Stage 1	-	-	-	-	-	-				734	0	-
Stage 2	-	-	-	-	-	-				640	0	-
Approach	EB			WB			SB					
HCM Control Delay, s/v	2.97			0.04			11.37					
HCM LOS							B					
Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1						
Capacity (veh/h)	671	-	1365	-	-	697						
HCM Lane V/C Ratio	0.092	-	0.001	-	-	0.19						
HCM Control Delay (s/veh)	8	0	7.6	-	-	11.4						
HCM Lane LOS	A	A	A	-	-	B						
HCM 95th %tile Q(veh)	0.3	-	0	-	-	0.7						

Lanes, Volumes, Timings  
9: Mooney Blvd & Seminole Ave

AM 2029  
09/12/2024



























Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↖	↕	↗	↖	↕
Traffic Volume (vph)	1	235	898	19	50	652
Future Volume (vph)	1	235	898	19	50	652
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	540	0		0	80	
Storage Lanes	0	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.865		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	0	1484	3539	1458	1630	3539
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	0	1484	3539	1458	1630	3539
Link Speed (mph)	55		55			55
Link Distance (ft)	1719		2673			2617
Travel Time (s)	21.3		33.1			32.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	255	976	21	54	709
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1	255	976	21	54	709
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization Err%	ICU Level of Service H					
Analysis Period (min)	15					



Intersection						
Int Delay, s/veh	2.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	235	898	19	50	652
Future Vol, veh/h	1	235	898	19	50	652
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	0	80	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	255	976	21	54	709
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1439	488	0	0	997	0
Stage 1	976	-	-	-	-	-
Stage 2	463	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	124	526	-	-	690	-
Stage 1	326	-	-	-	-	-
Stage 2	600	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	114	526	-	-	690	-
Mov Cap-2 Maneuver	114	-	-	-	-	-
Stage 1	326	-	-	-	-	-
Stage 2	553	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s/v18.15		0		0.76		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	526	690	-	
HCM Lane V/C Ratio	-	-	0.486	0.079	-	
HCM Control Delay (s/veh)	-	-	18.2	10.7	-	
HCM Lane LOS	-	-	C	B	-	
HCM 95th %tile Q(veh)	-	-	2.6	0.3	-	


Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

AM 2029  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Traffic Volume (vph)	54	412	72	45	625	43	123	218	61	57	184	68
Future Volume (vph)	54	412	72	45	625	43	123	218	61	57	184	68
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		135	110		0	90		90	80		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97		1.00				0.98			0.98
Frt			0.850		0.990				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3496	0	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1408	1630	3496	0	1630	1863	1431	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191		6				191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		841			2671			726			5387	
Travel Time (s)		10.4			33.1			9.0			66.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	59	448	78	49	679	47	134	237	66	62	200	74
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	448	78	49	726	0	134	237	66	62	200	74
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

AM 2029  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.9	29.9	10.0	28.4		10.0	39.9	39.9	10.0	44.1	44.1
Total Split (s)	20.0	41.9	41.9	16.0	37.9		18.0	41.1	41.1	21.0	44.1	44.1
Total Split (%)	16.7%	34.9%	34.9%	13.3%	31.6%		15.0%	34.3%	34.3%	17.5%	36.8%	36.8%
Maximum Green (s)	14.0	35.9	35.9	10.0	31.9		12.0	35.1	35.1	15.0	38.1	38.1
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Don't Walk (s)		16.9	16.9		15.4			26.9	26.9		31.1	31.1
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effect Green (s)	11.3	28.7	28.7	10.4	25.0		13.7	25.8	25.8	11.4	19.4	19.4
Actuated g/C Ratio	0.14	0.35	0.35	0.13	0.30		0.17	0.31	0.31	0.14	0.23	0.23
v/c Ratio	0.27	0.37	0.13	0.24	0.69		0.50	0.41	0.11	0.28	0.46	0.15
Control Delay (s/veh)	42.4	24.0	0.4	43.8	31.4		46.1	30.6	0.4	42.4	33.0	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	42.4	24.0	0.4	43.8	31.4		46.1	30.6	0.4	42.4	33.0	0.7
LOS	D	C	A	D	C		D	C	A	D	C	A
Approach Delay (s/veh)		22.7			32.2			30.8			27.6	
Approach LOS		C			C			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 82.8

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay (s/veh): 28.6

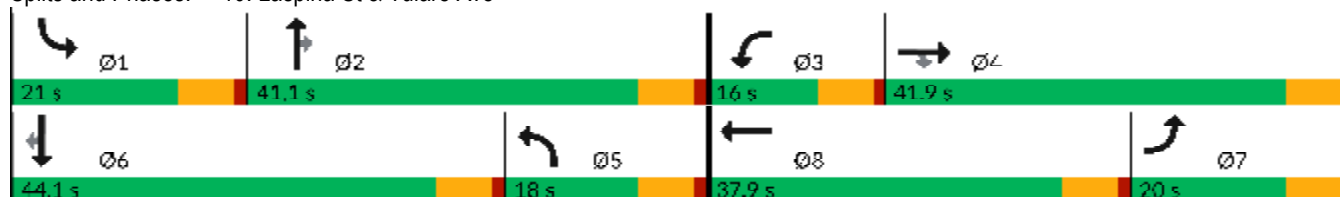
Intersection LOS: C

Intersection Capacity Utilization 55.8%

ICU Level of Service B

Analysis Period (min) 15


























Splits and Phases: 10: Laspina St & Tulare Ave



# HCM 7th Signalized Intersection Summary

























## 10: Laspina St & Tulare Ave

AM 2029  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 							
Traffic Volume (veh/h)	54	412	72	45	625	43	123	218	61	57	184	68
Future Volume (veh/h)	54	412	72	45	625	43	123	218	61	57	184	68
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	59	448	78	49	679	47	134	237	66	62	200	74
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	126	1082	431	117	1005	70	221	511	391	131	407	311
Arrive On Green	0.08	0.30	0.30	0.07	0.30	0.26	0.13	0.27	0.27	0.08	0.22	0.22
Sat Flow, veh/h	1641	3554	1415	1641	3364	233	1641	1870	1432	1641	1870	1430
Grp Volume(v), veh/h	59	448	78	49	358	368	134	237	66	62	200	74
Grp Sat Flow(s),veh/h/ln	1641	1777	1415	1641	1777	1819	1641	1870	1432	1641	1870	1430
Q Serve(g_s), s	2.0	5.9	1.2	1.7	10.4	10.5	4.5	6.2	2.1	2.1	5.5	2.5
Cycle Q Clear(g_c), s	2.0	5.9	1.2	1.7	10.4	10.5	4.5	6.2	2.1	2.1	5.5	2.5
Prop In Lane	1.00		1.00	1.00		0.13	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	126	1082	431	117	531	544	221	511	391	131	407	311
V/C Ratio(X)	0.47	0.41	0.18	0.42	0.67	0.68	0.61	0.46	0.17	0.48	0.49	0.24
Avail Cap(c_a), veh/h	445	2284	910	334	1022	1046	390	1177	901	473	1272	972
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.0	16.3	4.0	26.2	18.2	18.3	24.0	17.8	16.3	26.0	20.2	19.0
Incr Delay (d2), s/veh	2.7	0.3	0.2	2.4	1.5	1.5	2.7	0.7	0.2	2.7	0.9	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	1.9	0.6	0.6	3.6	3.7	1.6	2.2	0.6	0.8	2.1	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.7	16.6	4.2	28.6	19.7	19.8	26.7	18.5	16.5	28.6	21.1	19.4
LnGrp LOS	C	B	A	C	B	B	C	B	B	C	C	B
Approach Vol, veh/h	585			775			437			336		
Approach Delay, s/veh	16.1			20.3			20.7			22.1		
Approach LOS	B			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.7	20.1	8.2	22.0	12.0	16.8	8.5	21.6				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	35.1	10.0	35.9	12.0	38.1	14.0	31.9				
Max Q Clear Time (g_c+I1), s	4.1	8.2	3.7	7.9	6.5	7.5	4.0	12.5				
Green Ext Time (p_c), s	0.1	1.0	0.0	2.2	0.2	0.9	0.1	2.5				
Intersection Summary												
HCM 7th Control Delay, s/veh	19.5											
HCM 7th LOS	B											













Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

AM 2029  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	210	352	88	77	443	216	147	602	67	147	331	158
Future Volume (vph)	210	352	88	77	443	216	147	602	67	147	331	158
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	420		185	125		125	80		0	475		475
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98		1.00				0.98
Frt			0.850			0.850		0.985				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3539	1458	1630	3475	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1412	1630	3539	1430	1630	3475	0	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			230			9			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2671			2887			1662			2673	
Travel Time (s)		33.1			35.8			20.6			33.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	228	383	96	84	482	235	160	654	73	160	360	172
Shared Lane Traffic (%)												
Lane Group Flow (vph)	228	383	96	84	482	235	160	727	0	160	360	172
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

AM 2029  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	37.0	37.0	10.0	37.0	37.0	10.0	39.9		10.0	42.7	42.7
Total Split (s)	20.0	40.0	40.0	17.0	37.0	37.0	19.0	32.0		31.0	44.0	44.0
Total Split (%)	16.7%	33.3%	33.3%	14.2%	30.8%	30.8%	15.8%	26.7%		25.8%	36.7%	36.7%
Maximum Green (s)	14.0	34.0	34.0	11.0	31.0	31.0	13.0	26.0		25.0	38.0	38.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Don't Walk (s)		24.0	24.0		24.0	24.0		26.9			29.7	29.7
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effect Green (s)	16.4	25.1	25.1	16.4	22.0	22.0	18.1	27.3		17.4	26.6	26.6
Actuated g/C Ratio	0.16	0.25	0.25	0.16	0.22	0.22	0.18	0.27		0.17	0.27	0.27
v/c Ratio	0.85	0.43	0.19	0.31	0.62	0.48	0.54	0.76		0.56	0.72	0.33
Control Delay (s/veh)	71.4	36.5	0.9	44.0	39.6	8.5	47.6	39.5		47.6	42.9	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	71.4	36.5	0.9	44.0	39.6	8.5	47.6	39.5		47.6	42.9	5.1
LOS	E	D	A	D	D	A	D	D		D	D	A
Approach Delay (s/veh)		42.9			30.9			41.0			34.6	
Approach LOS		D			C			D			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 99.5

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay (s/veh): 37.4

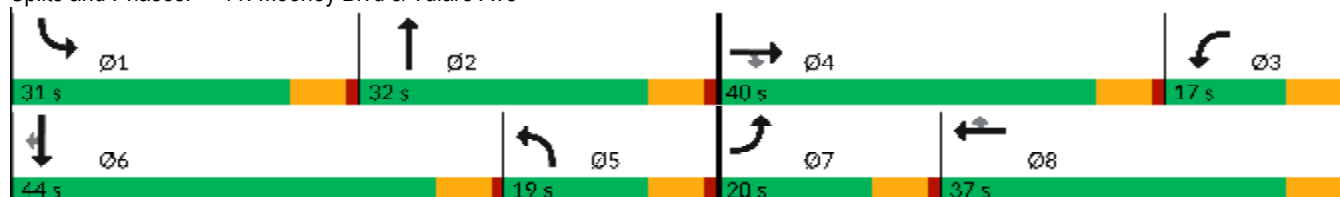
Intersection LOS: D

Intersection Capacity Utilization 69.4%

ICU Level of Service C

Analysis Period (min) 15





























Splits and Phases: 11: Mooney Blvd & Tulare Ave



# HCM 7th Signalized Intersection Summary

















## 11: Mooney Blvd & Tulare Ave

AM 2029  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (veh/h)	210	352	88	77	443	216	147	602	67	147	331	158
Future Volume (veh/h)	210	352	88	77	443	216	147	602	67	147	331	158
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	228	383	96	84	482	235	160	654	73	160	360	172
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	291	670	265	378	858	346	225	840	94	230	494	379
Arrive On Green	0.18	0.19	0.19	0.23	0.24	0.24	0.14	0.26	0.24	0.14	0.26	0.26
Sat Flow, veh/h	1641	3554	1406	1641	3554	1431	1641	3210	358	1641	1870	1432
Grp Volume(v), veh/h	228	383	96	84	482	235	160	362	365	160	360	172
Grp Sat Flow(s),veh/h/ln	1641	1777	1406	1641	1777	1431	1641	1777	1791	1641	1870	1432
Q Serve(g_s), s	11.8	8.7	5.3	3.7	10.6	13.3	8.3	16.8	16.9	8.3	15.6	5.2
Cycle Q Clear(g_c), s	11.8	8.7	5.3	3.7	10.6	13.3	8.3	16.8	16.9	8.3	15.6	5.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	291	670	265	378	858	346	225	465	468	230	494	379
V/C Ratio(X)	0.78	0.57	0.36	0.22	0.56	0.68	0.71	0.78	0.78	0.70	0.73	0.45
Avail Cap(c_a), veh/h	295	1436	568	378	1316	530	276	558	563	497	840	643
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.0	32.9	31.5	27.8	29.6	30.7	36.7	30.5	30.7	36.5	29.9	9.1
Incr Delay (d2), s/veh	12.8	0.8	0.8	0.3	0.6	2.4	6.4	5.7	5.8	3.8	2.1	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	3.5	1.7	1.4	4.2	4.4	3.5	7.2	7.4	3.3	6.6	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	47.8	33.6	32.3	28.1	30.2	33.0	43.1	36.2	36.5	40.3	31.9	9.9
LnGrp LOS	D	C	C	C	C	C	D	D	D	D	C	A
Approach Vol, veh/h	707		801				887		692			
Approach Delay, s/veh	38.0		30.8				37.6		28.4			
Approach LOS	D		C				D		C			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.5	27.3	24.5	20.8	16.2	27.6	19.8	25.5				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	25.0	26.0	11.0	34.0	13.0	38.0	14.0	31.0				
Max Q Clear Time (g_c+I1), s	10.3	18.9	5.7	10.7	10.3	17.6	13.8	15.3				
Green Ext Time (p_c), s	0.4	1.7	0.1	1.9	0.1	1.9	0.0	2.7				
Intersection Summary												
HCM 7th Control Delay, s/veh	33.9											
HCM 7th LOS	C											
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
12: Morrison St & Tulare Ave

AM 2029  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	476	64	29	531	0	87	48	91	0	17	10
Future Volume (vph)	21	476	64	29	531	0	87	48	91	0	17	10
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985						0.946			0.949	
Flt Protected		0.998			0.997			0.981				
Satd. Flow (prot)	0	1831	0	0	1857	0	0	1729	0	0	1768	0
Flt Permitted		0.998			0.997			0.981				
Satd. Flow (perm)	0	1831	0	0	1857	0	0	1729	0	0	1768	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	517	70	32	577	0	95	52	99	0	18	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	610	0	0	609	0	0	246	0	0	29	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	
Intersection Summary												
Area Type:	Other											
Control Type:	Roundabout											
Intersection Capacity Utilization	65.7%						ICU Level of Service C					
Analysis Period (min)	15											

























Intersection				
Intersection Delay, s/veh	8.5			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	610	609	246	29
Demand Flow Rate, veh/h	621	622	251	29
Vehicles Circulating, veh/h	51	173	550	719
Vehicles Exiting, veh/h	697	628	122	76
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	7.7	9.5	8.4	6.0
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	621	622	251	29
Cap Entry Lane, veh/h	1310	1157	787	663
Entry HV Adj Factor	0.982	0.980	0.980	0.988
Flow Entry, veh/h	610	609	246	29
Cap Entry, veh/h	1286	1133	772	655
V/C Ratio	0.474	0.538	0.319	0.044
Control Delay, s/veh	7.7	9.5	8.4	6.0
LOS	A	A	A	A
95th %tile Queue, veh	3	3	1	0















Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

AM 2029+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	176	135	23	119	2	155	763	25	9	455	78
Future Volume (vph)	137	176	135	23	119	2	155	763	25	9	455	78
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.998			0.995			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1858	0	1630	3518	0	1630	3446	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1858	0	1630	3518	0	1630	3446	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			173		1			3			18	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	149	191	147	25	129	2	168	829	27	10	495	85
Shared Lane Traffic (%)												
Lane Group Flow (vph)	149	191	147	25	131	0	168	856	0	10	580	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

AM 2029+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	20.0	48.7	48.7	10.3	39.0		14.0	51.5		9.5	47.0	
Total Split (%)	16.7%	40.6%	40.6%	8.6%	32.5%		11.7%	42.9%		7.9%	39.2%	
Maximum Green (s)	14.5	43.2	43.2	4.8	33.5		8.5	46.0		4.0	41.5	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Don't Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effect Green (s)	13.7	26.5	26.5	9.1	14.6		10.5	34.0		5.8	20.6	
Actuated g/C Ratio	0.18	0.35	0.35	0.12	0.19		0.14	0.45		0.08	0.27	
v/c Ratio	0.51	0.29	0.24	0.13	0.37		0.75	0.55		0.08	0.61	
Control Delay (s/veh)	38.9	23.6	4.1	36.4	30.8		58.0	19.1		43.3	27.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	38.9	23.6	4.1	36.4	30.8		58.0	19.1		43.3	27.2	
LOS	D	C	A	D	C		E	B		D	C	
Approach Delay (s/veh)		22.4			31.7			25.5			27.5	
Approach LOS		C			C			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 76.2

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay (s/veh): 25.8

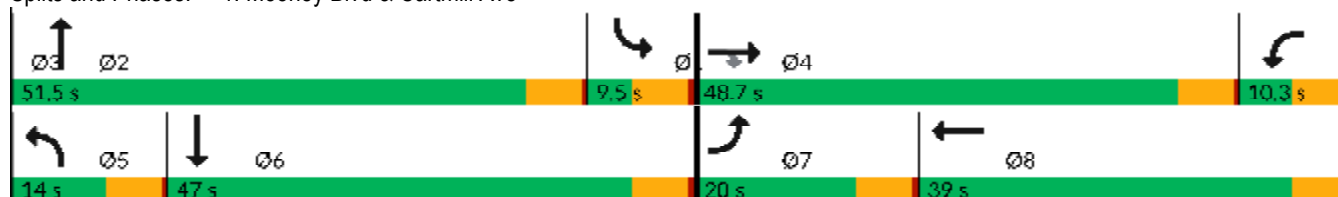
Intersection LOS: C

Intersection Capacity Utilization 57.4%

ICU Level of Service B

Analysis Period (min) 15























Splits and Phases: 1: Mooney Blvd & Cartmill Ave



# HCM 7th Signalized Intersection Summary

## 1: Mooney Blvd & Cartmill Ave

AM 2029+Project  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	137	176	135	23	119	2	155	763	25	9	455	78
Future Volume (veh/h)	137	176	135	23	119	2	155	763	25	9	455	78
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	149	191	147	25	129	2	168	829	27	10	495	85
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	228	383	293	162	301	5	245	1206	39	126	817	140
Arrive On Green	0.14	0.20	0.20	0.10	0.16	0.14	0.15	0.34	0.32	0.08	0.27	0.24
Sat Flow, veh/h	1641	1870	1429	1641	1836	28	1641	3508	114	1641	3018	515
Grp Volume(v), veh/h	149	191	147	25	0	131	168	420	436	10	290	290
Grp Sat Flow(s),veh/h/ln	1641	1870	1429	1641	0	1864	1641	1777	1846	1641	1777	1757
Q Serve(g_s), s	5.0	5.2	3.0	0.8	0.0	3.7	5.6	11.8	11.8	0.3	8.2	8.4
Cycle Q Clear(g_c), s	5.0	5.2	3.0	0.8	0.0	3.7	5.6	11.8	11.8	0.3	8.2	8.4
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.06	1.00		0.29
Lane Grp Cap(c), veh/h	228	383	293	162	0	306	245	611	634	126	481	476
V/C Ratio(X)	0.65	0.50	0.50	0.15	0.00	0.43	0.69	0.69	0.69	0.08	0.60	0.61
Avail Cap(c_a), veh/h	453	1444	1103	179	0	1127	283	1458	1514	156	1320	1305
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.6	20.4	6.7	23.9	0.0	21.8	23.3	16.3	16.4	24.8	18.4	18.6
Incr Delay (d2), s/veh	3.1	1.0	1.3	0.4	0.0	0.9	5.6	1.4	1.3	0.3	1.2	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	2.0	1.5	0.3	0.0	1.4	2.2	3.9	4.0	0.1	2.8	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	26.7	21.4	8.0	24.3	0.0	22.7	28.9	17.7	17.7	25.1	19.6	19.9
LnGrp LOS	C	C	A	C		C	C	B	B	C	B	B
Approach Vol, veh/h	487			156			1024			590		
Approach Delay, s/veh	19.0			23.0			19.6			19.9		
Approach LOS	B			C			B			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.4	23.9	9.7	15.9	12.6	19.7	12.1	13.5				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	4.0	46.0	4.8	43.2	8.5	41.5	14.5	33.5				
Max Q Clear Time (g_c+I1), s	2.3	13.8	2.8	7.2	7.6	10.4	7.0	5.7				
Green Ext Time (p_c), s	0.0	3.3	0.0	1.2	0.0	2.1	0.2	0.4				
Intersection Summary												
HCM 7th Control Delay, s/veh	19.7											
HCM 7th LOS	B											

# Lanes, Volumes, Timings

## 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

AM 2029+Project

09/12/2024

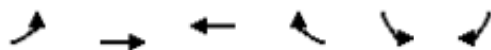


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (vph)	0	354	353	0	100	118
Future Volume (vph)	0	354	353	0	100	118
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Fr <sub>t</sub>						0.850
Fl <sub>t</sub> Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	1630	1458
Fl <sub>t</sub> Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	1630	1458
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						128
Link Speed (mph)		55	55		55	
Link Distance (ft)		349	727		300	
Travel Time (s)		4.3	9.0		3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	385	384	0	109	128
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	385	384	0	109	128
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors		1	1		1	1
Detector Template						
Leading Detector (ft)		50	50		50	50
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		50	50		50	50
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		4.0	4.0		4.0	4.0
Minimum Split (s)		24.0	24.0		24.0	24.0
Total Split (s)		53.0	53.0		47.0	47.0
Total Split (%)		53.0%	53.0%		47.0%	47.0%
Maximum Green (s)		47.0	47.0		41.0	41.0
Yellow Time (s)		5.0	5.0		5.0	5.0

# Lanes, Volumes, Timings

## 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

AM 2029+Project  
09/12/2024



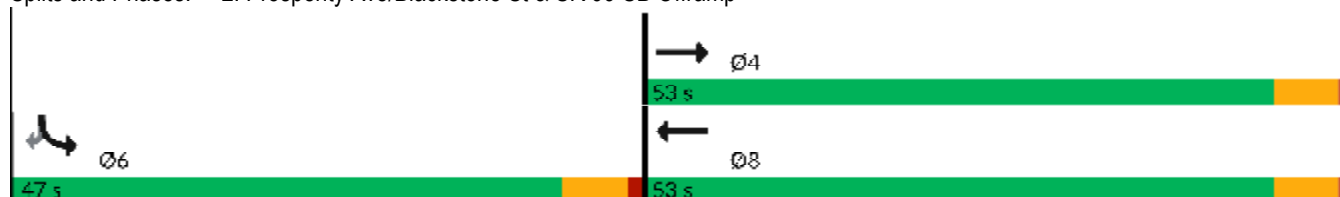
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		None	None		Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effect Green (s)		10.5	10.5		9.5	9.5
Actuated g/C Ratio		0.38	0.38		0.34	0.34
v/c Ratio		0.29	0.29		0.20	0.22
Control Delay (s/veh)		7.0	7.0		7.9	3.0
Queue Delay		0.0	0.0		0.0	0.0
Total Delay (s/veh)		7.0	7.0		7.9	3.0
LOS		A	A		A	A
Approach Delay (s/veh)		7.0	7.0		5.2	
Approach LOS		A	A		A	

### Intersection Summary

Area Type: Other  
Cycle Length: 100  
Actuated Cycle Length: 28  
Natural Cycle: 50  
Control Type: Actuated-Uncoordinated  
Maximum v/c Ratio: 0.29  
Intersection Signal Delay (s/veh): 6.6  
Intersection Capacity Utilization 24.4%  
Analysis Period (min) 15

Intersection LOS: A  
ICU Level of Service A

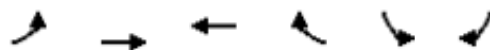
Splits and Phases: 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp



# HCM 7th Signalized Intersection Summary

## 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

AM 2029+Project  
09/12/2024

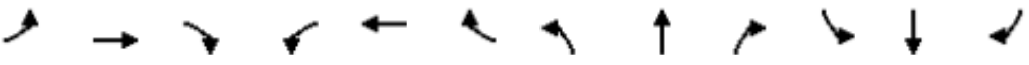


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (veh/h)	0	354	353	0	100	118
Future Volume (veh/h)	0	354	353	0	100	118
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1723	1723
Adj Flow Rate, veh/h	0	385	384	0	109	128
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	1197	1197	0	481	428
Arrive On Green	0.00	0.34	0.34	0.00	0.29	0.29
Sat Flow, veh/h	0	3741	3741	0	1641	1460
Grp Volume(v), veh/h	0	385	384	0	109	128
Grp Sat Flow(s),veh/h/ln	0	1777	1777	0	1641	1460
Q Serve(g_s), s	0.0	1.7	1.7	0.0	1.1	1.5
Cycle Q Clear(g_c), s	0.0	1.7	1.7	0.0	1.1	1.5
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1197	1197	0	481	428
V/C Ratio(X)	0.00	0.32	0.32	0.00	0.23	0.30
Avail Cap(c_a), veh/h	0	8052	8052	0	3262	2903
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	5.3	5.3	0.0	5.8	5.9
Incr Delay (d2), s/veh	0.0	0.2	0.2	0.0	0.2	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	0.0	5.5	5.5	0.0	6.0	6.3
LnGrp LOS		A	A		A	A
Approach Vol, veh/h		385	384		237	
Approach Delay, s/veh		5.5	5.5		6.2	
Approach LOS		A	A		A	
Timer - Assigned Phs				4	6	8
Phs Duration (G+Y+Rc), s				11.3	10.3	11.3
Change Period (Y+Rc), s				6.0	6.0	6.0
Max Green Setting (Gmax), s				47.0	41.0	47.0
Max Q Clear Time (g_c+I1), s				3.7	3.5	3.7
Green Ext Time (p_c), s				1.6	0.9	1.6
<b>Intersection Summary</b>						
HCM 7th Control Delay, s/veh			5.6			
HCM 7th LOS			A			



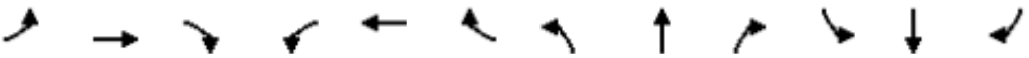
Lanes, Volumes, Timings  
3: Blackstone Ave/Blackstone St & Prosperity Ave

AM 2029+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	8	2	474	10	329	0	33	265	299	107	2
Future Volume (vph)	0	8	2	474	10	329	0	33	265	299	107	2
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	30		0	335		310	55		90	240		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor		1.00				0.98						
Frt		0.973				0.850			0.850		0.997	
Flt Protected				0.950	0.954					0.950		
Satd. Flow (prot)	1716	1805	0	1548	1688	1458	1716	1863	1458	3162	1857	0
Flt Permitted				0.950	0.727					0.950		
Satd. Flow (perm)	1716	1805	0	1548	1287	1427	1716	1863	1458	3162	1857	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				358			288		1	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		98			1229			643			727	
Travel Time (s)		1.2			15.2			8.0			9.0	
Confl. Peds. (#/hr)			5			5						
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	9	2	515	11	358	0	36	288	325	116	2
Shared Lane Traffic (%)				49%								
Lane Group Flow (vph)	0	11	0	263	263	358	0	36	288	325	118	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												

Lanes, Volumes, Timings  
3: Blackstone Ave/Blackstone St & Prosperity Ave

AM 2029+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	24.1		10.0	24.1	24.1	10.0	24.0	24.0	10.0	24.0	
Total Split (s)	13.0	27.1		26.9	41.0	41.0	10.0	24.0	24.0	22.0	36.0	
Total Split (%)	13.0%	27.1%		26.9%	41.0%	41.0%	10.0%	24.0%	24.0%	22.0%	36.0%	
Maximum Green (s)	7.0	21.1		20.9	35.0	35.0	4.0	18.0	18.0	16.0	30.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Don't Walk (s)		11.1			11.1	11.1		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		5			5	5		0	0		0	
Act Effect Green (s)		9.8		35.3	35.3	39.1		10.3	10.3	14.7	29.0	
Actuated g/C Ratio		0.13		0.46	0.46	0.51		0.13	0.13	0.19	0.38	
v/c Ratio		0.05		0.37	0.34	0.40		0.14	0.65	0.53	0.17	
Control Delay (s/veh)		27.9		20.0	19.1	2.9		31.6	11.7	32.3	16.3	
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay (s/veh)		27.9		20.0	19.1	2.9		31.6	11.7	32.3	16.3	
LOS		C		C	B	A		C	B	C	B	
Approach Delay (s/veh)		27.9			12.8			13.9			28.0	
Approach LOS		C			B			B			C	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 76.3

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay (s/veh): 17.2

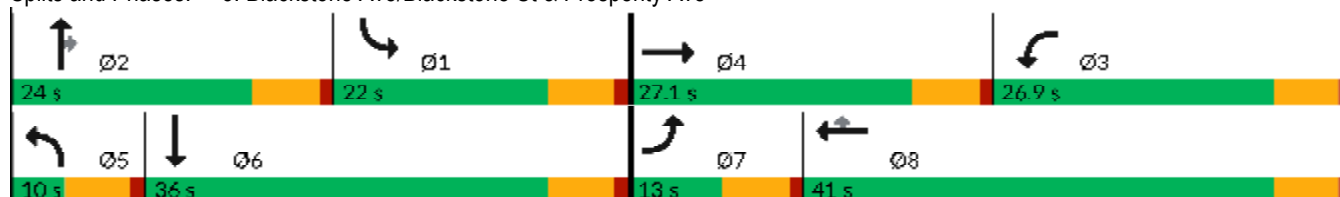
Intersection LOS: B

Intersection Capacity Utilization 43.5%

ICU Level of Service A

Analysis Period (min) 15
























Splits and Phases: 3: Blackstone Ave/Blackstone St & Prosperity Ave



# HCM 7th Signalized Intersection Summary

























## 3: Blackstone Ave/Blackstone St & Prosperity Ave

AM 2029+Project  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	8	2	474	10	329	0	33	265	299	107	2
Future Volume (veh/h)	0	8	2	474	10	329	0	33	265	299	107	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	0	9	2	523	0	358	0	36	288	325	116	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	2	161	36	756	0	575	2	470	367	531	878	15
Arrive On Green	0.00	0.11	0.08	0.23	0.00	0.40	0.00	0.25	0.25	0.17	0.48	0.45
Sat Flow, veh/h	1641	1470	327	3281	0	1435	1641	1870	1460	3183	1833	32
Grp Volume(v), veh/h	0	0	11	523	0	358	0	36	288	325	0	118
Grp Sat Flow(s),veh/h/ln	1641	0	1797	1641	0	1435	1641	1870	1460	1591	0	1865
Q Serve(g_s), s	0.0	0.0	0.4	9.7	0.0	5.5	0.0	1.0	12.2	6.3	0.0	2.3
Cycle Q Clear(g_c), s	0.0	0.0	0.4	9.7	0.0	5.5	0.0	1.0	12.2	6.3	0.0	2.3
Prop In Lane	1.00		0.18	1.00		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	2	0	197	756	0	575	2	470	367	531	0	893
V/C Ratio(X)	0.00	0.00	0.06	0.69	0.00	0.62	0.00	0.08	0.78	0.61	0.00	0.13
Avail Cap(c_a), veh/h	223	0	627	1135	0	802	149	565	441	866	0	902
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	26.6	23.3	0.0	3.3	0.0	18.9	23.1	25.6	0.0	9.6
Incr Delay (d2), s/veh	0.0	0.0	0.1	1.1	0.0	1.1	0.0	0.1	7.6	1.1	0.0	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.1	3.3	0.0	2.8	0.0	0.4	4.3	2.1	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	26.7	24.5	0.0	4.4	0.0	19.0	30.7	26.7	0.0	9.7
LnGrp LOS			C	C		A		B	C	C		A
Approach Vol, veh/h	11			881			324			443		
Approach Delay, s/veh	26.7			16.3			29.4			22.2		
Approach LOS	C			B			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	20.6	19.2	11.3	0.0	35.7	0.0	30.5				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	16.0	18.0	20.9	21.1	4.0	30.0	7.0	35.0				
Max Q Clear Time (g_c+I1), s	8.3	14.2	11.7	2.4	0.0	4.3	0.0	7.5				
Green Ext Time (p_c), s	0.8	0.5	1.6	0.0	0.0	0.3	0.0	1.5				
Intersection Summary												
HCM 7th Control Delay, s/veh	20.5											
HCM 7th LOS	C											
Notes												
User approved volume balancing among the lanes for turning movement.												













Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

AM 2029+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	251	297	66	80	469	116	124	264	75	81	31	287
Future Volume (vph)	251	297	66	80	469	116	124	264	75	81	31	287
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	270		0	155		85	155		0	200		205
Storage Lanes	2		1	1		1	1		0	2		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	0.88
Ped Bike Factor			0.97			0.98		1.00				0.97
Fr't			0.850			0.850		0.967				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	1630	5085	1458	1630	3409	0	3162	1863	2567
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1410	1630	5085	1433	1630	3409	0	3162	1863	2489
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			136			28			312
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1229			2636			362			5336	
Travel Time (s)		15.2			32.7			4.5			66.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	273	323	72	87	510	126	135	287	82	88	34	312
Shared Lane Traffic (%)												
Lane Group Flow (vph)	273	323	72	87	510	126	135	369	0	88	34	312
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

AM 2029+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	32.7	32.7	10.0	45.6	45.6	10.0	47.0		10.0	49.9	49.9
Total Split (s)	31.9	43.1	43.1	35.9	47.1	47.1	11.0	31.0		10.0	30.0	30.0
Total Split (%)	26.6%	35.9%	35.9%	29.9%	39.3%	39.3%	9.2%	25.8%		8.3%	25.0%	25.0%
Maximum Green (s)	25.9	37.1	37.1	29.9	41.1	41.1	5.0	25.0		4.0	24.0	24.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Don't Walk (s)		19.7	19.7		32.6	32.6		34.0			36.9	36.9
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effect Green (s)	15.1	24.5	24.5	12.5	18.4	18.4	7.8	20.7		6.7	16.7	16.7
Actuated g/C Ratio	0.20	0.32	0.32	0.16	0.24	0.24	0.10	0.27		0.09	0.22	0.22
v/c Ratio	0.43	0.28	0.13	0.32	0.41	0.28	0.81	0.39		0.32	0.08	0.39
Control Delay (s/veh)	32.9	23.0	0.5	37.9	26.0	6.4	73.0	23.5		44.0	25.4	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	32.9	23.0	0.5	37.9	26.0	6.4	73.0	23.5		44.0	25.4	4.9
LOS	C	C	A	D	C	A	E	C		D	C	A
Approach Delay (s/veh)		24.6			24.0			36.8			14.4	
Approach LOS		C			C			D			B	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 75.8

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay (s/veh): 25.2

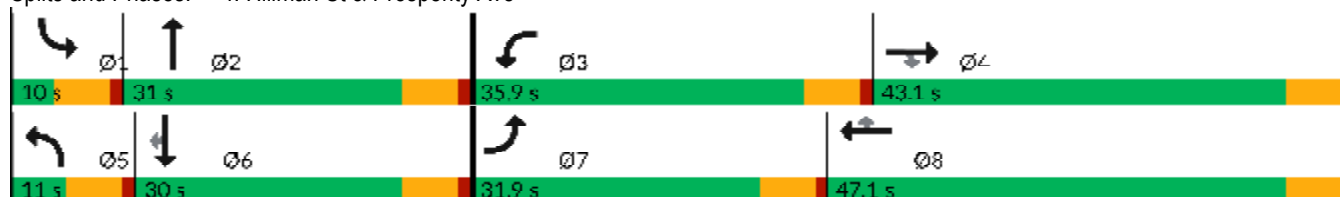
Intersection LOS: C

Intersection Capacity Utilization 50.7%

ICU Level of Service A

Analysis Period (min) 15
























Splits and Phases: 4: Hillman St & Prosperity Ave



# HCM 7th Signalized Intersection Summary




























## 4: Hillman St & Prosperity Ave

AM 2029+Project  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	251	297	66	80	469	116	124	264	75	81	31	287
Future Volume (veh/h)	251	297	66	80	469	116	124	264	75	81	31	287
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	273	323	72	87	510	126	135	287	82	88	34	312
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	511	1059	422	165	1214	340	191	687	192	269	411	546
Arrive On Green	0.16	0.30	0.30	0.10	0.24	0.24	0.12	0.25	0.22	0.08	0.22	0.22
Sat Flow, veh/h	3183	3554	1415	1641	5106	1431	1641	2728	763	3183	1870	2481
Grp Volume(v), veh/h	273	323	72	87	510	126	135	185	184	88	34	312
Grp Sat Flow(s),veh/h/ln	1591	1777	1415	1641	1702	1431	1641	1777	1714	1591	1870	1240
Q Serve(g_s), s	4.7	4.2	2.3	3.0	5.1	4.4	4.8	5.2	5.5	1.6	0.9	6.8
Cycle Q Clear(g_c), s	4.7	4.2	2.3	3.0	5.1	4.4	4.8	5.2	5.5	1.6	0.9	6.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.45	1.00		1.00
Lane Grp Cap(c), veh/h	511	1059	422	165	1214	340	191	447	432	269	411	546
V/C Ratio(X)	0.53	0.31	0.17	0.53	0.42	0.37	0.71	0.41	0.43	0.33	0.08	0.57
Avail Cap(c_a), veh/h	1474	2306	918	869	3653	1023	191	796	768	317	807	1071
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.2	16.3	15.6	25.8	19.4	19.2	25.6	18.8	19.3	26.0	18.7	21.0
Incr Delay (d2), s/veh	0.9	0.2	0.2	2.6	0.2	0.7	11.4	0.6	0.7	0.7	0.1	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	1.4	0.6	1.1	1.7	1.3	2.2	1.8	1.9	0.5	0.3	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	24.1	16.5	15.8	28.4	19.7	19.9	37.1	19.4	20.0	26.7	18.8	21.9
LnGrp LOS	C	B	B	C	B	B	D	B	B	C	B	C
Approach Vol, veh/h	668			723			504			434		
Approach Delay, s/veh	19.5			20.8			24.4			22.6		
Approach LOS	B			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.1	19.2	10.0	22.0	11.0	17.3	13.7	18.3				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	4.0	25.0	29.9	37.1	5.0	24.0	25.9	41.1				
Max Q Clear Time (g_c+I1), s	3.6	7.5	5.0	6.2	6.8	8.8	6.7	7.1				
Green Ext Time (p_c), s	0.0	1.2	0.2	1.6	0.0	1.4	1.0	2.8				
Intersection Summary												
HCM 7th Control Delay, s/veh	21.5											
HCM 7th LOS	C											
Notes												
User approved pedestrian interval to be less than phase max green.												













Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

AM 2029+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  							
Traffic Volume (vph)	35	279	69	42	399	49	119	175	67	54	164	96
Future Volume (vph)	35	279	69	42	399	49	119	175	67	54	164	96
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	235		115	230		100	100		100	160		100
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96			0.97			0.97			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	5085	1458	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1405	1630	5085	1410	1630	1863	1415	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			191			191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2636			2650			5387			713	
Travel Time (s)		32.7			32.9			66.8			8.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	303	75	46	434	53	129	190	73	59	178	104
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	303	75	46	434	53	129	190	73	59	178	104
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

AM 2029+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	27.0	27.0	10.0	34.1	34.1	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (s)	16.0	38.4	38.4	13.0	35.4	35.4	23.0	47.6	47.6	21.0	45.6	45.6
Total Split (%)	13.3%	32.0%	32.0%	10.8%	29.5%	29.5%	19.2%	39.7%	39.7%	17.5%	38.0%	38.0%
Maximum Green (s)	10.0	32.4	32.4	7.0	29.4	29.4	17.0	41.6	41.6	15.0	39.6	39.6
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		14.0	14.0		21.1	21.1		32.6	32.6		32.6	32.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effect Green (s)	11.0	16.2	16.2	11.8	16.9	16.9	14.8	22.9	22.9	13.4	18.5	18.5
Actuated g/C Ratio	0.17	0.24	0.24	0.18	0.26	0.26	0.22	0.35	0.35	0.20	0.28	0.28
v/c Ratio	0.14	0.35	0.15	0.16	0.33	0.11	0.35	0.30	0.12	0.18	0.34	0.19
Control Delay (s/veh)	37.4	28.4	0.7	34.6	25.3	0.4	34.2	23.3	0.4	32.7	25.5	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	37.4	28.4	0.7	34.6	25.3	0.4	34.2	23.3	0.4	32.7	25.5	0.8
LOS	D	C	A	C	C	A	C	C	A	C	C	A
Approach Delay (s/veh)		24.2			23.6			22.6			19.2	
Approach LOS		C			C			C			B	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 66.2

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.35

Intersection Signal Delay (s/veh): 22.6

Intersection LOS: C

Intersection Capacity Utilization 46.3%

ICU Level of Service A

Analysis Period (min) 15




























Splits and Phases: 5: Laspina St & Prosperity Ave




























# HCM 7th Signalized Intersection Summary 5: Laspina St & Prosperity Ave

AM 2029+Project  
09/12/2024

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 			  								
Traffic Volume (veh/h)	35	279	69	42	399	49	119	175	67	54	164	96	
Future Volume (veh/h)	35	279	69	42	399	49	119	175	67	54	164	96	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		0.97	1.00		0.98	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach	No			No			No			No			
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723	
Adj Flow Rate, veh/h	38	303	75	46	434	53	129	190	73	59	178	104	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2	
Cap, veh/h	122	734	291	152	1148	317	230	436	329	224	429	328	
Arrive On Green	0.07	0.21	0.21	0.09	0.22	0.22	0.14	0.23	0.23	0.14	0.23	0.23	
Sat Flow, veh/h	1641	3554	1408	1641	5106	1410	1641	1870	1411	1641	1870	1430	
Grp Volume(v), veh/h	38	303	75	46	434	53	129	190	73	59	178	104	
Grp Sat Flow(s),veh/h/ln	1641	1777	1408	1641	1702	1410	1641	1870	1411	1641	1870	1430	
Q Serve(g_s), s	1.1	3.6	1.1	1.3	3.5	0.7	3.5	4.2	2.0	1.6	3.9	2.9	
Cycle Q Clear(g_c), s	1.1	3.6	1.1	1.3	3.5	0.7	3.5	4.2	2.0	1.6	3.9	2.9	
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Lane Grp Cap(c), veh/h	122	734	291	152	1148	317	230	436	329	224	429	328	
V/C Ratio(X)	0.31	0.41	0.26	0.30	0.38	0.17	0.56	0.44	0.22	0.26	0.42	0.32	
Avail Cap(c_a), veh/h	407	2530	1003	306	3318	916	645	1688	1273	577	1610	1231	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	21.2	16.6	4.2	20.5	15.9	3.8	19.4	15.8	15.0	18.7	15.9	15.5	
Incr Delay (d2), s/veh	1.4	0.4	0.5	1.1	0.2	0.2	2.1	0.7	0.3	0.6	0.6	0.5	
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	0.4	1.1	0.5	0.4	1.0	0.4	1.2	1.4	0.5	0.5	1.3	0.8	
Unsig. Movement Delay, s/veh													
LnGrp Delay(d), s/veh	22.6	17.0	4.6	21.6	16.1	4.1	21.5	16.5	15.3	19.3	16.5	16.0	
LnGrp LOS	C	B	A	C	B	A	C	B	B	B	B	B	
Approach Vol, veh/h	416				533				392				341
Approach Delay, s/veh	15.3				15.4				17.9				16.8
Approach LOS	B				B				B				B
Timer - Assigned Phs	1	2	3	4	5	6	7	8					
Phs Duration (G+Y+Rc), s	10.6	15.3	8.5	14.0	10.8	15.1	7.6	14.9					
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0					
Max Green Setting (Gmax), s	15.0	41.6	7.0	32.4	17.0	39.6	10.0	29.4					
Max Q Clear Time (g_c+I1), s	3.6	6.2	3.3	5.6	5.5	5.9	3.1	5.5					
Green Ext Time (p_c), s	0.1	0.9	0.0	1.5	0.3	1.0	0.0	2.0					
Intersection Summary													
HCM 7th Control Delay, s/veh			16.2										
HCM 7th LOS			B										


Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

AM 2029+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	157	216	171	110	220	77	223	717	64	35	444	104
Future Volume (vph)	157	216	171	110	220	77	223	717	64	35	444	104
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98		0.99				0.97			0.98
Frt			0.850		0.961				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1781	0	1630	3539	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1432	1630	1781	0	1630	3539	1409	1630	3539	1426
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191		14				191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2617			5285	
Travel Time (s)		32.9			36.1			32.4			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	171	235	186	120	239	84	242	779	70	38	483	113
Shared Lane Traffic (%)												
Lane Group Flow (vph)	171	235	186	120	323	0	242	779	70	38	483	113
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

AM 2029+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	24.0	39.7	39.7	17.0	32.7		23.0	46.3	46.3	17.0	40.3	40.3
Total Split (%)	20.0%	33.1%	33.1%	14.2%	27.3%		19.2%	38.6%	38.6%	14.2%	33.6%	33.6%
Maximum Green (s)	18.0	33.7	33.7	11.0	26.7		17.0	40.3	40.3	11.0	34.3	34.3
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Don't Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effect Green (s)	17.5	23.5	23.5	19.8	25.7		19.1	49.9	49.9	10.9	36.5	36.5
Actuated g/C Ratio	0.15	0.20	0.20	0.17	0.22		0.17	0.43	0.43	0.09	0.32	0.32
v/c Ratio	0.69	0.62	0.42	0.43	0.79		0.90	0.51	0.10	0.25	0.43	0.19
Control Delay (s/veh)	62.0	48.3	7.4	50.2	54.9		82.2	28.3	0.3	53.7	33.6	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	62.0	48.3	7.4	50.2	54.9		82.2	28.3	0.3	53.7	33.6	0.7
LOS	E	D	A	D	D		F	C	A	D	C	A
Approach Delay (s/veh)		39.4			53.7			38.5			28.9	
Approach LOS		D			D			D			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 114.9

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay (s/veh): 38.9

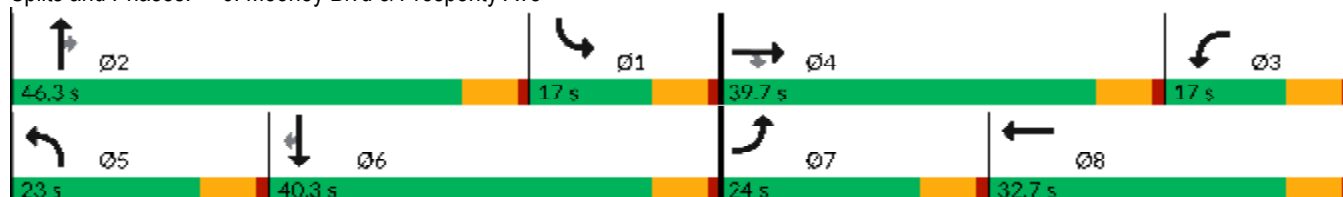
Intersection LOS: D

Intersection Capacity Utilization 69.8%

ICU Level of Service C

Analysis Period (min) 15
























Splits and Phases: 6: Mooney Blvd & Prosperity Ave



# HCM 7th Signalized Intersection Summary




## 6: Mooney Blvd & Prosperity Ave




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09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	157	216	171	110	220	77	223	717	64	35	444	104
Future Volume (veh/h)	157	216	171	110	220	77	223	717	64	35	444	104
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	171	235	186	120	239	84	242	779	70	38	483	113
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	226	352	269	279	290	102	280	1352	540	192	1161	468
Arrive On Green	0.14	0.19	0.19	0.17	0.22	0.20	0.17	0.38	0.38	0.12	0.33	0.33
Sat Flow, veh/h	1641	1870	1428	1641	1314	462	1641	3554	1418	1641	3554	1434
Grp Volume(v), veh/h	171	235	186	120	0	323	242	779	70	38	483	113
Grp Sat Flow(s),veh/h/ln	1641	1870	1428	1641	0	1775	1641	1777	1418	1641	1777	1434
Q Serve(g_s), s	11.2	13.0	8.9	7.3	0.0	19.3	15.9	19.3	3.6	2.3	11.8	6.4
Cycle Q Clear(g_c), s	11.2	13.0	8.9	7.3	0.0	19.3	15.9	19.3	3.6	2.3	11.8	6.4
Prop In Lane	1.00		1.00	1.00		0.26	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	226	352	269	279	0	392	280	1352	540	192	1161	468
V/C Ratio(X)	0.76	0.67	0.69	0.43	0.00	0.82	0.86	0.58	0.13	0.20	0.42	0.24
Avail Cap(c_a), veh/h	295	601	459	279	0	458	280	1352	540	192	1161	468
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.1	41.9	18.1	41.3	0.0	41.5	44.8	27.3	22.4	44.4	29.2	27.4
Incr Delay (d2), s/veh	7.9	2.2	3.2	1.0	0.0	10.2	23.1	1.8	0.5	0.5	1.1	1.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	5.9	4.5	2.9	0.0	9.1	7.9	7.9	1.2	0.9	4.9	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	54.0	44.1	21.3	42.3	0.0	51.7	67.9	29.1	22.9	44.9	30.3	28.6
LnGrp LOS	D	D	C	D		D	E	C	C	D	C	C
Approach Vol, veh/h	592			443			1091			634		
Approach Delay, s/veh	39.8			49.2			37.3			30.8		
Approach LOS	D			D			D			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	46.3	22.9	24.9	23.0	40.3	19.3	28.6				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	11.0	40.3	11.0	33.7	17.0	34.3	18.0	26.7				
Max Q Clear Time (g_c+I1), s	4.3	21.3	9.3	15.0	17.9	13.8	13.2	21.3				
Green Ext Time (p_c), s	0.0	3.5	0.0	1.4	0.0	2.4	0.2	0.6				
Intersection Summary												
HCM 7th Control Delay, s/veh	38.3											
HCM 7th LOS	D											
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
7: Morrison St & Prosperity Ave
















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09/12/2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	262	43	27	263	137	47
Future Volume (vph)	262	43	27	263	137	47
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.981				0.966	
Flt Protected				0.995	0.964	
Satd. Flow (prot)	1827	0	0	1853	1598	0
Flt Permitted				0.995	0.964	
Satd. Flow (perm)	1827	0	0	1853	1598	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	285	47	29	286	149	51
Shared Lane Traffic (%)						
Lane Group Flow (vph)	332	0	0	315	200	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	53.1%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	4.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	262	43	27	263	137	47
Future Vol, veh/h	262	43	27	263	137	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	285	47	29	286	149	51
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	332	0	653	308
Stage 1	-	-	-	-	308	-
Stage 2	-	-	-	-	345	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1228	-	432	732
Stage 1	-	-	-	-	745	-
Stage 2	-	-	-	-	717	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1228	-	420	732
Mov Cap-2 Maneuver	-	-	-	-	420	-
Stage 1	-	-	-	-	745	-
Stage 2	-	-	-	-	697	-
Approach	EB	WB		NB		
HCM Control Delay, s/v	0	0.75		18.16		
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	471	-	-	168	-	
HCM Lane V/C Ratio	0.424	-	-	0.024	-	
HCM Control Delay (s/veh)	18.2	-	-	8	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	2.1	-	-	0.1	-	

Lanes, Volumes, Timings  
8: Prosperity Ave & Oakmore Rd

AM 2029+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	190	0	1	181	33	0	0	0	19	0	103
Future Volume (vph)	113	190	0	1	181	33	0	0	0	19	0	103
Ideal Flow (vphpl)	1750	1900	1900	1900	1900	1750	1900	1900	1900	1750	1900	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.979					0.865						
Flt Protected	0.982					0.950						
Satd. Flow (prot)	0	1829	0	0	1824	0	0	0	0	1630	0	0
Flt Permitted	0.982					0.950						
Satd. Flow (perm)	0	1829	0	0	1824	0	0	0	0	1630	0	0
Link Speed (mph)	55					55						
Link Distance (ft)	2108					329						
Travel Time (s)	26.1					4.1						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	123	207	0	1	197	36	0	0	0	21	0	112
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	330	0	0	234	0	0	0	0	21	112	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)	0					12						
Link Offset(ft)	0					0						
Crosswalk Width(ft)	16					16						
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.00	1.00	1.00	1.11	1.00	1.00	1.00	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control	Free					Stop						
Intersection Summary												
Area Type:	Other											
Control Type: Unsignalized												
Intersection Capacity Utilization Err%					ICU Level of Service H							
Analysis Period (min) 15												

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			2					1		
Traffic Vol, veh/h	113	190	0	1	181	33	0	0	0	19	0	103
Future Vol, veh/h	113	190	0	1	181	33	0	0	0	19	0	103
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	123	207	0	1	197	36	0	0	0	21	0	112

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	233	0	-	207	0	0	669	-	215
Stage 1	-	-	-	-	-	-	217	-	-
Stage 2	-	-	-	-	-	-	452	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	6.42	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	-	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	-	3.318
Pot Cap-1 Maneuver	1335	-	0	1365	-	-	423	0	825
Stage 1	-	-	0	-	-	-	819	0	-
Stage 2	-	-	0	-	-	-	641	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1335	-	-	1365	-	-	378	0	825
Mov Cap-2 Maneuver	-	-	-	-	-	-	378	0	-
Stage 1	-	-	-	-	-	-	734	0	-
Stage 2	-	-	-	-	-	-	640	0	-







Approach	EB	WB	SB
HCM Control Delay, s/v	2.97	0.04	11.37
HCM LOS			B






Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	671	-	1365	-	-	697
HCM Lane V/C Ratio	0.092	-	0.001	-	-	0.19
HCM Control Delay (s/veh)	8	0	7.6	-	-	11.4
HCM Lane LOS	A	A	A	-	-	B
HCM 95th %tile Q(veh)	0.3	-	0	-	-	0.7



Lanes, Volumes, Timings  
9: Mooney Blvd & Seminole Ave
























AM 2029+Project  
09/12/2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	237	902	19	56	653
Future Volume (vph)	1	237	902	19	56	653
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	540	0		0	80	
Storage Lanes	0	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.865		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	0	1484	3539	1458	1630	3539
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	0	1484	3539	1458	1630	3539
Link Speed (mph)	55		55			55
Link Distance (ft)	1719		2673			2617
Travel Time (s)	21.3		33.1			32.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	258	980	21	61	710
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1	258	980	21	61	710
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization Err%	ICU Level of Service H					
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	2.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	237	902	19	56	653
Future Vol, veh/h	1	237	902	19	56	653
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	0	80	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	258	980	21	61	710
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1457	490	0	0	1001	0
Stage 1	980	-	-	-	-	-
Stage 2	477	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	120	524	-	-	687	-
Stage 1	324	-	-	-	-	-
Stage 2	591	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	110	524	-	-	687	-
Mov Cap-2 Maneuver	110	-	-	-	-	-
Stage 1	324	-	-	-	-	-
Stage 2	538	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s/v18.34		0		0.85		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	524	687	-	
HCM Lane V/C Ratio	-	-	0.492	0.089	-	
HCM Control Delay (s/veh)	-	-	18.3	10.7	-	
HCM Lane LOS	-	-	C	B	-	
HCM 95th %tile Q(veh)	-	-	2.7	0.3	-	













Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

AM 2029+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	433	72	45	689	43	123	218	61	57	184	68
Future Volume (vph)	54	433	72	45	689	43	123	218	61	57	184	68
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		135	110		0	90		90	80		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97		1.00				0.98			0.98
Frt			0.850		0.991				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3500	0	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1408	1630	3500	0	1630	1863	1431	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191		5				191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		841			2671			726			5387	
Travel Time (s)		10.4			33.1			9.0			66.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	59	471	78	49	749	47	134	237	66	62	200	74
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	471	78	49	796	0	134	237	66	62	200	74
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

AM 2029+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.9	29.9	10.0	28.4		10.0	39.9	39.9	10.0	44.1	44.1
Total Split (s)	20.0	41.9	41.9	16.0	37.9		18.0	41.1	41.1	21.0	44.1	44.1
Total Split (%)	16.7%	34.9%	34.9%	13.3%	31.6%		15.0%	34.3%	34.3%	17.5%	36.8%	36.8%
Maximum Green (s)	14.0	35.9	35.9	10.0	31.9		12.0	35.1	35.1	15.0	38.1	38.1
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Don't Walk (s)		16.9	16.9		15.4			26.9	26.9		31.1	31.1
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effect Green (s)	11.3	30.4	30.4	10.4	26.7		13.7	26.0	26.0	11.4	19.6	19.6
Actuated g/C Ratio	0.13	0.36	0.36	0.12	0.32		0.16	0.31	0.31	0.13	0.23	0.23
v/c Ratio	0.27	0.37	0.12	0.25	0.72		0.51	0.41	0.12	0.28	0.46	0.15
Control Delay (s/veh)	43.4	23.8	0.4	44.7	32.2		47.3	31.5	0.4	43.3	33.9	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	43.4	23.8	0.4	44.7	32.2		47.3	31.5	0.4	43.3	33.9	0.7
LOS	D	C	A	D	C		D	C	A	D	C	A
Approach Delay (s/veh)		22.7			32.9			31.6			28.3	
Approach LOS		C			C			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 84.7

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay (s/veh): 29.2

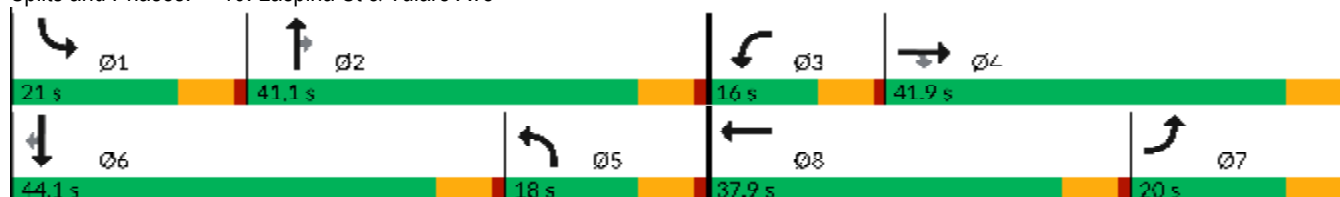
Intersection LOS: C

Intersection Capacity Utilization 57.6%

ICU Level of Service B


























Analysis Period (min) 15

Splits and Phases: 10: Laspina St & Tulare Ave






























# HCM 7th Signalized Intersection Summary 10: Laspina St & Tulare Ave

AM 2029+Project  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 							
Traffic Volume (veh/h)	54	433	72	45	689	43	123	218	61	57	184	68
Future Volume (veh/h)	54	433	72	45	689	43	123	218	61	57	184	68
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	59	471	78	49	749	47	134	237	66	62	200	74
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	125	1138	454	114	1064	67	219	505	386	129	402	307
Arrive On Green	0.08	0.32	0.32	0.07	0.31	0.28	0.13	0.27	0.27	0.08	0.21	0.21
Sat Flow, veh/h	1641	3554	1416	1641	3388	213	1641	1870	1432	1641	1870	1429
Grp Volume(v), veh/h	59	471	78	49	393	403	134	237	66	62	200	74
Grp Sat Flow(s),veh/h/ln	1641	1777	1416	1641	1777	1824	1641	1870	1432	1641	1870	1429
Q Serve(g_s), s	2.1	6.3	1.2	1.8	11.9	11.9	4.7	6.5	2.2	2.2	5.7	2.6
Cycle Q Clear(g_c), s	2.1	6.3	1.2	1.8	11.9	11.9	4.7	6.5	2.2	2.2	5.7	2.6
Prop In Lane	1.00		1.00	1.00		0.12	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	125	1138	454	114	558	573	219	505	386	129	402	307
V/C Ratio(X)	0.47	0.41	0.17	0.43	0.70	0.70	0.61	0.47	0.17	0.48	0.50	0.24
Avail Cap(c_a), veh/h	429	2203	878	322	985	1011	376	1135	869	456	1227	938
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.1	16.3	4.0	27.3	18.5	18.6	25.0	18.7	17.1	27.0	21.1	19.9
Incr Delay (d2), s/veh	2.8	0.2	0.2	2.5	1.6	1.6	2.8	0.7	0.2	2.8	1.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	2.1	0.6	0.7	4.1	4.2	1.7	2.4	0.6	0.8	2.2	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	29.8	16.5	4.1	29.8	20.1	20.2	27.7	19.3	17.3	29.7	22.1	20.3
LnGrp LOS	C	B	A	C	C	C	C	B	B	C	C	C
Approach Vol, veh/h	608			845			437			336		
Approach Delay, s/veh	16.2			20.7			21.6			23.1		
Approach LOS	B			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.8	20.5	8.3	23.6	12.2	17.1	8.6	23.2				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	35.1	10.0	35.9	12.0	38.1	14.0	31.9				
Max Q Clear Time (g_c+I1), s	4.2	8.5	3.8	8.3	6.7	7.7	4.1	13.9				
Green Ext Time (p_c), s	0.1	1.0	0.0	2.3	0.2	0.9	0.1	2.8				
Intersection Summary												
HCM 7th Control Delay, s/veh	20.0											
HCM 7th LOS	C											













Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

AM 2029+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	210	373	88	83	507	220	147	602	69	148	331	158
Future Volume (vph)	210	373	88	83	507	220	147	602	69	148	331	158
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	420		185	125		125	80		0	475		475
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98		1.00				0.98
Fr't			0.850			0.850		0.985				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3539	1458	1630	3475	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1412	1630	3539	1430	1630	3475	0	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			205			9			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2671			2887			1662			2673	
Travel Time (s)		33.1			35.8			20.6			33.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	228	405	96	90	551	239	160	654	75	161	360	172
Shared Lane Traffic (%)												
Lane Group Flow (vph)	228	405	96	90	551	239	160	729	0	161	360	172
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

AM 2029+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	37.0	37.0	10.0	37.0	37.0	10.0	39.9		10.0	42.7	42.7
Total Split (s)	20.0	40.0	40.0	17.0	37.0	37.0	19.0	32.0		31.0	44.0	44.0
Total Split (%)	16.7%	33.3%	33.3%	14.2%	30.8%	30.8%	15.8%	26.7%		25.8%	36.7%	36.7%
Maximum Green (s)	14.0	34.0	34.0	11.0	31.0	31.0	13.0	26.0		25.0	38.0	38.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Don't Walk (s)		24.0	24.0		24.0	24.0		26.9			29.7	29.7
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effect Green (s)	16.4	26.1	26.1	17.2	23.7	23.7	18.1	27.6		17.6	27.1	27.1
Actuated g/C Ratio	0.16	0.26	0.26	0.17	0.23	0.23	0.18	0.27		0.17	0.27	0.27
v/c Ratio	0.87	0.45	0.19	0.33	0.67	0.49	0.55	0.77		0.57	0.73	0.33
Control Delay (s/veh)	75.5	37.1	0.8	44.4	40.6	11.3	49.0	40.9		48.8	43.7	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	75.5	37.1	0.8	44.4	40.6	11.3	49.0	40.9		48.8	43.7	5.0
LOS	E	D	A	D	D	B	D	D		D	D	A
Approach Delay (s/veh)		44.3			33.0			42.4			35.3	
Approach LOS		D			C			D			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 101.6

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay (s/veh): 38.7

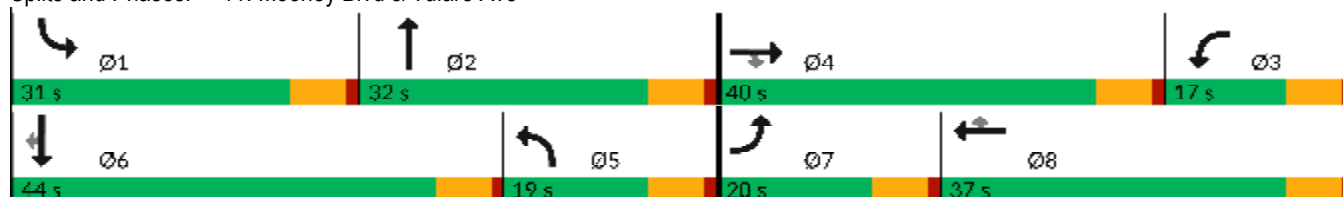
Intersection LOS: D

Intersection Capacity Utilization 71.0%

ICU Level of Service C

Analysis Period (min) 15





























Splits and Phases: 11: Mooney Blvd & Tulare Ave



# HCM 7th Signalized Intersection Summary

## 11: Mooney Blvd & Tulare Ave

















AM 2029+Project  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (veh/h)	210	373	88	83	507	220	147	602	69	148	331	158
Future Volume (veh/h)	210	373	88	83	507	220	147	602	69	148	331	158
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	228	405	96	90	551	239	160	654	75	161	360	172
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	290	688	272	375	872	351	225	833	95	230	493	377
Arrive On Green	0.18	0.19	0.19	0.23	0.25	0.25	0.14	0.26	0.24	0.14	0.26	0.26
Sat Flow, veh/h	1641	3554	1407	1641	3554	1431	1641	3200	366	1641	1870	1432
Grp Volume(v), veh/h	228	405	96	90	551	239	160	363	366	161	360	172
Grp Sat Flow(s),veh/h/ln	1641	1777	1407	1641	1777	1431	1641	1777	1789	1641	1870	1432
Q Serve(g_s), s	12.0	9.4	5.3	4.0	12.5	13.6	8.4	17.1	17.2	8.4	15.8	5.3
Cycle Q Clear(g_c), s	12.0	9.4	5.3	4.0	12.5	13.6	8.4	17.1	17.2	8.4	15.8	5.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	290	688	272	375	872	351	225	462	466	230	493	377
V/C Ratio(X)	0.79	0.59	0.35	0.24	0.63	0.68	0.71	0.78	0.79	0.70	0.73	0.46
Avail Cap(c_a), veh/h	291	1419	562	375	1300	524	273	552	556	491	830	635
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.5	33.1	31.5	28.4	30.4	30.8	37.2	31.0	31.2	37.0	30.3	9.3
Incr Delay (d2), s/veh	13.3	0.8	0.8	0.3	0.8	2.3	6.6	6.2	6.2	3.8	2.1	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	3.8	1.7	1.5	4.9	4.5	3.5	7.4	7.5	3.4	6.7	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	48.7	33.9	32.2	28.7	31.2	33.2	43.8	37.2	37.4	40.8	32.4	10.2
LnGrp LOS	D	C	C	C	C	C	D	D	D	D	C	B
Approach Vol, veh/h	729				880				889		693	
Approach Delay, s/veh	38.3				31.5				38.5		28.8	
Approach LOS	D				C				D		C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.6	27.5	24.6	21.5	16.4	27.8	19.9	26.1				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	25.0	26.0	11.0	34.0	13.0	38.0	14.0	31.0				
Max Q Clear Time (g_c+I1), s	10.4	19.2	6.0	11.4	10.4	17.8	14.0	15.6				
Green Ext Time (p_c), s	0.4	1.7	0.1	2.0	0.1	1.9	0.0	3.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			34.4									
HCM 7th LOS			C									
Notes												
User approved pedestrian interval to be less than phase max green.												



Lanes, Volumes, Timings  
12: Morrison St & Tulare Ave

AM 2029+Project  
09/12/2024























												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	476	64	29	531	2	87	48	91	7	17	84
Future Volume (vph)	46	476	64	29	531	2	87	48	91	7	17	84
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985						0.946			0.895	
Flt Protected		0.996			0.997			0.981			0.997	
Satd. Flow (prot)	0	1827	0	0	1857	0	0	1729	0	0	1662	0
Flt Permitted		0.996			0.997			0.981			0.997	
Satd. Flow (perm)	0	1827	0	0	1857	0	0	1729	0	0	1662	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	50	517	70	32	577	2	95	52	99	8	18	91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	637	0	0	611	0	0	246	0	0	117	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	
Intersection Summary												
Area Type:	Other											
Control Type:	Roundabout											
Intersection Capacity Utilization	71.1%						ICU Level of Service C					
Analysis Period (min)	15											

Intersection				
Intersection Delay, s/veh	8.9			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	637	611	246	117
Demand Flow Rate, veh/h	649	624	251	119
Vehicles Circulating, veh/h	59	201	586	719
Vehicles Exiting, veh/h	779	636	122	106
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	8.1	10.0	8.9	7.6
Approach LOS	A	B	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	649	624	251	119
Cap Entry Lane, veh/h	1299	1124	759	663
Entry HV Adj Factor	0.981	0.980	0.980	0.980
Flow Entry, veh/h	637	611	246	117
Cap Entry, veh/h	1275	1101	744	650
V/C Ratio	0.500	0.555	0.331	0.180
Control Delay, s/veh	8.1	10.0	8.9	7.6
LOS	A	B	A	A
95th %tile Queue, veh	3	4	1	1















Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

AM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	204	262	199	34	177	3	225	1123	37	14	673	116
Future Volume (vph)	204	262	199	34	177	3	225	1123	37	14	673	116
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.998			0.995			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1858	0	1630	3518	0	1630	3446	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1858	0	1630	3518	0	1630	3446	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			216		1			3			18	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	222	285	216	37	192	3	245	1221	40	15	732	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	285	216	37	195	0	245	1261	0	15	858	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

AM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	20.0	48.7	48.7	10.3	39.0		14.0	51.5		9.5	47.0	
Total Split (%)	16.7%	40.6%	40.6%	8.6%	32.5%		11.7%	42.9%		7.9%	39.2%	
Maximum Green (s)	14.5	43.2	43.2	4.8	33.5		8.5	46.0		4.0	41.5	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Don't Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effect Green (s)	16.5	29.9	29.9	9.7	18.1		10.3	42.6		5.7	31.3	
Actuated g/C Ratio	0.18	0.32	0.32	0.10	0.20		0.11	0.46		0.06	0.34	
v/c Ratio	0.77	0.48	0.36	0.22	0.54		1.35	0.78		0.15	0.73	
Control Delay (s/veh)	58.8	32.6	6.2	45.5	40.1		227.2	26.9		52.6	30.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	58.8	32.6	6.2	45.5	40.1		227.2	26.9		52.6	30.6	
LOS	E	C	A	D	D		F	C		D	C	
Approach Delay (s/veh)		32.8			41.0			59.5			30.9	
Approach LOS		C			D			E			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 92.7

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.35

Intersection Signal Delay (s/veh): 44.9

Intersection LOS: D

Intersection Capacity Utilization 74.4%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: Mooney Blvd & Cartmill Ave

























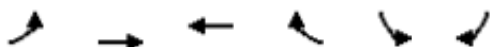
# HCM 7th Signalized Intersection Summary

AM 2044

## 1: Mooney Blvd & Cartmill Ave

09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	204	262	199	34	177	3	225	1123	37	14	673	116
Future Volume (veh/h)	204	262	199	34	177	3	225	1123	37	14	673	116
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	222	285	216	37	192	3	245	1221	40	15	732	126
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	285	428	327	196	321	5	204	1472	48	54	990	170
Arrive On Green	0.17	0.23	0.23	0.12	0.17	0.16	0.12	0.42	0.40	0.03	0.33	0.31
Sat Flow, veh/h	1641	1870	1430	1641	1836	29	1641	3508	115	1641	3016	519
Grp Volume(v), veh/h	222	285	216	37	0	195	245	618	643	15	431	427
Grp Sat Flow(s),veh/h/ln	1641	1870	1430	1641	0	1864	1641	1777	1846	1641	1777	1758
Q Serve(g_s), s	10.4	11.1	7.3	1.6	0.0	7.8	10.0	24.9	25.0	0.7	17.3	17.4
Cycle Q Clear(g_c), s	10.4	11.1	7.3	1.6	0.0	7.8	10.0	24.9	25.0	0.7	17.3	17.4
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.06	1.00		0.30
Lane Grp Cap(c), veh/h	285	428	327	196	0	326	204	746	775	54	583	577
V/C Ratio(X)	0.78	0.67	0.66	0.19	0.00	0.60	1.20	0.83	0.83	0.28	0.74	0.74
Avail Cap(c_a), veh/h	326	1039	795	196	0	811	204	1049	1090	112	950	940
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.8	28.2	12.3	31.9	0.0	30.6	35.2	20.8	20.8	38.0	24.0	24.2
Incr Delay (d2), s/veh	10.1	1.8	2.3	0.5	0.0	1.8	127.8	4.0	3.8	2.8	1.9	1.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	4.7	3.3	0.6	0.0	3.3	10.9	9.3	9.7	0.3	6.6	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.9	30.0	14.6	32.3	0.0	32.3	163.0	24.7	24.7	40.7	25.8	26.1
LnGrp LOS	D	C	B	C		C	F	C	C	D	C	C
Approach Vol, veh/h	723			232			1506			873		
Approach Delay, s/veh	29.0			32.3			47.2			26.2		
Approach LOS	C			C			D			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.6	37.8	13.6	22.4	14.0	30.4	18.0	18.1				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	4.0	46.0	4.8	43.2	8.5	41.5	14.5	33.5				
Max Q Clear Time (g_c+I1), s	2.7	27.0	3.6	13.1	12.0	19.4	12.4	9.8				
Green Ext Time (p_c), s	0.0	5.1	0.0	1.9	0.0	3.3	0.2	0.6				
Intersection Summary												
HCM 7th Control Delay, s/veh	36.7											
HCM 7th LOS	D											

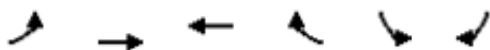


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (vph)	0	521	494	0	145	175
Future Volume (vph)	0	521	494	0	145	175
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Fr <sub>t</sub>						0.850
Fl <sub>t</sub> Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	1630	1458
Fl <sub>t</sub> Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	1630	1458
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						190
Link Speed (mph)		55	55		55	
Link Distance (ft)		349	727		300	
Travel Time (s)		4.3	9.0		3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	566	537	0	158	190
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	566	537	0	158	190
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors		1	1		1	1
Detector Template						
Leading Detector (ft)		50	50		50	50
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		50	50		50	50
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		4.0	4.0		4.0	4.0
Minimum Split (s)		24.0	24.0		24.0	24.0
Total Split (s)		53.0	53.0		47.0	47.0
Total Split (%)		53.0%	53.0%		47.0%	47.0%
Maximum Green (s)		47.0	47.0		41.0	41.0
Yellow Time (s)		5.0	5.0		5.0	5.0

# Lanes, Volumes, Timings

## 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

AM 2044  
09/12/2024



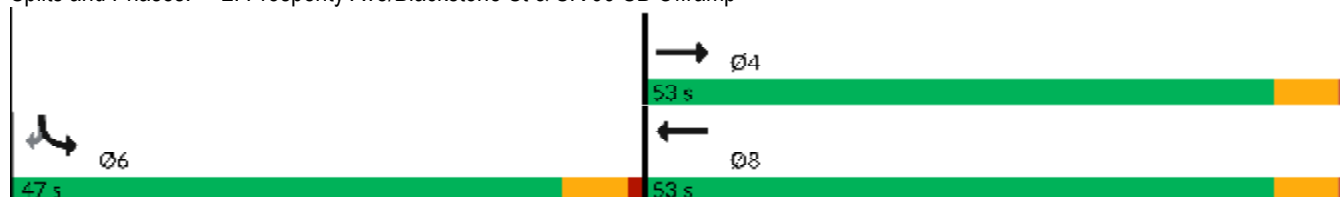
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		None	None		Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effect Green (s)		12.9	12.9		10.9	10.9
Actuated g/C Ratio		0.40	0.40		0.34	0.34
v/c Ratio		0.40	0.38		0.28	0.30
Control Delay (s/veh)		7.9	7.8		9.8	3.4
Queue Delay		0.0	0.0		0.0	0.0
Total Delay (s/veh)		7.9	7.8		9.8	3.4
LOS		A	A		A	A
Approach Delay (s/veh)		7.9	7.8		6.3	
Approach LOS		A	A		A	

### Intersection Summary

Area Type: Other  
Cycle Length: 100  
Actuated Cycle Length: 31.9  
Natural Cycle: 50  
Control Type: Actuated-Uncoordinated  
Maximum v/c Ratio: 0.40  
Intersection Signal Delay (s/veh): 7.5  
Intersection Capacity Utilization 32.1%  
Analysis Period (min) 15

Intersection LOS: A  
ICU Level of Service A

Splits and Phases: 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

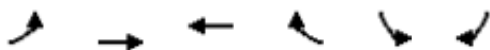




# HCM 7th Signalized Intersection Summary

## 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

AM 2044  
09/12/2024


























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (veh/h)	0	521	494	0	145	175
Future Volume (veh/h)	0	521	494	0	145	175
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1723	1723
Adj Flow Rate, veh/h	0	566	537	0	158	190
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	1324	1324	0	513	456
Arrive On Green	0.00	0.37	0.37	0.00	0.31	0.31
Sat Flow, veh/h	0	3741	3741	0	1641	1460
Grp Volume(v), veh/h	0	566	537	0	158	190
Grp Sat Flow(s),veh/h/ln	0	1777	1777	0	1641	1460
Q Serve(g_s), s	0.0	3.0	2.8	0.0	1.9	2.6
Cycle Q Clear(g_c), s	0.0	3.0	2.8	0.0	1.9	2.6
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1324	1324	0	513	456
V/C Ratio(X)	0.00	0.43	0.41	0.00	0.31	0.42
Avail Cap(c_a), veh/h	0	6856	6856	0	2777	2471
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	5.9	5.9	0.0	6.6	6.9
Incr Delay (d2), s/veh	0.0	0.2	0.2	0.0	0.3	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.2	0.0	0.2	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	0.0	6.2	6.1	0.0	7.0	7.5
LnGrp LOS		A	A		A	A
Approach Vol, veh/h		566	537		348	
Approach Delay, s/veh		6.2	6.1		7.3	
Approach LOS		A	A		A	
Timer - Assigned Phs				4	6	8
Phs Duration (G+Y+Rc), s				13.5	11.9	13.5
Change Period (Y+Rc), s				6.0	6.0	6.0
Max Green Setting (Gmax), s				47.0	41.0	47.0
Max Q Clear Time (g_c+I1), s				5.0	4.6	4.8
Green Ext Time (p_c), s				2.4	1.3	2.3
Intersection Summary						
HCM 7th Control Delay, s/veh			6.4			
HCM 7th LOS			A			

# Lanes, Volumes, Timings


## 3: Blackstone Ave/Blackstone St & Prosperity Ave

AM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	3	676	15	458	0	34	265	301	110	2
Future Volume (vph)	0	12	3	676	15	458	0	34	265	301	110	2
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	30		0	335		310	55		90	240		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor		1.00				0.98						
Frt		0.972				0.850			0.850		0.998	
Flt Protected				0.950	0.954					0.950		
Satd. Flow (prot)	1716	1803	0	1548	1688	1458	1716	1863	1458	3162	1859	0
Flt Permitted				0.950	0.724					0.950		
Satd. Flow (perm)	1716	1803	0	1548	1281	1427	1716	1863	1458	3162	1859	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				498			288		1	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		98			1229			643			727	
Travel Time (s)		1.2			15.2			8.0			9.0	
Confl. Peds. (#/hr)			5			5						
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	13	3	735	16	498	0	37	288	327	120	2
Shared Lane Traffic (%)				49%								
Lane Group Flow (vph)	0	16	0	375	376	498	0	37	288	327	122	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												

Lanes, Volumes, Timings  
3: Blackstone Ave/Blackstone St & Prosperity Ave

AM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	24.1		10.0	24.1	24.1	10.0	24.0	24.0	10.0	24.0	
Total Split (s)	13.0	27.1		26.9	41.0	41.0	10.0	24.0	24.0	22.0	36.0	
Total Split (%)	13.0%	27.1%		26.9%	41.0%	41.0%	10.0%	24.0%	24.0%	22.0%	36.0%	
Maximum Green (s)	7.0	21.1		20.9	35.0	35.0	4.0	18.0	18.0	16.0	30.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Don't Walk (s)		11.1			11.1	11.1		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		5			5	5		0	0		0	
Act Effect Green (s)		9.9		32.7	32.7	39.1		10.3	10.3	14.7	29.1	
Actuated g/C Ratio		0.13		0.43	0.43	0.51		0.13	0.13	0.19	0.38	
v/c Ratio		0.07		0.57	0.52	0.51		0.15	0.65	0.54	0.17	
Control Delay (s/veh)		27.5		26.5	24.9	3.3		31.6	11.7	32.3	16.3	
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay (s/veh)		27.5		26.5	24.9	3.3		31.6	11.7	32.3	16.3	
LOS		C		C	C	A		C	B	C	B	
Approach Delay (s/veh)		27.5			16.8			14.0			28.0	
Approach LOS		C			B			B			C	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 76.3

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay (s/veh): 18.9

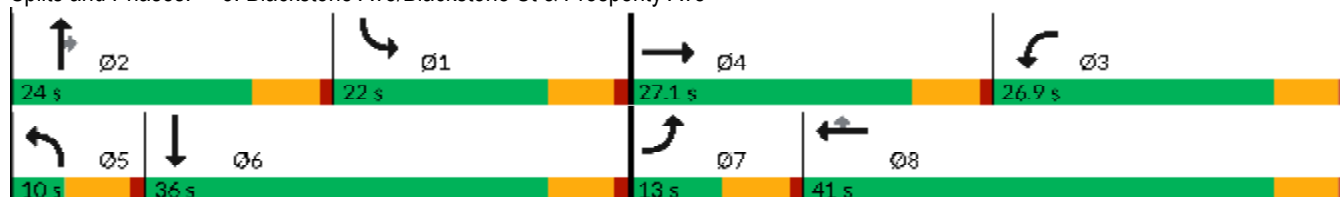
Intersection LOS: B

Intersection Capacity Utilization 49.7%

ICU Level of Service A

Analysis Period (min) 15
























Splits and Phases: 3: Blackstone Ave/Blackstone St & Prosperity Ave



# HCM 7th Signalized Intersection Summary

























## 3: Blackstone Ave/Blackstone St & Prosperity Ave

AM 2044  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	12	3	676	15	458	0	34	265	301	110	2
Future Volume (veh/h)	0	12	3	676	15	458	0	34	265	301	110	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	0	13	3	746	0	498	0	37	288	327	120	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	2	146	34	921	0	624	2	456	356	509	839	14
Arrive On Green	0.00	0.10	0.07	0.28	0.00	0.43	0.00	0.24	0.24	0.16	0.46	0.43
Sat Flow, veh/h	1641	1458	336	3281	0	1436	1641	1870	1460	3183	1834	31
Grp Volume(v), veh/h	0	0	16	746	0	498	0	37	288	327	0	122
Grp Sat Flow(s),veh/h/ln	1641	0	1794	1641	0	1436	1641	1870	1460	1591	0	1865
Q Serve(g_s), s	0.0	0.0	0.6	15.7	0.0	9.6	0.0	1.1	13.8	7.1	0.0	2.8
Cycle Q Clear(g_c), s	0.0	0.0	0.6	15.7	0.0	9.6	0.0	1.1	13.8	7.1	0.0	2.8
Prop In Lane	1.00		0.19	1.00		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	2	0	179	921	0	624	2	456	356	509	0	853
V/C Ratio(X)	0.00	0.00	0.09	0.81	0.00	0.80	0.00	0.08	0.81	0.64	0.00	0.14
Avail Cap(c_a), veh/h	199	0	559	1013	0	716	133	504	394	772	0	853
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	30.5	24.8	0.0	3.9	0.0	21.6	26.4	29.2	0.0	11.7
Incr Delay (d2), s/veh	0.0	0.0	0.2	4.6	0.0	5.6	0.0	0.1	11.0	1.4	0.0	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.2	5.8	0.0	5.0	0.0	0.4	5.2	2.5	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	30.7	29.5	0.0	9.5	0.0	21.7	37.5	30.5	0.0	11.8
LnGrp LOS			C	C		A		C	D	C		B
Approach Vol, veh/h	16			1244			325			449		
Approach Delay, s/veh	30.7			21.5			35.7			25.4		
Approach LOS	C			C			D			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.9	22.1	24.8	11.4	0.0	37.9	0.0	36.2				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	16.0	18.0	20.9	21.1	4.0	30.0	7.0	35.0				
Max Q Clear Time (g_c+I1), s	9.1	15.8	17.7	2.6	0.0	4.8	0.0	11.6				
Green Ext Time (p_c), s	0.7	0.3	1.1	0.0	0.0	0.3	0.0	2.2				
Intersection Summary												
HCM 7th Control Delay, s/veh	24.7											
HCM 7th LOS	C											
Notes												
User approved volume balancing among the lanes for turning movement.												













Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

AM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	375	423	99	58	637	160	128	272	62	80	32	296
Future Volume (vph)	375	423	99	58	637	160	128	272	62	80	32	296
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	270		0	155		85	155		0	200		205
Storage Lanes	2		1	1		1	1		0	2		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	0.88
Ped Bike Factor			0.97			0.98		1.00				0.97
Fr't			0.850			0.850		0.972				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	1630	5085	1458	1630	3429	0	3162	1863	2567
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1410	1630	5085	1433	1630	3429	0	3162	1863	2489
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			142		21				322
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1229			2636			362			5336	
Travel Time (s)		15.2			32.7			4.5			66.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	408	460	108	63	692	174	139	296	67	87	35	322
Shared Lane Traffic (%)												
Lane Group Flow (vph)	408	460	108	63	692	174	139	363	0	87	35	322
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

AM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	32.7	32.7	10.0	45.6	45.6	10.0	47.0		10.0	49.9	49.9
Total Split (s)	31.9	43.1	43.1	35.9	47.1	47.1	11.0	31.0		10.0	30.0	30.0
Total Split (%)	26.6%	35.9%	35.9%	29.9%	39.3%	39.3%	9.2%	25.8%		8.3%	25.0%	25.0%
Maximum Green (s)	25.9	37.1	37.1	29.9	41.1	41.1	5.0	25.0		4.0	24.0	24.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Don't Walk (s)		19.7	19.7		32.6	32.6		34.0			36.9	36.9
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effect Green (s)	18.8	32.8	32.8	11.5	22.1	22.1	7.7	21.4		6.6	17.4	17.4
Actuated g/C Ratio	0.23	0.39	0.39	0.14	0.26	0.26	0.09	0.26		0.08	0.21	0.21
v/c Ratio	0.57	0.33	0.17	0.28	0.51	0.36	0.93	0.41		0.35	0.09	0.42
Control Delay (s/veh)	35.5	21.3	3.1	42.8	28.7	10.5	102.0	27.3		48.9	28.7	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	35.5	21.3	3.1	42.8	28.7	10.5	102.0	27.3		48.9	28.7	5.2
LOS	D	C	A	D	C	B	F	C		D	C	A
Approach Delay (s/veh)		25.2			26.2			48.0			15.6	
Approach LOS		C			C			D			B	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 83.5

Natural Cycle: 130

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay (s/veh): 28.1

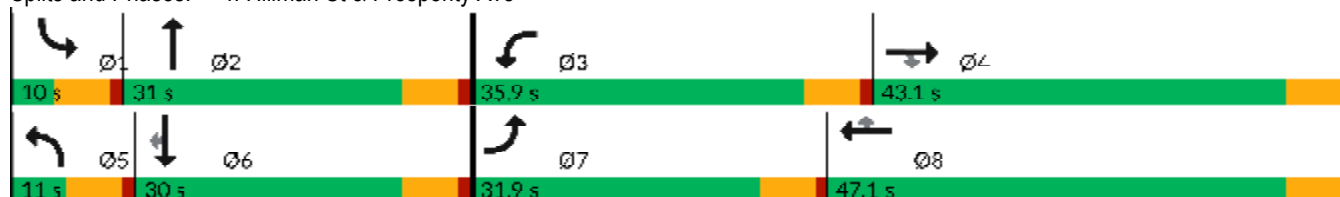
Intersection LOS: C

Intersection Capacity Utilization 57.1%

ICU Level of Service B

Analysis Period (min) 15
























Splits and Phases: 4: Hillman St & Prosperity Ave



# HCM 7th Signalized Intersection Summary

























## 4: Hillman St & Prosperity Ave

AM 2044  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	375	423	99	58	637	160	128	272	62	80	32	296
Future Volume (veh/h)	375	423	99	58	637	160	128	272	62	80	32	296
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	408	460	108	63	692	174	139	296	67	87	35	322
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	626	1364	545	125	1346	377	164	678	151	239	395	523
Arrive On Green	0.20	0.38	0.38	0.08	0.26	0.26	0.10	0.24	0.21	0.08	0.21	0.21
Sat Flow, veh/h	3183	3554	1419	1641	5106	1432	1641	2876	640	3183	1870	2479
Grp Volume(v), veh/h	408	460	108	63	692	174	139	181	182	87	35	322
Grp Sat Flow(s),veh/h/ln	1591	1777	1419	1641	1702	1432	1641	1777	1739	1591	1870	1240
Q Serve(g_s), s	8.3	6.4	3.6	2.6	8.1	7.1	5.8	6.1	6.3	1.8	1.1	8.2
Cycle Q Clear(g_c), s	8.3	6.4	3.6	2.6	8.1	7.1	5.8	6.1	6.3	1.8	1.1	8.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.37	1.00		1.00
Lane Grp Cap(c), veh/h	626	1364	545	125	1346	377	164	419	410	239	395	523
V/C Ratio(X)	0.65	0.34	0.20	0.50	0.51	0.46	0.85	0.43	0.44	0.36	0.09	0.62
Avail Cap(c_a), veh/h	1269	1986	793	748	3146	882	164	686	671	273	695	921
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.9	15.3	14.4	31.0	21.9	21.6	31.0	22.7	23.2	30.8	22.2	25.0
Incr Delay (d2), s/veh	1.2	0.1	0.2	3.1	0.3	0.9	31.6	0.7	0.8	0.9	0.1	1.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	2.1	1.0	1.0	2.8	2.1	3.5	2.3	2.3	0.7	0.4	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	27.0	15.4	14.5	34.1	22.3	22.5	62.5	23.4	23.9	31.7	22.3	26.2
LnGrp LOS	C	B	B	C	C	C	E	C	C	C	C	C
Approach Vol, veh/h	976				929		502				444	
Approach Delay, s/veh	20.2				23.1		34.4				27.0	
Approach LOS	C				C		C				C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.3	20.5	9.3	30.9	11.0	18.8	17.8	22.4				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	4.0	25.0	29.9	37.1	5.0	24.0	25.9	41.1				
Max Q Clear Time (g_c+l1), s	3.8	8.3	4.6	8.4	7.8	10.2	10.3	10.1				
Green Ext Time (p_c), s	0.0	1.1	0.2	2.4	0.0	1.4	1.5	4.0				
Intersection Summary												
HCM 7th Control Delay, s/veh	24.7											
HCM 7th LOS	C											
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave













AM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	370	102	63	458	73	123	180	69	55	169	99
Future Volume (vph)	53	370	102	63	458	73	123	180	69	55	169	99
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	235		115	230		100	100		100	160		100
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96			0.97			0.97			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	5085	1458	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1405	1630	5085	1410	1630	1863	1415	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			191			191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2636			2650			5387			713	
Travel Time (s)		32.7			32.9			66.8			8.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	58	402	111	68	498	79	134	196	75	60	184	108
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	402	111	68	498	79	134	196	75	60	184	108
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												



Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

AM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	27.0	27.0	10.0	34.1	34.1	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (s)	16.0	38.4	38.4	13.0	35.4	35.4	23.0	47.6	47.6	21.0	45.6	45.6
Total Split (%)	13.3%	32.0%	32.0%	10.8%	29.5%	29.5%	19.2%	39.7%	39.7%	17.5%	38.0%	38.0%
Maximum Green (s)	10.0	32.4	32.4	7.0	29.4	29.4	17.0	41.6	41.6	15.0	39.6	39.6
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		14.0	14.0		21.1	21.1		32.6	32.6		32.6	32.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effect Green (s)	11.5	18.1	18.1	11.5	21.0	21.0	15.0	22.6	22.6	13.5	18.8	18.8
Actuated g/C Ratio	0.16	0.26	0.26	0.16	0.30	0.30	0.21	0.32	0.32	0.19	0.27	0.27
v/c Ratio	0.22	0.45	0.22	0.26	0.33	0.14	0.39	0.33	0.13	0.19	0.37	0.21
Control Delay (s/veh)	38.6	29.1	1.0	38.3	25.1	0.5	36.5	25.1	0.5	34.1	27.7	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	38.6	29.1	1.0	38.3	25.1	0.5	36.5	25.1	0.5	34.1	27.7	0.9
LOS	D	C	A	D	C	A	D	C	A	C	C	A
Approach Delay (s/veh)		24.6			23.4			24.3			20.6	
Approach LOS		C			C			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 70.9

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay (s/veh): 23.5

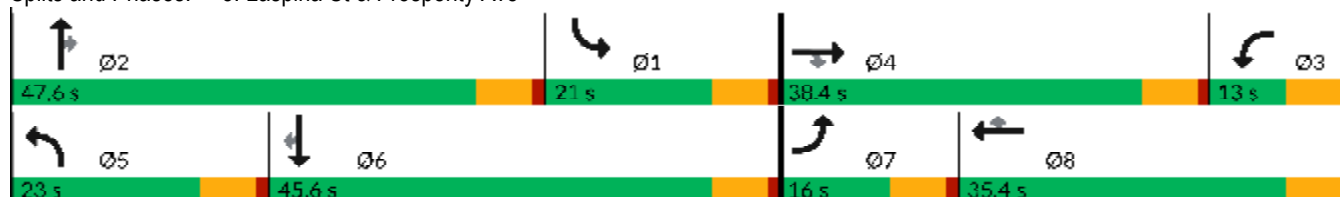
Intersection LOS: C

Intersection Capacity Utilization 48.5%

ICU Level of Service A

Analysis Period (min) 15

























Splits and Phases: 5: Laspina St & Prosperity Ave



# HCM 7th Signalized Intersection Summary
























## 5: Laspina St & Prosperity Ave

AM 2044  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	370	102	63	458	73	123	180	69	55	169	99
Future Volume (veh/h)	53	370	102	63	458	73	123	180	69	55	169	99
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	58	402	111	68	498	79	134	196	75	60	184	108
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	136	826	328	144	1213	335	232	431	325	226	424	324
Arrive On Green	0.08	0.23	0.23	0.09	0.24	0.24	0.14	0.23	0.23	0.14	0.23	0.23
Sat Flow, veh/h	1641	3554	1411	1641	5106	1411	1641	1870	1411	1641	1870	1430
Grp Volume(v), veh/h	58	402	111	68	498	79	134	196	75	60	184	108
Grp Sat Flow(s),veh/h/ln	1641	1777	1411	1641	1702	1411	1641	1870	1411	1641	1870	1430
Q Serve(g_s), s	1.7	5.0	1.7	2.0	4.2	1.2	3.9	4.6	2.2	1.7	4.3	3.2
Cycle Q Clear(g_c), s	1.7	5.0	1.7	2.0	4.2	1.2	3.9	4.6	2.2	1.7	4.3	3.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	136	826	328	144	1213	335	232	431	325	226	424	324
V/C Ratio(X)	0.43	0.49	0.34	0.47	0.41	0.24	0.58	0.46	0.23	0.27	0.43	0.33
Avail Cap(c_a), veh/h	383	2380	945	287	3121	863	607	1587	1197	543	1515	1158
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.4	17.1	4.3	22.3	16.5	4.2	20.6	17.0	16.1	19.8	17.0	16.6
Incr Delay (d2), s/veh	2.1	0.4	0.6	2.4	0.2	0.4	2.3	0.8	0.4	0.6	0.7	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.6	0.8	0.7	1.3	0.6	1.3	1.6	0.6	0.6	1.5	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	24.5	17.5	4.9	24.7	16.8	4.5	22.9	17.8	16.4	20.4	17.7	17.2
LnGrp LOS	C	B	A	C	B	A	C	B	B	C	B	B
Approach Vol, veh/h	571			645			405			352		
Approach Delay, s/veh	15.8			16.1			19.2			18.0		
Approach LOS	B			B			B			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.1	15.8	8.5	15.9	11.3	15.6	8.3	16.2				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	41.6	7.0	32.4	17.0	39.6	10.0	29.4				
Max Q Clear Time (g_c+I1), s	3.7	6.6	4.0	7.0	5.9	6.3	3.7	6.2				
Green Ext Time (p_c), s	0.1	1.0	0.0	2.1	0.3	1.0	0.1	2.4				
Intersection Summary												
HCM 7th Control Delay, s/veh	17.0											
HCM 7th LOS	B											

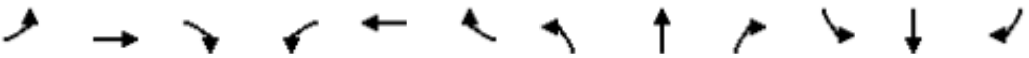
Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

AM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	233	276	256	155	191	92	332	1070	92	44	663	155
Future Volume (vph)	233	276	256	155	191	92	332	1070	92	44	663	155
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98		0.99				0.97			0.98
Frt			0.850		0.951				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1760	0	1630	3539	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1432	1630	1760	0	1630	3539	1409	1630	3539	1426
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			278		19				191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2617			5285	
Travel Time (s)		32.9			36.1			32.4			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	253	300	278	168	208	100	361	1163	100	48	721	168
Shared Lane Traffic (%)												
Lane Group Flow (vph)	253	300	278	168	308	0	361	1163	100	48	721	168
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

AM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	24.0	39.7	39.7	17.0	32.7		23.0	46.3	46.3	17.0	40.3	40.3
Total Split (%)	20.0%	33.1%	33.1%	14.2%	27.3%		19.2%	38.6%	38.6%	14.2%	33.6%	33.6%
Maximum Green (s)	18.0	33.7	33.7	11.0	26.7		17.0	40.3	40.3	11.0	34.3	34.3
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Don't Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effect Green (s)	20.0	26.7	26.7	18.6	25.2		19.0	46.0	46.0	11.8	36.4	36.4
Actuated g/C Ratio	0.17	0.23	0.23	0.16	0.22		0.16	0.39	0.39	0.10	0.31	0.31
v/c Ratio	0.91	0.70	0.51	0.65	0.78		1.36	0.83	0.15	0.29	0.65	0.29
Control Delay (s/veh)	83.2	50.2	7.4	60.4	54.5		223.2	40.3	0.5	54.3	38.8	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	83.2	50.2	7.4	60.4	54.5		223.2	40.3	0.5	54.3	38.8	4.4
LOS	F	D	A	E	D		F	D	A	D	D	A
Approach Delay (s/veh)		45.9			56.6			78.5			33.4	
Approach LOS		D			E			E			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 116.7

Natural Cycle: 115

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.36

Intersection Signal Delay (s/veh): 57.9

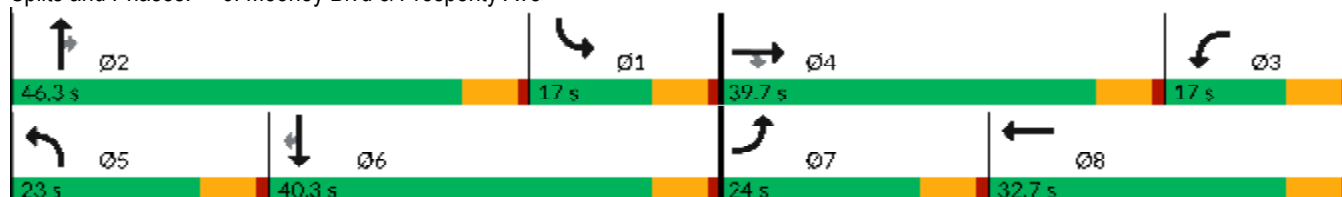
Intersection LOS: E

Intersection Capacity Utilization 82.5%

ICU Level of Service E

Analysis Period (min) 15
























Splits and Phases: 6: Mooney Blvd & Prosperity Ave



# HCM 7th Signalized Intersection Summary

## 6: Mooney Blvd & Prosperity Ave




AM 2044  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	233	276	256	155	191	92	332	1070	92	44	663	155
Future Volume (veh/h)	233	276	256	155	191	92	332	1070	92	44	663	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	253	300	278	168	208	100	361	1163	100	48	721	168
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	283	406	310	276	252	121	269	1296	517	184	1112	449
Arrive On Green	0.17	0.22	0.22	0.17	0.21	0.20	0.16	0.36	0.36	0.11	0.31	0.31
Sat Flow, veh/h	1641	1870	1430	1641	1184	569	1641	3554	1418	1641	3554	1433
Grp Volume(v), veh/h	253	300	278	168	0	308	361	1163	100	48	721	168
Grp Sat Flow(s),veh/h/ln	1641	1870	1430	1641	0	1753	1641	1777	1418	1641	1777	1433
Q Serve(g_s), s	17.5	17.4	14.4	11.0	0.0	19.5	19.0	35.9	5.6	3.1	20.3	10.6
Cycle Q Clear(g_c), s	17.5	17.4	14.4	11.0	0.0	19.5	19.0	35.9	5.6	3.1	20.3	10.6
Prop In Lane	1.00		1.00	1.00		0.32	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	283	406	310	276	0	373	269	1296	517	184	1112	449
V/C Ratio(X)	0.89	0.74	0.90	0.61	0.00	0.82	1.34	0.90	0.19	0.26	0.65	0.37
Avail Cap(c_a), veh/h	283	576	440	276	0	434	269	1296	517	184	1112	449
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.0	42.4	19.2	44.7	0.0	43.9	48.5	34.8	25.2	47.1	34.4	31.0
Incr Delay (d2), s/veh	28.2	3.1	15.8	3.8	0.0	10.9	177.4	10.0	0.8	0.7	2.9	2.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.0	7.9	5.7	4.6	0.0	9.2	20.6	16.0	1.9	1.3	8.7	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	75.2	45.4	35.0	48.5	0.0	54.8	225.9	44.8	26.0	47.9	37.3	33.4
LnGrp LOS	E	D	C	D		D	F	D	C	D	D	C
Approach Vol, veh/h	831		476			1624			937			
Approach Delay, s/veh	51.0		52.6			83.9			37.1			
Approach LOS	D		D			F			D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	46.3	23.5	29.2	23.0	40.3	24.0	28.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	11.0	40.3	11.0	33.7	17.0	34.3	18.0	26.7				
Max Q Clear Time (g_c+I1), s	5.1	37.9	13.0	19.4	21.0	22.3	19.5	21.5				
Green Ext Time (p_c), s	0.0	1.4	0.0	1.9	0.0	3.1	0.0	0.5				
Intersection Summary												
HCM 7th Control Delay, s/veh	61.7											
HCM 7th LOS	E											
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
7: Morrison St & Prosperity Ave
















AM 2044  
09/12/2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Traffic Volume (vph)	390	7	41	392	37	70
Future Volume (vph)	390	7	41	392	37	70
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.997				0.912	
Flt Protected				0.995	0.983	
Satd. Flow (prot)	1857	0	0	1853	1538	0
Flt Permitted				0.995	0.983	
Satd. Flow (perm)	1857	0	0	1853	1538	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	424	8	45	426	40	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	432	0	0	471	116	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization 60.7%				ICU Level of Service B		
Analysis Period (min) 15						

Intersection						
Int Delay, s/veh	2.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	390	7	41	392	37	70
Future Vol, veh/h	390	7	41	392	37	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	424	8	45	426	40	76
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	432	0	943	428
Stage 1	-	-	-	-	428	-
Stage 2	-	-	-	-	515	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1128	-	291	627
Stage 1	-	-	-	-	658	-
Stage 2	-	-	-	-	600	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1128	-	276	627
Mov Cap-2 Maneuver	-	-	-	-	276	-
Stage 1	-	-	-	-	658	-
Stage 2	-	-	-	-	569	-
Approach	EB		WB		NB	
HCM Control Delay, s/v	0		0.79		16.24	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	436	-	-	170	-	
HCM Lane V/C Ratio	0.267	-	-	0.04	-	
HCM Control Delay (s/veh)	16.2	-	-	8.3	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	1.1	-	-	0.1	-	

Lanes, Volumes, Timings  
8: Prosperity Ave & Oakmore Rd

AM 2044  
09/12/2024







													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	169	283	0	2	269	49	0	0	0	29	0	153	
Future Volume (vph)	169	283	0	2	269	49	0	0	0	29	0	153	
Ideal Flow (vphpl)	1750	1900	1900	1900	1900	1750	1900	1900	1900	1750	1900	1750	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.979					0.865							
Flt Protected	0.982					0.950							
Satd. Flow (prot)	0	1829	0	0	1824	0	0	0	0	1630	0	0	
Flt Permitted	0.982					0.950							
Satd. Flow (perm)	0	1829	0	0	1824	0	0	0	0	1630	0	0	
Link Speed (mph)	55					55							
Link Distance (ft)	2108					5202							
Travel Time (s)	26.1					64.5							
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	184	308	0	2	292	53	0	0	0	32	0	166	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	492	0	0	347	0	0	0	0	32	166	0	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No	
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(ft)	0					0							
Link Offset(ft)	0					0							
Crosswalk Width(ft)	16					16							
Two way Left Turn Lane													
Headway Factor	1.11	1.00	1.00	1.00	1.00	1.11	1.00	1.00	1.00	1.11	1.00	1.11	
Turning Speed (mph)	15		9	15		9	15		9	15		9	
Sign Control	Free					Free					Stop		Stop
Intersection Summary													
Area Type:	Other												
Control Type: Unsignalized													
Intersection Capacity Utilization Err%					ICU Level of Service H								
Analysis Period (min) 15													



Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			2					2		
Traffic Vol, veh/h	169	283	0	2	269	49	0	0	0	29	0	153
Future Vol, veh/h	169	283	0	2	269	49	0	0	0	29	0	153
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	184	308	0	2	292	53	0	0	0	32	0	166
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	346	0	-	308	0	0				998	-	319
Stage 1	-	-	-	-	-	-				323	-	-
Stage 2	-	-	-	-	-	-				675	-	-
Critical Hdwy	4.12	-	-	4.12	-	-				6.42	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-				5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.42	-	-
Follow-up Hdwy	2.218	-	-	2.218	-	-				3.518	-	3.318
Pot Cap-1 Maneuver	1213	-	0	1253	-	-				270	0	722
Stage 1	-	-	0	-	-	-				733	0	-
Stage 2	-	-	0	-	-	-				506	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1213	-	-	1253	-	-				220	0	722
Mov Cap-2 Maneuver	-	-	-	-	-	-				220	0	-
Stage 1	-	-	-	-	-	-				600	0	-
Stage 2	-	-	-	-	-	-				505	0	-
Approach	EB			WB			SB					
HCM Control Delay, s/v	3.18			0.05			15.79					
HCM LOS							C					
Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1						
Capacity (veh/h)	673	-	1253	-	-	530						
HCM Lane V/C Ratio	0.151	-	0.002	-	-	0.374						
HCM Control Delay (s/veh)	8.5	0	7.9	-	-	15.8						
HCM Lane LOS	A	A	A	-	-	C						
HCM 95th %tile Q(veh)	0.5	-	0	-	-	1.7						

Lanes, Volumes, Timings  
9: Mooney Blvd & Seminole Ave



























AM 2044  
09/12/2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	367	1400	29	78	1015
Future Volume (vph)	2	367	1400	29	78	1015
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	540	0		0	80	
Storage Lanes	0	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.865		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	0	1484	3539	1458	1630	3539
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	0	1484	3539	1458	1630	3539
Link Speed (mph)	55		55			55
Link Distance (ft)	1719		2673			2617
Travel Time (s)	21.3		33.1			32.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	399	1522	32	85	1103
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2	399	1522	32	85	1103
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization Err%	ICU Level of Service H					
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	16.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗	↗	↘	↗↗
Traffic Vol, veh/h	2	367	1400	29	78	1015
Future Vol, veh/h	2	367	1400	29	78	1015
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	0	80	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	399	1522	32	85	1103
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	2243	761	0	0	1553	0
Stage 1	1522	-	-	-	-	-
Stage 2	721	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	36 ~ 348	-	-	-	422	-
Stage 1	166	-	-	-	-	-
Stage 2	442	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	28 ~ 348	-	-	-	422	-
Mov Cap-2 Maneuver	28	-	-	-	-	-
Stage 1	166	-	-	-	-	-
Stage 2	354	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s/veh	28.32	0		1.12		
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	- 348	422	-		
HCM Lane V/C Ratio	-	- 1.146	0.201	-		
HCM Control Delay (s/veh)	-	- 128.3	15.7	-		
HCM Lane LOS	-	- F	C	-		
HCM 95th %tile Q(veh)	-	- 15.8	0.7	-		
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon













Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

AM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Traffic Volume (vph)	80	615	107	66	932	65	127	225	62	58	189	70
Future Volume (vph)	80	615	107	66	932	65	127	225	62	58	189	70
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		135	110		0	90		90	80		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97		1.00				0.98			0.98
Frt			0.850		0.990				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3496	0	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1408	1630	3496	0	1630	1863	1431	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191		6				191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		841			2671			726			5387	
Travel Time (s)		10.4			33.1			9.0			66.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	668	116	72	1013	71	138	245	67	63	205	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	668	116	72	1084	0	138	245	67	63	205	76
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

AM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.9	29.9	10.0	28.4		10.0	39.9	39.9	10.0	44.1	44.1
Total Split (s)	20.0	41.9	41.9	16.0	37.9		18.0	41.1	41.1	21.0	44.1	44.1
Total Split (%)	16.7%	34.9%	34.9%	13.3%	31.6%		15.0%	34.3%	34.3%	17.5%	36.8%	36.8%
Maximum Green (s)	14.0	35.9	35.9	10.0	31.9		12.0	35.1	35.1	15.0	38.1	38.1
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Don't Walk (s)		16.9	16.9		15.4			26.9	26.9		31.1	31.1
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effect Green (s)	12.3	36.5	36.5	10.8	35.1		13.6	25.6	25.6	11.3	20.0	20.0
Actuated g/C Ratio	0.13	0.39	0.39	0.11	0.37		0.14	0.27	0.27	0.12	0.21	0.21
v/c Ratio	0.41	0.49	0.17	0.39	0.83		0.59	0.48	0.13	0.32	0.52	0.17
Control Delay (s/veh)	48.1	26.2	0.6	50.2	36.5		53.0	35.3	0.5	46.9	38.1	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	48.1	26.2	0.6	50.2	36.5		53.0	35.3	0.5	46.9	38.1	0.8
LOS	D	C	A	D	D		D	D	A	D	D	A
Approach Delay (s/veh)		25.0			37.3			35.5			31.4	
Approach LOS		C			D			D			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 94.1

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay (s/veh): 32.5

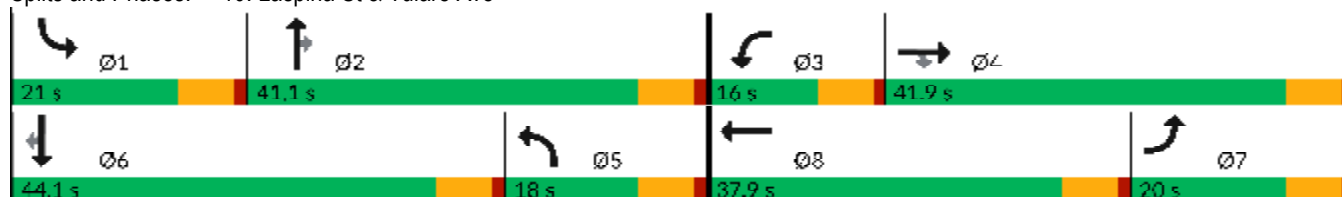
Intersection LOS: C

Intersection Capacity Utilization 66.9%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 10: Laspina St & Tulare Ave


























# HCM 7th Signalized Intersection Summary

## 10: Laspina St & Tulare Ave




























AM 2044

09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	615	107	66	932	65	127	225	62	58	189	70
Future Volume (veh/h)	80	615	107	66	932	65	127	225	62	58	189	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	87	668	116	72	1013	71	138	245	67	63	205	76
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	152	1347	538	132	1234	86	211	478	366	121	376	287
Arrive On Green	0.09	0.38	0.38	0.08	0.37	0.34	0.13	0.26	0.26	0.07	0.20	0.20
Sat Flow, veh/h	1641	3554	1418	1641	3361	236	1641	1870	1431	1641	1870	1429
Grp Volume(v), veh/h	87	668	116	72	535	549	138	245	67	63	205	76
Grp Sat Flow(s),veh/h/ln	1641	1777	1418	1641	1777	1820	1641	1870	1431	1641	1870	1429
Q Serve(g_s), s	3.9	10.9	2.3	3.2	20.7	20.7	6.1	8.5	2.8	2.8	7.5	3.4
Cycle Q Clear(g_c), s	3.9	10.9	2.3	3.2	20.7	20.7	6.1	8.5	2.8	2.8	7.5	3.4
Prop In Lane	1.00		1.00	1.00		0.13	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	152	1347	538	132	652	668	211	478	366	121	376	287
V/C Ratio(X)	0.57	0.50	0.22	0.55	0.82	0.82	0.65	0.51	0.18	0.52	0.55	0.26
Avail Cap(c_a), veh/h	346	1776	709	260	794	813	303	915	700	368	989	755
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.0	18.0	4.6	33.5	21.8	21.9	31.4	24.2	22.0	33.8	27.2	25.6
Incr Delay (d2), s/veh	3.4	0.3	0.2	3.5	5.8	5.7	3.4	0.9	0.2	3.4	1.2	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	3.8	1.1	1.3	8.2	8.4	2.4	3.4	0.8	1.1	3.1	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	36.4	18.3	4.8	37.0	27.5	27.5	34.9	25.0	22.3	37.3	28.4	26.1
LnGrp LOS	D	B	A	D	C	C	C	C	C	D	C	C
Approach Vol, veh/h	871			1156			450			344		
Approach Delay, s/veh	18.3			28.1			27.6			29.5		
Approach LOS	B			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.6	23.4	10.1	32.8	13.8	19.2	11.0	31.8				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	35.1	10.0	35.9	12.0	38.1	14.0	31.9				
Max Q Clear Time (g_c+I1), s	4.8	10.5	5.2	12.9	8.1	9.5	5.9	22.7				
Green Ext Time (p_c), s	0.1	1.1	0.1	3.3	0.1	1.0	0.1	3.1				
Intersection Summary												
HCM 7th Control Delay, s/veh	25.2											
HCM 7th LOS	C											













Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

AM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	313	525	131	114	661	322	220	898	101	183	494	235
Future Volume (vph)	313	525	131	114	661	322	220	898	101	183	494	235
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	420		185	125		125	80		0	475		475
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98		1.00				0.98
Fr't			0.850			0.850		0.985				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3539	1458	1630	3475	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1412	1630	3539	1430	1630	3475	0	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			230			9			255
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2671			2887			1662			2673	
Travel Time (s)		33.1			35.8			20.6			33.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	340	571	142	124	718	350	239	976	110	199	537	255
Shared Lane Traffic (%)												
Lane Group Flow (vph)	340	571	142	124	718	350	239	1086	0	199	537	255
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

AM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	37.0	37.0	10.0	37.0	37.0	10.0	39.9		10.0	42.7	42.7
Total Split (s)	20.0	40.0	40.0	17.0	37.0	37.0	19.0	32.0		31.0	44.0	44.0
Total Split (%)	16.7%	33.3%	33.3%	14.2%	30.8%	30.8%	15.8%	26.7%		25.8%	36.7%	36.7%
Maximum Green (s)	14.0	34.0	34.0	11.0	31.0	31.0	13.0	26.0		25.0	38.0	38.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Don't Walk (s)		24.0	24.0		24.0	24.0		26.9			29.7	29.7
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effect Green (s)	16.1	26.7	26.7	19.3	29.8	29.8	16.5	32.5		20.8	36.8	36.8
Actuated g/C Ratio	0.14	0.23	0.23	0.17	0.26	0.26	0.14	0.28		0.18	0.32	0.32
v/c Ratio	1.50	0.70	0.30	0.46	0.78	0.65	1.03	1.10		0.68	0.91	0.40
Control Delay (s/veh)	281.3	45.8	3.2	53.1	47.3	19.6	115.5	100.1		57.1	58.5	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	281.3	45.8	3.2	53.1	47.3	19.6	115.5	100.1		57.1	58.5	5.8
LOS	F	D	A	D	D	B	F	F		E	E	A
Approach Delay (s/veh)		116.1			39.8			102.8			44.7	
Approach LOS		F			D			F			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 115.4

Natural Cycle: 140

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.50

Intersection Signal Delay (s/veh): 76.8

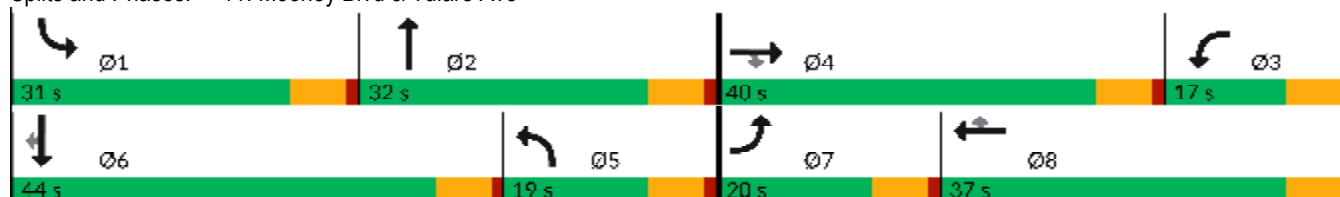
Intersection LOS: E

Intersection Capacity Utilization 91.5%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 11: Mooney Blvd & Tulare Ave
































# HCM 7th Signalized Intersection Summary

















## 11: Mooney Blvd & Tulare Ave

AM 2044  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (veh/h)	313	525	131	114	661	322	220	898	101	183	494	235
Future Volume (veh/h)	313	525	131	114	661	322	220	898	101	183	494	235
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	340	571	142	124	718	350	239	976	110	199	537	255
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	225	775	307	321	983	396	211	946	107	253	600	460
Arrive On Green	0.14	0.22	0.22	0.20	0.28	0.28	0.13	0.30	0.28	0.15	0.32	0.32
Sat Flow, veh/h	1641	3554	1409	1641	3554	1432	1641	3207	361	1641	1870	1434
Grp Volume(v), veh/h	340	571	142	124	718	350	239	541	545	199	537	255
Grp Sat Flow(s),veh/h/ln	1641	1777	1409	1641	1777	1432	1641	1777	1791	1641	1870	1434
Q Serve(g_s), s	16.0	17.5	10.2	7.7	21.4	27.3	15.0	34.5	34.5	13.6	31.9	11.1
Cycle Q Clear(g_c), s	16.0	17.5	10.2	7.7	21.4	27.3	15.0	34.5	34.5	13.6	31.9	11.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	225	775	307	321	983	396	211	524	529	253	600	460
V/C Ratio(X)	1.51	0.74	0.46	0.39	0.73	0.88	1.13	1.03	1.03	0.79	0.89	0.55
Avail Cap(c_a), veh/h	225	1095	434	321	1004	405	211	524	529	379	640	491
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.4	42.6	39.7	40.9	38.3	40.4	50.9	41.2	41.4	47.5	37.8	13.7
Incr Delay (d2), s/veh	252.4	1.6	1.1	0.8	2.7	19.7	102.9	47.6	47.6	6.2	14.5	1.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	22.0	7.4	3.5	3.0	9.1	11.2	11.9	21.0	21.2	5.7	16.0	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	302.8	44.2	40.8	41.6	41.0	60.1	153.8	88.8	89.0	53.8	52.3	14.9
LnGrp LOS	F	D	D	D	D	E	F	F	F	D	D	B
Approach Vol, veh/h	1053		1192				1325		991			
Approach Delay, s/veh	127.2		46.7				100.6		43.0			
Approach LOS	F		D				F		D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.0	38.5	26.9	29.5	19.0	41.5	20.0	36.3				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	25.0	26.0	11.0	34.0	13.0	38.0	14.0	31.0				
Max Q Clear Time (g_c+I1), s	15.6	36.5	9.7	19.5	17.0	33.9	18.0	29.3				
Green Ext Time (p_c), s	0.4	0.0	0.0	2.6	0.0	1.3	0.0	0.9				
Intersection Summary												
HCM 7th Control Delay, s/veh	80.1											
HCM 7th LOS	F											
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
12: Morrison St & Tulare Ave

AM 2044  
09/12/2024























												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	640	74	43	792	0	129	72	136	0	26	15
Future Volume (vph)	31	640	74	43	792	0	129	72	136	0	26	15
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987						0.945			0.951	
Flt Protected		0.998			0.997			0.981				
Satd. Flow (prot)	0	1835	0	0	1857	0	0	1727	0	0	1771	0
Flt Permitted		0.998			0.997			0.981				
Satd. Flow (perm)	0	1835	0	0	1857	0	0	1727	0	0	1771	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	696	80	47	861	0	140	78	148	0	28	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	810	0	0	908	0	0	366	0	0	44	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	
Intersection Summary												
Area Type:	Other											
Control Type:	Roundabout											
Intersection Capacity Utilization	90.4%						ICU Level of Service E					
Analysis Period (min)	15											

Intersection				
Intersection Delay, s/veh	18.3			
Intersection LOS	C			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	810	908	366	44
Demand Flow Rate, veh/h	827	926	374	45
Vehicles Circulating, veh/h	77	258	745	1069
Vehicles Exiting, veh/h	1037	861	159	115
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	11.3	25.9	16.1	9.2
Approach LOS	B	D	C	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	827	926	374	45
Cap Entry Lane, veh/h	1276	1061	645	464
Entry HV Adj Factor	0.980	0.980	0.980	0.987
Flow Entry, veh/h	810	908	366	44
Cap Entry, veh/h	1250	1040	632	458
V/C Ratio	0.648	0.873	0.579	0.097
Control Delay, s/veh	11.3	25.9	16.1	9.2
LOS	B	D	C	A
95th %tile Queue, veh	5	12	4	0















Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

AM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	204	262	199	34	177	3	225	1123	37	14	673	116
Future Volume (vph)	204	262	199	34	177	3	225	1123	37	14	673	116
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.998			0.995			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1858	0	1630	3518	0	1630	3446	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1858	0	1630	3518	0	1630	3446	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			216		1			3			18	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	222	285	216	37	192	3	245	1221	40	15	732	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	285	216	37	195	0	245	1261	0	15	858	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

AM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	20.0	48.7	48.7	10.3	39.0		14.0	51.5		9.5	47.0	
Total Split (%)	16.7%	40.6%	40.6%	8.6%	32.5%		11.7%	42.9%		7.9%	39.2%	
Maximum Green (s)	14.5	43.2	43.2	4.8	33.5		8.5	46.0		4.0	41.5	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Don't Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effect Green (s)	16.5	29.9	29.9	9.7	18.1		10.3	42.6		5.7	31.3	
Actuated g/C Ratio	0.18	0.32	0.32	0.10	0.20		0.11	0.46		0.06	0.34	
v/c Ratio	0.77	0.48	0.36	0.22	0.54		1.35	0.78		0.15	0.73	
Control Delay (s/veh)	58.8	32.6	6.2	45.5	40.1		227.2	26.9		52.6	30.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	58.8	32.6	6.2	45.5	40.1		227.2	26.9		52.6	30.6	
LOS	E	C	A	D	D		F	C		D	C	
Approach Delay (s/veh)		32.8			41.0			59.5			30.9	
Approach LOS		C			D			E			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 92.7

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.35

Intersection Signal Delay (s/veh): 44.9

Intersection LOS: D

Intersection Capacity Utilization 74.4%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: Mooney Blvd & Cartmill Ave

























# HCM 7th Signalized Intersection Summary

## 1: Mooney Blvd & Cartmill Ave

AM 2044+Project

09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	204	262	199	34	177	3	225	1123	37	14	673	116
Future Volume (veh/h)	204	262	199	34	177	3	225	1123	37	14	673	116
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	222	285	216	37	192	3	245	1221	40	15	732	126
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	285	428	327	196	321	5	204	1472	48	54	990	170
Arrive On Green	0.17	0.23	0.23	0.12	0.17	0.16	0.12	0.42	0.40	0.03	0.33	0.31
Sat Flow, veh/h	1641	1870	1430	1641	1836	29	1641	3508	115	1641	3016	519
Grp Volume(v), veh/h	222	285	216	37	0	195	245	618	643	15	431	427
Grp Sat Flow(s),veh/h/ln	1641	1870	1430	1641	0	1864	1641	1777	1846	1641	1777	1758
Q Serve(g_s), s	10.4	11.1	7.3	1.6	0.0	7.8	10.0	24.9	25.0	0.7	17.3	17.4
Cycle Q Clear(g_c), s	10.4	11.1	7.3	1.6	0.0	7.8	10.0	24.9	25.0	0.7	17.3	17.4
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.06	1.00		0.30
Lane Grp Cap(c), veh/h	285	428	327	196	0	326	204	746	775	54	583	577
V/C Ratio(X)	0.78	0.67	0.66	0.19	0.00	0.60	1.20	0.83	0.83	0.28	0.74	0.74
Avail Cap(c_a), veh/h	326	1039	795	196	0	811	204	1049	1090	112	950	940
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.8	28.2	12.3	31.9	0.0	30.6	35.2	20.8	20.8	38.0	24.0	24.2
Incr Delay (d2), s/veh	10.1	1.8	2.3	0.5	0.0	1.8	127.8	4.0	3.8	2.8	1.9	1.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	4.7	3.3	0.6	0.0	3.3	10.9	9.3	9.7	0.3	6.6	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.9	30.0	14.6	32.3	0.0	32.3	163.0	24.7	24.7	40.7	25.8	26.1
LnGrp LOS	D	C	B	C		C	F	C	C	D	C	C
Approach Vol, veh/h	723			232			1506			873		
Approach Delay, s/veh	29.0			32.3			47.2			26.2		
Approach LOS	C			C			D			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.6	37.8	13.6	22.4	14.0	30.4	18.0	18.1				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	4.0	46.0	4.8	43.2	8.5	41.5	14.5	33.5				
Max Q Clear Time (g_c+I1), s	2.7	27.0	3.6	13.1	12.0	19.4	12.4	9.8				
Green Ext Time (p_c), s	0.0	5.1	0.0	1.9	0.0	3.3	0.2	0.6				
Intersection Summary												
HCM 7th Control Delay, s/veh				36.7								
HCM 7th LOS				D								

# Lanes, Volumes, Timings

## 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

AM 2044+Project  
09/12/2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (vph)	0	525	526	0	148	175
Future Volume (vph)	0	525	526	0	148	175
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Fr <sub>t</sub>						0.850
Fl <sub>t</sub> Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	1630	1458
Fl <sub>t</sub> Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	1630	1458
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						190
Link Speed (mph)		55	55		55	
Link Distance (ft)		349	727		300	
Travel Time (s)		4.3	9.0		3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	571	572	0	161	190
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	571	572	0	161	190
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors		1	1		1	1
Detector Template						
Leading Detector (ft)		50	50		50	50
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		50	50		50	50
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		4.0	4.0		4.0	4.0
Minimum Split (s)		24.0	24.0		24.0	24.0
Total Split (s)		53.0	53.0		47.0	47.0
Total Split (%)		53.0%	53.0%		47.0%	47.0%
Maximum Green (s)		47.0	47.0		41.0	41.0
Yellow Time (s)		5.0	5.0		5.0	5.0



Lanes, Volumes, Timings  
2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

AM 2044+Project  
09/12/2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		None	None		Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effect Green (s)		12.9	12.9		11.0	11.0
Actuated g/C Ratio		0.40	0.40		0.34	0.34
v/c Ratio		0.40	0.40		0.29	0.30
Control Delay (s/veh)		8.0	8.0		9.8	3.4
Queue Delay		0.0	0.0		0.0	0.0
Total Delay (s/veh)		8.0	8.0		9.8	3.4
LOS		A	A		A	A
Approach Delay (s/veh)		8.0	8.0		6.3	
Approach LOS		A	A		A	

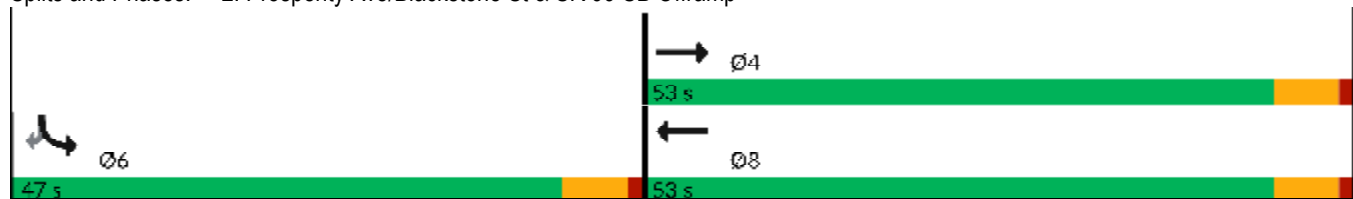
Intersection Summary

Area Type: Other  
Cycle Length: 100  
Actuated Cycle Length: 32.1  
Natural Cycle: 50  
Control Type: Actuated-Uncoordinated  
Maximum v/c Ratio: 0.40  
Intersection Signal Delay (s/veh): 7.6  
Intersection Capacity Utilization 33.0%  
Analysis Period (min) 15

Intersection LOS: A

ICU Level of Service A

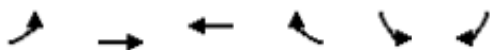
Splits and Phases: 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp



# HCM 7th Signalized Intersection Summary

## 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

AM 2044+Project  
09/12/2024


























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (veh/h)	0	525	526	0	148	175
Future Volume (veh/h)	0	525	526	0	148	175
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1723	1723
Adj Flow Rate, veh/h	0	571	572	0	161	190
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	1329	1329	0	512	456
Arrive On Green	0.00	0.37	0.37	0.00	0.31	0.31
Sat Flow, veh/h	0	3741	3741	0	1641	1460
Grp Volume(v), veh/h	0	571	572	0	161	190
Grp Sat Flow(s),veh/h/ln	0	1777	1777	0	1641	1460
Q Serve(g_s), s	0.0	3.1	3.1	0.0	1.9	2.6
Cycle Q Clear(g_c), s	0.0	3.1	3.1	0.0	1.9	2.6
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1329	1329	0	512	456
V/C Ratio(X)	0.00	0.43	0.43	0.00	0.31	0.42
Avail Cap(c_a), veh/h	0	6830	6830	0	2767	2462
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	6.0	6.0	0.0	6.7	6.9
Incr Delay (d2), s/veh	0.0	0.2	0.2	0.0	0.3	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.2	0.0	0.2	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	0.0	6.2	6.2	0.0	7.0	7.5
LnGrp LOS		A	A		A	A
Approach Vol, veh/h		571	572		351	
Approach Delay, s/veh		6.2	6.2		7.3	
Approach LOS		A	A		A	
Timer - Assigned Phs				4	6	8
Phs Duration (G+Y+Rc), s				13.5	12.0	13.5
Change Period (Y+Rc), s				6.0	6.0	6.0
Max Green Setting (Gmax), s				47.0	41.0	47.0
Max Q Clear Time (g_c+I1), s				5.1	4.6	5.1
Green Ext Time (p_c), s				2.5	1.3	2.5
Intersection Summary						
HCM 7th Control Delay, s/veh			6.4			
HCM 7th LOS			A			

# Lanes, Volumes, Timings


## 3: Blackstone Ave/Blackstone St & Prosperity Ave

AM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	3	708	15	490	0	34	272	308	110	2
Future Volume (vph)	0	12	3	708	15	490	0	34	272	308	110	2
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	30		0	335		310	55		90	240		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor		1.00				0.98						
Frt		0.972				0.850			0.850		0.998	
Flt Protected				0.950	0.954					0.950		
Satd. Flow (prot)	1716	1803	0	1548	1688	1458	1716	1863	1458	3162	1859	0
Flt Permitted				0.950	0.723					0.950		
Satd. Flow (perm)	1716	1803	0	1548	1279	1427	1716	1863	1458	3162	1859	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				533			296		1	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		98			1229			643			727	
Travel Time (s)		1.2			15.2			8.0			9.0	
Confl. Peds. (#/hr)			5			5						
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	13	3	770	16	533	0	37	296	335	120	2
Shared Lane Traffic (%)				49%								
Lane Group Flow (vph)	0	16	0	393	393	533	0	37	296	335	122	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												

Lanes, Volumes, Timings  
3: Blackstone Ave/Blackstone St & Prosperity Ave

AM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	24.1		10.0	24.1	24.1	10.0	24.0	24.0	10.0	24.0	
Total Split (s)	13.0	27.1		26.9	41.0	41.0	10.0	24.0	24.0	22.0	36.0	
Total Split (%)	13.0%	27.1%		26.9%	41.0%	41.0%	10.0%	24.0%	24.0%	22.0%	36.0%	
Maximum Green (s)	7.0	21.1		20.9	35.0	35.0	4.0	18.0	18.0	16.0	30.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Don't Walk (s)		11.1			11.1	11.1		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		5			5	5		0	0		0	
Act Effect Green (s)		9.9		32.7	32.7	39.1		10.4	10.4	14.8	29.3	
Actuated g/C Ratio		0.13		0.43	0.43	0.51		0.14	0.14	0.19	0.38	
v/c Ratio		0.07		0.59	0.55	0.54		0.15	0.65	0.55	0.17	
Control Delay (s/veh)		27.5		27.3	25.6	3.5		31.7	11.7	32.5	16.3	
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay (s/veh)		27.5		27.3	25.6	3.5		31.7	11.7	32.5	16.3	
LOS		C		C	C	A		C	B	C	B	
Approach Delay (s/veh)		27.5			17.2			13.9			28.2	
Approach LOS		C			B			B			C	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 76.5

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay (s/veh): 19.1

Intersection LOS: B

Intersection Capacity Utilization 50.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Blackstone Ave/Blackstone St & Prosperity Ave


























# HCM 7th Signalized Intersection Summary

## 3: Blackstone Ave/Blackstone St & Prosperity Ave

























AM 2044+Project

09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	12	3	708	15	490	0	34	272	308	110	2
Future Volume (veh/h)	0	12	3	708	15	490	0	34	272	308	110	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	0	13	3	781	0	533	0	37	296	335	120	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	2	142	33	936	0	625	2	461	360	512	843	14
Arrive On Green	0.00	0.10	0.07	0.29	0.00	0.44	0.00	0.25	0.25	0.16	0.46	0.43
Sat Flow, veh/h	1641	1458	336	3281	0	1436	1641	1870	1460	3183	1834	31
Grp Volume(v), veh/h	0	0	16	781	0	533	0	37	296	335	0	122
Grp Sat Flow(s),veh/h/ln	1641	0	1794	1641	0	1436	1641	1870	1460	1591	0	1865
Q Serve(g_s), s	0.0	0.0	0.6	17.0	0.0	11.1	0.0	1.2	14.6	7.5	0.0	2.9
Cycle Q Clear(g_c), s	0.0	0.0	0.6	17.0	0.0	11.1	0.0	1.2	14.6	7.5	0.0	2.9
Prop In Lane	1.00		0.19	1.00		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	2	0	175	936	0	625	2	461	360	512	0	857
V/C Ratio(X)	0.00	0.00	0.09	0.83	0.00	0.85	0.00	0.08	0.82	0.65	0.00	0.14
Avail Cap(c_a), veh/h	194	0	543	985	0	696	129	490	383	751	0	857
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	31.5	25.6	0.0	4.2	0.0	22.1	27.2	30.0	0.0	11.9
Incr Delay (d2), s/veh	0.0	0.0	0.2	6.0	0.0	9.2	0.0	0.1	12.8	1.4	0.0	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.3	6.5	0.0	6.2	0.0	0.5	5.7	2.7	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	31.7	31.6	0.0	13.4	0.0	22.2	40.0	31.5	0.0	12.0
LnGrp LOS			C	C		B		C	D	C		B
Approach Vol, veh/h	16			1314			333			457		
Approach Delay, s/veh	31.7			24.2			38.0			26.3		
Approach LOS	C			C			D			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.3	22.8	25.8	11.4	0.0	39.1	0.0	37.2				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	16.0	18.0	20.9	21.1	4.0	30.0	7.0	35.0				
Max Q Clear Time (g_c+I1), s	9.5	16.6	19.0	2.6	0.0	4.9	0.0	13.1				
Green Ext Time (p_c), s	0.7	0.2	0.7	0.0	0.0	0.3	0.0	2.4				
Intersection Summary												
HCM 7th Control Delay, s/veh	26.9											
HCM 7th LOS	C											
Notes												
User approved volume balancing among the lanes for turning movement.												













Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

AM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	375	437	99	123	701	174	128	272	76	83	32	296
Future Volume (vph)	375	437	99	123	701	174	128	272	76	83	32	296
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	270		0	155		85	155		0	200		205
Storage Lanes	2		1	1		1	1		0	2		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	0.88
Ped Bike Factor			0.97			0.98		1.00				0.97
Fr't			0.850			0.850		0.967				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	1630	5085	1458	1630	3409	0	3162	1863	2567
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1410	1630	5085	1433	1630	3409	0	3162	1863	2489
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			140			28			322
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1229			2636			362			5336	
Travel Time (s)		15.2			32.7			4.5			66.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	408	475	108	134	762	189	139	296	83	90	35	322
Shared Lane Traffic (%)												
Lane Group Flow (vph)	408	475	108	134	762	189	139	379	0	90	35	322
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

AM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	32.7	32.7	10.0	45.6	45.6	10.0	47.0		10.0	49.9	49.9
Total Split (s)	31.9	43.1	43.1	35.9	47.1	47.1	11.0	31.0		10.0	30.0	30.0
Total Split (%)	26.6%	35.9%	35.9%	29.9%	39.3%	39.3%	9.2%	25.8%		8.3%	25.0%	25.0%
Maximum Green (s)	25.9	37.1	37.1	29.9	41.1	41.1	5.0	25.0		4.0	24.0	24.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Don't Walk (s)		19.7	19.7		32.6	32.6		34.0			36.9	36.9
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effect Green (s)	19.0	26.7	26.7	15.5	23.2	23.2	7.6	21.8		6.5	17.7	17.7
Actuated g/C Ratio	0.22	0.31	0.31	0.18	0.27	0.27	0.09	0.26		0.08	0.21	0.21
v/c Ratio	0.58	0.43	0.20	0.45	0.55	0.38	0.95	0.42		0.37	0.09	0.42
Control Delay (s/veh)	36.2	26.3	3.8	40.9	29.2	11.8	108.1	27.5		50.0	29.1	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	36.2	26.3	3.8	40.9	29.2	11.8	108.1	27.5		50.0	29.1	5.2
LOS	D	C	A	D	C	B	F	C		D	C	A
Approach Delay (s/veh)		27.9			27.6			49.1			16.1	
Approach LOS		C			C			D			B	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 85

Natural Cycle: 130

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay (s/veh): 29.7

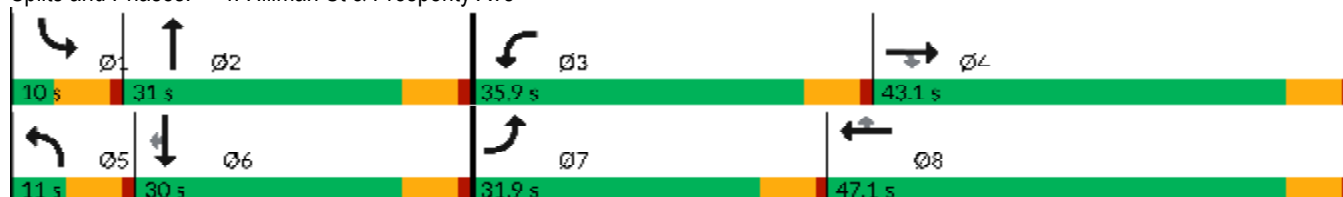
Intersection LOS: C

Intersection Capacity Utilization 58.6%

ICU Level of Service B

























Analysis Period (min) 15

Splits and Phases: 4: Hillman St & Prosperity Ave



# HCM 7th Signalized Intersection Summary 4: Hillman St & Prosperity Ave





























AM 2044+Project  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	375	437	99	123	701	174	128	272	76	83	32	296
Future Volume (veh/h)	375	437	99	123	701	174	128	272	76	83	32	296
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	408	475	108	134	762	189	139	296	83	90	35	322
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	620	1209	482	215	1411	396	160	636	175	236	391	518
Arrive On Green	0.19	0.34	0.34	0.13	0.28	0.28	0.10	0.23	0.20	0.07	0.21	0.21
Sat Flow, veh/h	3183	3554	1417	1641	5106	1432	1641	2740	753	3183	1870	2479
Grp Volume(v), veh/h	408	475	108	134	762	189	139	190	189	90	35	322
Grp Sat Flow(s),veh/h/ln	1591	1777	1417	1641	1702	1432	1641	1777	1715	1591	1870	1239
Q Serve(g_s), s	8.5	7.3	3.9	5.6	9.1	7.9	6.0	6.6	6.9	1.9	1.1	8.5
Cycle Q Clear(g_c), s	8.5	7.3	3.9	5.6	9.1	7.9	6.0	6.6	6.9	1.9	1.1	8.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.44	1.00		1.00
Lane Grp Cap(c), veh/h	620	1209	482	215	1411	396	160	412	398	236	391	518
V/C Ratio(X)	0.66	0.39	0.22	0.62	0.54	0.48	0.87	0.46	0.48	0.38	0.09	0.62
Avail Cap(c_a), veh/h	1236	1934	771	728	3063	859	160	668	645	266	677	897
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.7	18.0	16.9	29.6	22.1	21.7	32.0	23.7	24.2	31.7	22.9	25.8
Incr Delay (d2), s/veh	1.2	0.2	0.2	3.0	0.3	0.9	36.8	0.8	0.9	1.0	0.1	1.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	2.5	1.1	2.1	3.2	2.4	3.8	2.5	2.5	0.7	0.4	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	27.9	18.3	17.2	32.5	22.4	22.6	68.7	24.5	25.1	32.7	23.0	27.1
LnGrp LOS	C	B	B	C	C	C	E	C	C	C	C	C
Approach Vol, veh/h	991				1085		518				447	
Approach Delay, s/veh	22.1				23.7		36.6				27.9	
Approach LOS	C				C		D				C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.3	20.7	13.4	28.5	11.0	19.0	18.0	23.9				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	4.0	25.0	29.9	37.1	5.0	24.0	25.9	41.1				
Max Q Clear Time (g_c+I1), s	3.9	8.9	7.6	9.3	8.0	10.5	10.5	11.1				
Green Ext Time (p_c), s	0.0	1.2	0.4	2.4	0.0	1.3	1.5	4.4				
Intersection Summary												
HCM 7th Control Delay, s/veh	26.0											
HCM 7th LOS	C											
Notes												
User approved pedestrian interval to be less than phase max green.												















Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

AM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  						 	
Traffic Volume (vph)	53	402	102	63	601	73	123	180	69	55	169	99
Future Volume (vph)	53	402	102	63	601	73	123	180	69	55	169	99
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	235		115	230		100	100		100	160		100
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96			0.97			0.97			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	5085	1458	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1405	1630	5085	1410	1630	1863	1415	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			191			191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2636			2650			5387			713	
Travel Time (s)		32.7			32.9			66.8			8.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	58	437	111	68	653	79	134	196	75	60	184	108
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	437	111	68	653	79	134	196	75	60	184	108
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

AM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	27.0	27.0	10.0	34.1	34.1	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (s)	16.0	38.4	38.4	13.0	35.4	35.4	23.0	47.6	47.6	21.0	45.6	45.6
Total Split (%)	13.3%	32.0%	32.0%	10.8%	29.5%	29.5%	19.2%	39.7%	39.7%	17.5%	38.0%	38.0%
Maximum Green (s)	10.0	32.4	32.4	7.0	29.4	29.4	17.0	41.6	41.6	15.0	39.6	39.6
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		14.0	14.0		21.1	21.1		32.6	32.6		32.6	32.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effect Green (s)	11.5	19.4	19.4	12.3	23.1	23.1	15.2	23.0	23.0	13.7	19.2	19.2
Actuated g/C Ratio	0.16	0.26	0.26	0.17	0.31	0.31	0.21	0.31	0.31	0.19	0.26	0.26
v/c Ratio	0.23	0.47	0.22	0.25	0.41	0.14	0.40	0.34	0.13	0.20	0.38	0.21
Control Delay (s/veh)	40.1	29.7	1.0	38.8	25.4	0.5	37.9	26.3	0.5	35.4	28.9	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	40.1	29.7	1.0	38.8	25.4	0.5	37.9	26.3	0.5	35.4	28.9	0.9
LOS	D	C	A	D	C	A	D	C	A	D	C	A
Approach Delay (s/veh)		25.4			24.1			25.3			21.4	
Approach LOS		C			C			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 73.4

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.47

Intersection Signal Delay (s/veh): 24.3

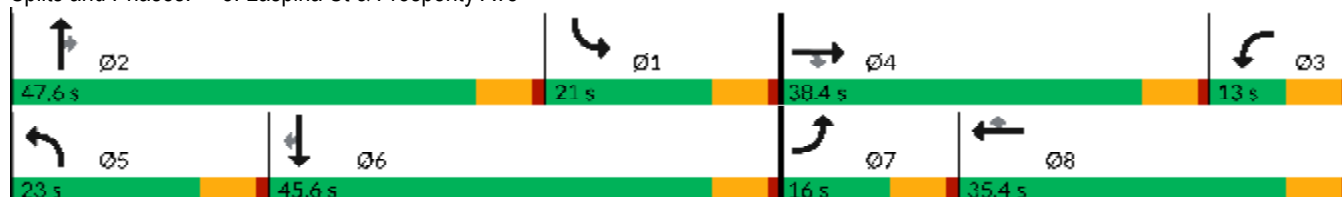
Intersection LOS: C

Intersection Capacity Utilization 50.1%

ICU Level of Service A

Analysis Period (min) 15

























Splits and Phases: 5: Laspina St & Prosperity Ave



# HCM 7th Signalized Intersection Summary
























## 5: Laspina St & Prosperity Ave

AM 2044+Project  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	402	102	63	601	73	123	180	69	55	169	99
Future Volume (veh/h)	53	402	102	63	601	73	123	180	69	55	169	99
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	58	437	111	68	653	79	134	196	75	60	184	108
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	131	842	334	174	1343	372	229	422	318	223	415	317
Arrive On Green	0.08	0.24	0.24	0.11	0.26	0.26	0.14	0.23	0.23	0.14	0.22	0.22
Sat Flow, veh/h	1641	3554	1411	1641	5106	1413	1641	1870	1410	1641	1870	1430
Grp Volume(v), veh/h	58	437	111	68	653	79	134	196	75	60	184	108
Grp Sat Flow(s),veh/h/ln	1641	1777	1411	1641	1702	1413	1641	1870	1410	1641	1870	1430
Q Serve(g_s), s	1.8	5.8	1.9	2.1	5.8	1.2	4.1	4.9	2.4	1.8	4.6	3.4
Cycle Q Clear(g_c), s	1.8	5.8	1.9	2.1	5.8	1.2	4.1	4.9	2.4	1.8	4.6	3.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	131	842	334	174	1343	372	229	422	318	223	415	317
V/C Ratio(X)	0.44	0.52	0.33	0.39	0.49	0.21	0.59	0.46	0.24	0.27	0.44	0.34
Avail Cap(c_a), veh/h	364	2260	897	273	2964	820	576	1508	1137	516	1438	1100
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.7	18.0	4.7	22.6	16.8	4.1	21.8	18.1	17.1	21.0	18.2	17.7
Incr Delay (d2), s/veh	2.3	0.5	0.6	1.4	0.3	0.3	2.4	0.8	0.4	0.6	0.7	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.9	0.9	0.7	1.8	0.6	1.5	1.8	0.6	0.6	1.7	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	26.1	18.4	5.3	24.0	17.1	4.4	24.2	18.9	17.5	21.6	18.9	18.4
LnGrp LOS	C	B	A	C	B	A	C	B	B	C	B	B
Approach Vol, veh/h	606				800				405		352	
Approach Delay, s/veh	16.8				16.4				20.4		19.2	
Approach LOS	B				B				C		B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.3	16.2	9.7	16.8	11.6	16.0	8.3	18.2				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	41.6	7.0	32.4	17.0	39.6	10.0	29.4				
Max Q Clear Time (g_c+I1), s	3.8	6.9	4.1	7.8	6.1	6.6	3.8	7.8				
Green Ext Time (p_c), s	0.1	1.0	0.0	2.2	0.3	1.0	0.0	3.1				
Intersection Summary												
HCM 7th Control Delay, s/veh			17.7									
HCM 7th LOS			B									


Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

AM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	233	308	256	182	334	92	332	1070	98	44	663	155
Future Volume (vph)	233	308	256	182	334	92	332	1070	98	44	663	155
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98		1.00				0.97			0.98
Frt			0.850		0.968				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1795	0	1630	3539	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1432	1630	1795	0	1630	3539	1409	1630	3539	1426
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			278		11				191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2617			5285	
Travel Time (s)		32.9			36.1			32.4			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	253	335	278	198	363	100	361	1163	107	48	721	168
Shared Lane Traffic (%)												
Lane Group Flow (vph)	253	335	278	198	463	0	361	1163	107	48	721	168
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

AM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	24.0	39.7	39.7	17.0	32.7		23.0	46.3	46.3	17.0	40.3	40.3
Total Split (%)	20.0%	33.1%	33.1%	14.2%	27.3%		19.2%	38.6%	38.6%	14.2%	33.6%	33.6%
Maximum Green (s)	18.0	33.7	33.7	11.0	26.7		17.0	40.3	40.3	11.0	34.3	34.3
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Don't Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effect Green (s)	20.0	29.2	29.2	20.1	29.3		19.0	45.7	45.7	11.9	36.3	36.3
Actuated g/C Ratio	0.17	0.24	0.24	0.17	0.24		0.16	0.38	0.38	0.10	0.30	0.30
v/c Ratio	0.94	0.74	0.50	0.73	1.04		1.40	0.87	0.16	0.30	0.68	0.30
Control Delay (s/veh)	91.2	52.0	7.0	66.0	98.1		242.8	43.9	0.5	55.2	40.9	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	91.2	52.0	7.0	66.0	98.1		242.8	43.9	0.5	55.2	40.9	4.4
LOS	F	D	A	E	F		F	D	A	E	D	A
Approach Delay (s/veh)		49.0			88.5			85.1			35.1	
Approach LOS		D			F			F			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120.6

Natural Cycle: 115

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.40

Intersection Signal Delay (s/veh): 66.6

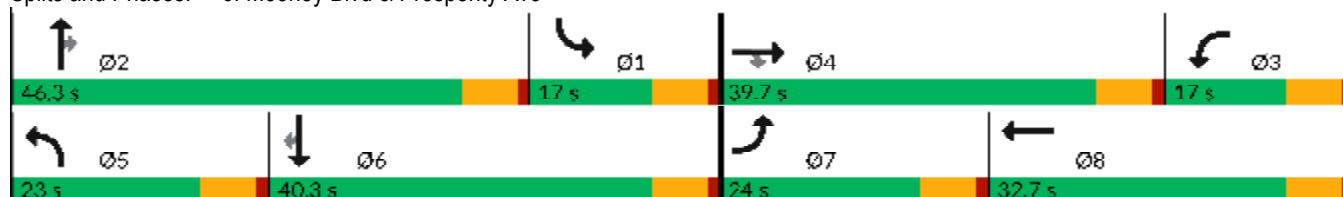
Intersection LOS: E

Intersection Capacity Utilization 88.9%

ICU Level of Service E
























Analysis Period (min) 15

Splits and Phases: 6: Mooney Blvd & Prosperity Ave












# HCM 7th Signalized Intersection Summary 6: Mooney Blvd & Prosperity Ave




AM 2044+Project  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	233	308	256	182	334	92	332	1070	98	44	663	155
Future Volume (veh/h)	233	308	256	182	334	92	332	1070	98	44	663	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	253	335	278	198	363	100	361	1163	107	48	721	168
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	273	430	329	289	336	93	260	1253	500	178	1075	434
Arrive On Green	0.17	0.23	0.23	0.18	0.24	0.22	0.16	0.35	0.35	0.11	0.30	0.30
Sat Flow, veh/h	1641	1870	1430	1641	1404	387	1641	3554	1418	1641	3554	1433
Grp Volume(v), veh/h	253	335	278	198	0	463	361	1163	107	48	721	168
Grp Sat Flow(s),veh/h/ln	1641	1870	1430	1641	0	1791	1641	1777	1418	1641	1777	1433
Q Serve(g_s), s	18.2	20.2	14.8	13.6	0.0	28.7	19.0	37.8	6.3	3.2	21.3	11.1
Cycle Q Clear(g_c), s	18.2	20.2	14.8	13.6	0.0	28.7	19.0	37.8	6.3	3.2	21.3	11.1
Prop In Lane	1.00		1.00	1.00		0.22	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	273	430	329	289	0	428	260	1253	500	178	1075	434
V/C Ratio(X)	0.93	0.78	0.85	0.69	0.00	1.08	1.39	0.93	0.21	0.27	0.67	0.39
Avail Cap(c_a), veh/h	273	556	426	289	0	428	260	1253	500	178	1075	434
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.3	43.4	19.5	46.3	0.0	45.9	50.5	37.4	27.2	49.1	36.6	33.1
Incr Delay (d2), s/veh	35.2	5.3	11.7	6.6	0.0	66.9	197.3	13.2	1.0	0.8	3.3	2.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.8	9.5	5.6	5.8	0.0	20.0	21.7	17.5	2.2	1.3	9.2	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	84.4	48.7	31.3	52.9	0.0	112.8	247.8	50.6	28.2	49.9	40.0	35.7
LnGrp LOS	F	D	C	D		F	F	D	C	D	D	D
Approach Vol, veh/h	866			661			1631			937		
Approach Delay, s/veh	53.5			94.8			92.8			39.7		
Approach LOS	D			F			F			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	46.3	25.1	31.6	23.0	40.3	24.0	32.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	11.0	40.3	11.0	33.7	17.0	34.3	18.0	26.7				
Max Q Clear Time (g_c+I1), s	5.2	39.8	15.6	22.2	21.0	23.3	20.2	30.7				
Green Ext Time (p_c), s	0.0	0.3	0.0	1.9	0.0	3.0	0.0	0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh	72.7											
HCM 7th LOS	E											
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
7: Morrison St & Prosperity Ave

AM 2044+Project  
09/12/2024
















						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	409	26	41	451	148	70
Future Volume (vph)	409	26	41	451	148	70
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.992				0.957	
Flt Protected				0.996	0.967	
Satd. Flow (prot)	1848	0	0	1855	1588	0
Flt Permitted				0.996	0.967	
Satd. Flow (perm)	1848	0	0	1855	1588	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	445	28	45	490	161	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	473	0	0	535	237	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	72.7%			ICU Level of Service C		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	10					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	409	26	41	451	148	70
Future Vol, veh/h	409	26	41	451	148	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	445	28	45	490	161	76
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	473	0	1038	459
Stage 1	-	-	-	-	459	-
Stage 2	-	-	-	-	579	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1089	-	256	602
Stage 1	-	-	-	-	636	-
Stage 2	-	-	-	-	560	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1089	-	241	602
Mov Cap-2 Maneuver	-	-	-	-	241	-
Stage 1	-	-	-	-	636	-
Stage 2	-	-	-	-	529	-
Approach	EB	WB		NB		
HCM Control Delay, s/v	0	0.7		50.86		
HCM LOS	F					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	299	-	-	150	-	
HCM Lane V/C Ratio	0.793	-	-	0.041	-	
HCM Control Delay (s/veh)	50.9	-	-	8.4	0	
HCM Lane LOS	F	-	-	A	A	
HCM 95th %tile Q(veh)	6.3	-	-	0.1	-	



Lanes, Volumes, Timings  
8: Prosperity Ave & Oakmore Rd












AM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	169	283	19	7	269	49	59	0	14	29	0	153
Future Volume (vph)	169	283	19	7	269	49	59	0	14	29	0	153
Ideal Flow (vphpl)	1750	1900	1900	1900	1900	1750	1900	1900	1900	1750	1900	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.980			0.972			0.865	
Flt Protected		0.982			0.999			0.961		0.950		
Satd. Flow (prot)	0	1818	0	0	1824	0	0	0	0	1630	0	0
Flt Permitted		0.982			0.999			0.961		0.950		
Satd. Flow (perm)	0	1818	0	0	1824	0	0	0	0	1630	0	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2108			5202			329			1848	
Travel Time (s)		26.1			64.5			4.1			22.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	184	308	21	8	292	53	64	0	15	32	0	166
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	513	0	0	353	0	0	79	0	32	166	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.00	1.00	1.00	1.11	1.00	1.00	1.00	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization Err%	ICU Level of Service H											
Analysis Period (min)	15											

Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			2					2		
Traffic Vol, veh/h	169	283	19	7	269	49	59	0	14	29	0	153
Future Vol, veh/h	169	283	19	7	269	49	59	0	14	29	0	153
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	184	308	21	8	292	53	64	0	15	32	0	166
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	346	0	0	328	0	0	1009			-	319	
Stage 1	-	-	-	-	-	-	334			-	-	
Stage 2	-	-	-	-	-	-	675			-	-	
Critical Hdwy	4.12	-	-	4.12	-	-	6.42			-	6.22	
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42			-	-	
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42			-	-	
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518			-	3.318	
Pot Cap-1 Maneuver	1213	-	-	1231	-	-	266			0	722	
Stage 1	-	-	-	-	-	-	725			0	-	
Stage 2	-	-	-	-	-	-	506			0	-	
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1213	-	-	1231	-	-	215			0	722	
Mov Cap-2 Maneuver	-	-	-	-	-	-	215			0	-	
Stage 1	-	-	-	-	-	-	591			0	-	
Stage 2	-	-	-	-	-	-	502			0	-	
Approach	EB			WB			SB					
HCM Control Delay, s/v	3.05			0.17			15.95					
HCM LOS							C					
Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1					
Capacity (veh/h)	638	-	-	1231	-	-	525					
HCM Lane V/C Ratio	0.151	-	-	0.006	-	-	0.377					
HCM Control Delay (s/veh)	8.5	0	-	7.9	-	-	16					
HCM Lane LOS	A	A	-	A	-	-	C					
HCM 95th %tile Q(veh)	0.5	-	-	0	-	-	1.7					

Lanes, Volumes, Timings  
9: Mooney Blvd & Seminole Ave



























AM 2044+Project  
09/12/2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	373	1404	29	105	1016
Future Volume (vph)	2	373	1404	29	105	1016
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	540	0		0	80	
Storage Lanes	0	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.865		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	0	1484	3539	1458	1630	3539
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	0	1484	3539	1458	1630	3539
Link Speed (mph)	55		55			55
Link Distance (ft)	1719		2673			2617
Travel Time (s)	21.3		33.1			32.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	405	1526	32	114	1104
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2	405	1526	32	114	1104
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization Err%	ICU Level of Service H					
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	18.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗	↗	↘	↗↗
Traffic Vol, veh/h	2	373	1404	29	105	1016
Future Vol, veh/h	2	373	1404	29	105	1016
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	0	80	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	405	1526	32	114	1104
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	2307	763	0	0	1558	0
Stage 1	1526	-	-	-	-	-
Stage 2	780	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	32 ~ 347	-	-	-	421	-
Stage 1	166	-	-	-	-	-
Stage 2	412	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	23 ~ 347	-	-	-	421	-
Mov Cap-2 Maneuver	23	-	-	-	-	-
Stage 1	166	-	-	-	-	-
Stage 2	300	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s/v136.4		0		1.57		
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	347	421	-	
HCM Lane V/C Ratio	-	-	1.169	0.271	-	
HCM Control Delay (s/veh)	-	-	136.4	16.7	-	
HCM Lane LOS	-	-	F	C	-	
HCM 95th %tile Q(veh)	-	-	16.5	1.1	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon













Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

AM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Traffic Volume (vph)	80	626	107	66	996	65	127	225	62	58	189	70
Future Volume (vph)	80	626	107	66	996	65	127	225	62	58	189	70
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		135	110		0	90		90	80		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97		1.00				0.98			0.98
Fr't			0.850		0.991				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3500	0	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1408	1630	3500	0	1630	1863	1431	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191		6				191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		841			2671			726			5387	
Travel Time (s)		10.4			33.1			9.0			66.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	680	116	72	1083	71	138	245	67	63	205	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	680	116	72	1154	0	138	245	67	63	205	76
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

AM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.9	29.9	10.0	28.4		10.0	39.9	39.9	10.0	44.1	44.1
Total Split (s)	20.0	41.9	41.9	16.0	37.9		18.0	41.1	41.1	21.0	44.1	44.1
Total Split (%)	16.7%	34.9%	34.9%	13.3%	31.6%		15.0%	34.3%	34.3%	17.5%	36.8%	36.8%
Maximum Green (s)	14.0	35.9	35.9	10.0	31.9		12.0	35.1	35.1	15.0	38.1	38.1
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Don't Walk (s)		16.9	16.9		15.4			26.9	26.9		31.1	31.1
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effect Green (s)	12.3	36.5	36.5	10.8	35.1		13.6	25.6	25.6	11.3	20.0	20.0
Actuated g/C Ratio	0.13	0.39	0.39	0.11	0.37		0.14	0.27	0.27	0.12	0.21	0.21
v/c Ratio	0.41	0.50	0.17	0.39	0.88		0.59	0.48	0.13	0.32	0.52	0.17
Control Delay (s/veh)	48.1	26.3	0.6	50.2	39.8		53.0	35.3	0.5	46.9	38.1	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	48.1	26.3	0.6	50.2	39.8		53.0	35.3	0.5	46.9	38.1	0.8
LOS	D	C	A	D	D		D	D	A	D	D	A
Approach Delay (s/veh)		25.1			40.4			35.5			31.4	
Approach LOS		C			D			D			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 94.1

Natural Cycle: 105

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay (s/veh): 33.9

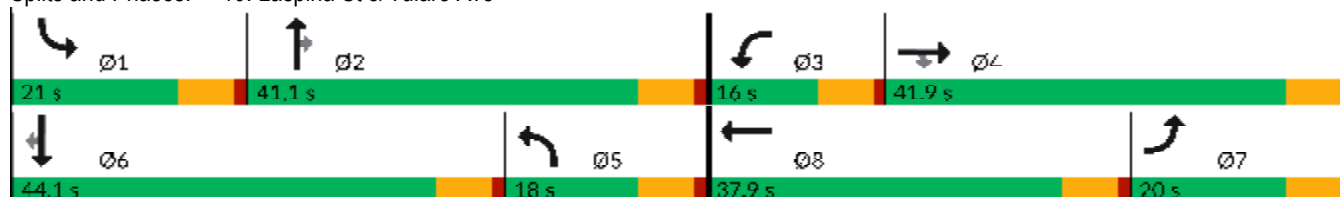
Intersection LOS: C

Intersection Capacity Utilization 68.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 10: Laspina St & Tulare Ave


























# HCM 7th Signalized Intersection Summary

## 10: Laspina St & Tulare Ave





























AM 2044+Project

09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	626	107	66	996	65	127	225	62	58	189	70
Future Volume (veh/h)	80	626	107	66	996	65	127	225	62	58	189	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	87	680	116	72	1083	71	138	245	67	63	205	76
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	150	1391	555	131	1282	84	209	473	362	120	371	283
Arrive On Green	0.09	0.39	0.39	0.08	0.38	0.35	0.13	0.25	0.25	0.07	0.20	0.20
Sat Flow, veh/h	1641	3554	1419	1641	3378	221	1641	1870	1431	1641	1870	1428
Grp Volume(v), veh/h	87	680	116	72	569	585	138	245	67	63	205	76
Grp Sat Flow(s),veh/h/ln	1641	1777	1419	1641	1777	1823	1641	1870	1431	1641	1870	1428
Q Serve(g_s), s	4.0	11.3	2.3	3.3	23.0	23.1	6.3	8.9	2.9	2.9	7.8	3.5
Cycle Q Clear(g_c), s	4.0	11.3	2.3	3.3	23.0	23.1	6.3	8.9	2.9	2.9	7.8	3.5
Prop In Lane	1.00		1.00	1.00		0.12	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	150	1391	555	131	674	692	209	473	362	120	371	283
V/C Ratio(X)	0.58	0.49	0.21	0.55	0.84	0.85	0.66	0.52	0.19	0.53	0.55	0.27
Avail Cap(c_a), veh/h	334	1712	683	250	765	785	292	882	675	354	953	728
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.3	18.0	4.6	34.9	22.3	22.4	32.7	25.3	23.0	35.2	28.4	26.7
Incr Delay (d2), s/veh	3.5	0.3	0.2	3.6	7.8	7.7	3.5	0.9	0.2	3.6	1.3	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	4.0	1.1	1.3	9.5	9.8	2.5	3.6	0.9	1.2	3.2	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	37.8	18.3	4.8	38.5	30.1	30.1	36.3	26.2	23.3	38.7	29.7	27.2
LnGrp LOS	D	B	A	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h	883			1226			450			344		
Approach Delay, s/veh	18.4			30.6			28.8			30.8		
Approach LOS	B			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.7	23.9	10.3	34.8	14.0	19.6	11.2	33.9				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	35.1	10.0	35.9	12.0	38.1	14.0	31.9				
Max Q Clear Time (g_c+I1), s	4.9	10.9	5.3	13.3	8.3	9.8	6.0	25.1				
Green Ext Time (p_c), s	0.1	1.0	0.1	3.4	0.1	1.0	0.1	2.8				
Intersection Summary												
HCM 7th Control Delay, s/veh	26.7											
HCM 7th LOS	C											

Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave













AM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	313	536	131	120	725	326	220	898	102	184	494	235
Future Volume (vph)	313	536	131	120	725	326	220	898	102	184	494	235
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	420		185	125		125	80		0	475		475
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98		1.00				0.98
Fr't			0.850			0.850		0.985				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3539	1458	1630	3475	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1412	1630	3539	1430	1630	3475	0	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			212			9			255
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2671			2887			1662			2673	
Travel Time (s)		33.1			35.8			20.6			33.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	340	583	142	130	788	354	239	976	111	200	537	255
Shared Lane Traffic (%)												
Lane Group Flow (vph)	340	583	142	130	788	354	239	1087	0	200	537	255
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												



Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

AM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	37.0	37.0	10.0	37.0	37.0	10.0	39.9		10.0	42.7	42.7
Total Split (s)	20.0	40.0	40.0	17.0	37.0	37.0	19.0	32.0		31.0	44.0	44.0
Total Split (%)	16.7%	33.3%	33.3%	14.2%	30.8%	30.8%	15.8%	26.7%		25.8%	36.7%	36.7%
Maximum Green (s)	14.0	34.0	34.0	11.0	31.0	31.0	13.0	26.0		25.0	38.0	38.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Don't Walk (s)		24.0	24.0		24.0	24.0		26.9			29.7	29.7
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effect Green (s)	16.1	27.3	27.3	19.9	31.1	31.1	16.5	32.7		21.0	37.1	37.1
Actuated g/C Ratio	0.14	0.23	0.23	0.17	0.27	0.27	0.14	0.28		0.18	0.32	0.32
v/c Ratio	1.52	0.71	0.30	0.47	0.84	0.66	1.04	1.11		0.68	0.91	0.41
Control Delay (s/veh)	290.6	46.3	3.2	53.5	50.2	22.0	120.0	104.0		58.0	59.4	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	290.6	46.3	3.2	53.5	50.2	22.0	120.0	104.0		58.0	59.4	5.8
LOS	F	D	A	D	D	C	F	F		E	E	A
Approach Delay (s/veh)		118.6			42.7			106.9			45.4	
Approach LOS		F			D			F			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 117

Natural Cycle: 140

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.52

Intersection Signal Delay (s/veh): 78.9

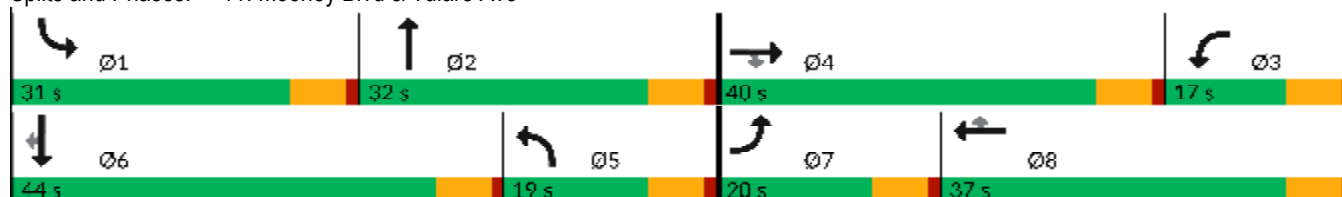
Intersection LOS: E

Intersection Capacity Utilization 93.0%

ICU Level of Service F

Analysis Period (min) 15

























Splits and Phases: 11: Mooney Blvd & Tulare Ave



# HCM 7th Signalized Intersection Summary

















## 11: Mooney Blvd & Tulare Ave

AM 2044+Project  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	313	536	131	120	725	326	220	898	102	184	494	235
Future Volume (veh/h)	313	536	131	120	725	326	220	898	102	184	494	235
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	340	583	142	130	788	354	239	976	111	200	537	255
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	224	784	311	318	988	398	210	942	107	254	600	460
Arrive On Green	0.14	0.22	0.22	0.19	0.28	0.28	0.13	0.29	0.28	0.15	0.32	0.32
Sat Flow, veh/h	1641	3554	1410	1641	3554	1432	1641	3203	364	1641	1870	1434
Grp Volume(v), veh/h	340	583	142	130	788	354	239	541	546	200	537	255
Grp Sat Flow(s),veh/h/ln	1641	1777	1410	1641	1777	1432	1641	1777	1791	1641	1870	1434
Q Serve(g_s), s	16.0	17.9	10.2	8.1	24.1	27.8	15.0	34.4	34.4	13.7	32.0	11.2
Cycle Q Clear(g_c), s	16.0	17.9	10.2	8.1	24.1	27.8	15.0	34.4	34.4	13.7	32.0	11.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	224	784	311	318	988	398	210	522	526	254	600	460
V/C Ratio(X)	1.52	0.74	0.46	0.41	0.80	0.89	1.14	1.04	1.04	0.79	0.90	0.55
Avail Cap(c_a), veh/h	224	1093	433	318	1002	404	210	522	526	378	639	490
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.5	42.5	39.5	41.3	39.2	40.5	51.0	41.3	41.5	47.6	37.9	13.8
Incr Delay (d2), s/veh	254.0	1.8	1.0	0.8	4.6	20.7	103.9	49.1	49.1	6.4	14.7	1.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	22.1	7.6	3.5	3.2	10.5	11.4	11.9	21.1	21.4	5.8	16.1	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	304.6	44.3	40.6	42.2	43.8	61.2	154.9	90.4	90.6	54.0	52.6	15.0
LnGrp LOS	F	D	D	D	D	E	F	F	F	D	D	B
Approach Vol, veh/h	1065				1272				1326			
Approach Delay, s/veh	126.9				48.5				102.1			
Approach LOS	F				D				F			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.1	38.4	26.7	29.8	19.0	41.5	20.0	36.5				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	25.0	26.0	11.0	34.0	13.0	38.0	14.0	31.0				
Max Q Clear Time (g_c+I1), s	15.7	36.4	10.1	19.9	17.0	34.0	18.0	29.8				
Green Ext Time (p_c), s	0.4	0.0	0.0	2.6	0.0	1.3	0.0	0.7				
Intersection Summary												
HCM 7th Control Delay, s/veh	80.6											
HCM 7th LOS	F											
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
12: Morrison St & Tulare Ave

AM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	640	74	43	792	1	129	72	136	7	26	89
Future Volume (vph)	43	640	74	43	792	1	129	72	136	7	26	89
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987						0.945			0.902	
Flt Protected		0.997			0.997			0.981			0.997	
Satd. Flow (prot)	0	1833	0	0	1857	0	0	1727	0	0	1675	0
Flt Permitted		0.997			0.997			0.981			0.997	
Satd. Flow (perm)	0	1833	0	0	1857	0	0	1727	0	0	1675	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	47	696	80	47	861	1	140	78	148	8	28	97
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	823	0	0	909	0	0	366	0	0	133	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	
Intersection Summary												
Area Type:	Other											
Control Type:	Roundabout											
Intersection Capacity Utilization	87.8%				ICU Level of Service E							
Analysis Period (min)	15											
























Intersection				
Intersection Delay, s/veh	19.1			
Intersection LOS	C			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	823	909	366	133
Demand Flow Rate, veh/h	840	927	374	136
Vehicles Circulating, veh/h	85	271	766	1069
Vehicles Exiting, veh/h	1120	869	159	129
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	11.8	27.6	16.9	12.6
Approach LOS	B	D	C	B
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	840	927	374	136
Cap Entry Lane, veh/h	1265	1047	632	464
Entry HV Adj Factor	0.980	0.980	0.980	0.981
Flow Entry, veh/h	823	909	366	133
Cap Entry, veh/h	1240	1026	619	455
V/C Ratio	0.664	0.886	0.592	0.293
Control Delay, s/veh	11.8	27.6	16.9	12.6
LOS	B	D	C	B
95th %tile Queue, veh	5	13	4	1



Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

AM 2044+Project with Mitigation













09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	249	191	203	32	203	7	145	1130	32	14	1375	262
Future Volume (vph)	249	191	203	32	203	7	145	1130	32	14	1375	262
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.995			0.996			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1852	0	1630	5061	0	1630	4939	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1852	0	1630	5061	0	1630	4939	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			221		2			4			36	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	271	208	221	35	221	8	158	1228	35	15	1495	285
Shared Lane Traffic (%)												
Lane Group Flow (vph)	271	208	221	35	229	0	158	1263	0	15	1780	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

AM 2044+Project with Mitigation

09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	20.0	48.7	48.7	10.3	39.0		14.0	51.5		9.5	47.0	
Total Split (%)	16.7%	40.6%	40.6%	8.6%	32.5%		11.7%	42.9%		7.9%	39.2%	
Maximum Green (s)	14.5	43.2	43.2	4.8	33.5		8.5	46.0		4.0	41.5	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Don't Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effect Green (s)	16.1	28.8	28.8	12.1	20.5		10.0	54.9		6.1	43.2	
Actuated g/C Ratio	0.15	0.27	0.27	0.11	0.19		0.09	0.52		0.06	0.41	
v/c Ratio	1.10	0.41	0.40	0.19	0.64		1.03	0.48		0.16	0.87	
Control Delay (s/veh)	129.3	36.8	6.8	45.0	46.8		128.2	18.8		53.4	35.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	129.3	36.8	6.8	45.0	46.8		128.2	18.8		53.4	35.0	
LOS	F	D	A	D	D		F	B		D	C	
Approach Delay (s/veh)		63.1			46.6			31.0			35.1	
Approach LOS		E			D			C			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 105.8

Natural Cycle: 130

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.10

Intersection Signal Delay (s/veh): 39.1

Intersection LOS: D

Intersection Capacity Utilization 82.9%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Mooney Blvd & Cartmill Ave


























# HCM 7th Signalized Intersection Summary

AM 2044+Project with Mitigation

1: Mooney Blvd & Cartmill Ave

09/12/2024
























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	249	191	203	32	203	7	145	1130	32	14	1375	262
Future Volume (veh/h)	249	191	203	32	203	7	145	1130	32	14	1375	262
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	271	208	221	35	221	8	158	1228	35	15	1495	285
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	262	346	264	252	321	12	163	1599	46	309	1724	328
Arrive On Green	0.16	0.19	0.19	0.15	0.18	0.16	0.10	0.31	0.30	0.19	0.40	0.39
Sat Flow, veh/h	1641	1870	1427	1641	1792	65	1641	5098	145	1641	4286	814
Grp Volume(v), veh/h	271	208	221	35	0	229	158	820	443	15	1186	594
Grp Sat Flow(s),veh/h/ln	1641	1870	1427	1641	0	1857	1641	1702	1839	1641	1702	1696
Q Serve(g_s), s	16.0	10.2	11.1	1.9	0.0	11.6	9.6	21.9	21.9	0.8	32.1	32.4
Cycle Q Clear(g_c), s	16.0	10.2	11.1	1.9	0.0	11.6	9.6	21.9	21.9	0.8	32.1	32.4
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.08	1.00		0.48
Lane Grp Cap(c), veh/h	262	346	264	252	0	333	163	1068	577	309	1369	682
V/C Ratio(X)	1.04	0.60	0.84	0.14	0.00	0.69	0.97	0.77	0.77	0.05	0.87	0.87
Avail Cap(c_a), veh/h	262	833	636	252	0	647	163	1611	870	309	1458	727
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.2	37.5	21.8	36.8	0.0	38.6	45.0	31.1	31.2	33.4	27.5	27.9
Incr Delay (d2), s/veh	65.4	1.7	6.9	0.2	0.0	2.5	60.3	1.3	2.3	0.1	5.5	10.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.8	4.5	3.9	0.7	0.0	5.2	6.4	8.3	9.2	0.3	12.6	13.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	107.6	39.2	28.6	37.0	0.0	41.1	105.3	32.4	33.5	33.4	33.0	38.6
LnGrp LOS	F	D	C	D		D	F	C	C	C	C	D
Approach Vol, veh/h	700			264			1421			1795		
Approach Delay, s/veh	62.3			40.6			40.9			34.9		
Approach LOS	E			D			D			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.9	35.5	19.4	22.6	14.0	44.4	20.0	22.0				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	4.0	46.0	4.8	43.2	8.5	41.5	14.5	33.5				
Max Q Clear Time (g_c+I1), s	2.8	23.9	3.9	13.1	11.6	34.4	18.0	13.6				
Green Ext Time (p_c), s	0.0	5.5	0.0	1.6	0.0	4.5	0.0	0.7				
Intersection Summary												
HCM 7th Control Delay, s/veh	41.9											
HCM 7th LOS	D											



Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

AM 2044+Project with Mitigation













09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	353	464	513	234	411	68	329	881	87	90	1193	375
Future Volume (vph)	353	464	513	234	411	68	329	881	87	90	1193	375
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	2		1	2		0	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.95	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor			0.98		1.00				0.97			0.98
Frt			0.850		0.979				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	3162	3455	0	3162	5085	1458	3162	5085	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1433	3162	3455	0	3162	5085	1411	3162	5085	1427
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			149		17				208			408
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2617			5285	
Travel Time (s)		32.9			36.1			32.4			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	384	504	558	254	447	74	358	958	95	98	1297	408
Shared Lane Traffic (%)												
Lane Group Flow (vph)	384	504	558	254	521	0	358	958	95	98	1297	408
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

AM 2044+Project with Mitigation

09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	21.0	43.0	43.0	13.0	35.0		17.0	43.0	43.0	11.0	37.0	37.0
Total Split (%)	19.1%	39.1%	39.1%	11.8%	31.8%		15.5%	39.1%	39.1%	10.0%	33.6%	33.6%
Maximum Green (s)	15.0	37.0	37.0	7.0	29.0		11.0	37.0	37.0	5.0	31.0	31.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Don't Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effect Green (s)	16.7	37.3	37.3	9.0	29.7		13.0	41.4	41.4	7.0	33.0	33.0
Actuated g/C Ratio	0.15	0.34	0.34	0.08	0.27		0.12	0.38	0.38	0.06	0.30	0.30
v/c Ratio	0.79	0.41	0.94	0.97	0.54		0.94	0.49	0.14	0.48	0.84	0.57
Control Delay (s/veh)	57.4	28.3	51.6	98.9	34.8		82.6	27.6	0.4	57.8	41.3	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	57.4	28.3	51.6	98.9	34.8		82.6	27.6	0.4	57.8	41.3	6.4
LOS	E	C	D	F	C		F	C	A	E	D	A
Approach Delay (s/veh)		45.0			55.8			39.7			34.3	
Approach LOS		D			E			D			C	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 108.4

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay (s/veh): 41.6

Intersection LOS: D

Intersection Capacity Utilization 75.3%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 6: Mooney Blvd & Prosperity Ave


























# HCM 7th Signalized Intersection Summary

## 6: Mooney Blvd & Prosperity Ave










AM 2044+Project with Mitigation

09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	353	464	513	234	411	68	329	881	87	90	1193	375
Future Volume (veh/h)	353	464	513	234	411	68	329	881	87	90	1193	375
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	384	504	558	254	447	74	358	958	95	98	1297	408
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	504	1016	410	288	664	109	416	2022	562	212	1694	476
Arrive On Green	0.16	0.29	0.29	0.09	0.22	0.20	0.13	0.40	0.40	0.07	0.33	0.33
Sat Flow, veh/h	3183	3554	1433	3183	3044	500	3183	5106	1419	3183	5106	1434
Grp Volume(v), veh/h	384	504	558	254	260	261	358	958	95	98	1297	408
Grp Sat Flow(s),veh/h/ln	1591	1777	1433	1591	1777	1767	1591	1702	1419	1591	1702	1434
Q Serve(g_s), s	11.5	11.7	18.4	7.8	13.3	13.5	11.0	13.9	2.8	2.9	22.6	26.4
Cycle Q Clear(g_c), s	11.5	11.7	18.4	7.8	13.3	13.5	11.0	13.9	2.8	2.9	22.6	26.4
Prop In Lane	1.00		1.00	1.00		0.28	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	504	1016	410	288	388	385	416	2022	562	212	1694	476
V/C Ratio(X)	0.76	0.50	1.36	0.88	0.67	0.68	0.86	0.47	0.17	0.46	0.77	0.86
Avail Cap(c_a), veh/h	544	1394	562	288	554	551	416	2022	562	224	1694	476
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.1	29.5	14.9	44.7	35.6	35.9	42.3	22.3	8.2	44.7	29.8	31.0
Incr Delay (d2), s/veh	5.8	0.4	177.8	25.6	2.0	2.1	16.5	0.8	0.7	1.6	3.4	17.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	4.7	25.3	3.9	5.6	5.7	5.0	5.1	1.3	1.1	8.9	10.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	45.9	29.9	192.7	70.3	37.6	38.0	58.8	23.1	8.9	46.3	33.1	48.8
LnGrp LOS	D	C	F	E	D	D	E	C	A	D	C	D
Approach Vol, veh/h	1446			775			1411			1803		
Approach Delay, s/veh	97.0			48.5			31.2			37.4		
Approach LOS	F			D			C			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.6	43.4	13.0	32.4	17.0	37.0	19.7	25.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	37.0	7.0	37.0	11.0	31.0	15.0	29.0				
Max Q Clear Time (g_c+I1), s	4.9	15.9	9.8	20.4	13.0	28.4	13.5	15.5				
Green Ext Time (p_c), s	0.0	4.7	0.0	4.5	0.0	1.9	0.3	1.6				
Intersection Summary												
HCM 7th Control Delay, s/veh				53.2								
HCM 7th LOS				D								
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
7: Morrison St & Prosperity Ave

AM 2044+Project with Mitigation  
09/12/2024

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	557	100	63	535	106	37
Future Volume (vph)	557	100	63	535	106	37
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.979				0.965	
Flt Protected				0.995	0.964	
Satd. Flow (prot)	1824	0	0	1853	1596	0
Flt Permitted				0.786	0.964	
Satd. Flow (perm)	1824	0	0	1464	1596	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	20				18	
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	605	109	68	582	115	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	714	0	0	650	155	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			24	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Number of Detectors	1		1	1	1	
Detector Template						
Leading Detector (ft)	50		50	50	50	
Trailing Detector (ft)	0		0	0	0	
Detector 1 Position(ft)	0		0	0	0	
Detector 1 Size(ft)	50		50	50	50	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Turn Type	NA		Perm	NA	Prot	
Protected Phases	4			8	2	
Permitted Phases			8			
Detector Phase	4		8	8	2	
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	
Minimum Split (s)	24.0		24.0	24.0	24.0	
Total Split (s)	64.0		64.0	64.0	26.0	
Total Split (%)	71.1%		71.1%	71.1%	28.9%	
Maximum Green (s)	58.0		58.0	58.0	20.0	
Yellow Time (s)	5.0		5.0	5.0	5.0	

Lanes, Volumes, Timings  
7: Morrison St & Prosperity Ave

AM 2044+Project with Mitigation  
09/12/2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
All-Red Time (s)	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	6.0			6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	None	Min	
Walk Time (s)	7.0		7.0	7.0	7.0	
Flash Don't Walk (s)	11.0		11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0		0	0	0	
Act Effect Green (s)	27.4			27.4	10.5	
Actuated g/C Ratio	0.54			0.54	0.21	
v/c Ratio	0.72			0.83	0.45	
Control Delay (s/veh)	13.2			19.9	23.5	
Queue Delay	0.0			0.0	0.0	
Total Delay (s/veh)	13.2			19.9	23.5	
LOS	B			B	C	
Approach Delay (s/veh)	13.2			19.9	23.5	
Approach LOS	B			B	C	

Intersection Summary

Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 51	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay (s/veh): 17.2	Intersection LOS: B
Intersection Capacity Utilization 90.9%	ICU Level of Service E
Analysis Period (min) 15	










Splits and Phases: 7: Morrison St & Prosperity Ave

↖ Ø2 26 s	→ Ø4 62 s
	↙ Ø8 62 s

# HCM 7th Signalized Intersection Summary

## 7: Morrison St & Prosperity Ave













AM 2044+Project with Mitigation  
09/12/2024

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	557	100	63	535	106	37
Future Volume (veh/h)	557	100	63	535	106	37
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1723	1723	1870	1723	1723
Adj Flow Rate, veh/h	605	109	68	582	115	40
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	826	149	143	738	181	63
Arrive On Green	0.54	0.54	0.54	0.54	0.15	0.15
Sat Flow, veh/h	1542	278	74	1378	1173	408
Grp Volume(v), veh/h	0	714	650	0	156	0
Grp Sat Flow(s),veh/h/ln	0	1820	1452	0	1591	0
Q Serve(g_s), s	0.0	11.6	4.0	0.0	3.6	0.0
Cycle Q Clear(g_c), s	0.0	11.6	15.6	0.0	3.6	0.0
Prop In Lane		0.15	0.10		0.74	0.26
Lane Grp Cap(c), veh/h	0	975	880	0	245	0
V/C Ratio(X)	0.00	0.73	0.74	0.00	0.64	0.00
Avail Cap(c_a), veh/h	0	2731	2435	0	823	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	6.9	7.0	0.0	15.3	0.0
Incr Delay (d2), s/veh	0.0	1.1	1.2	0.0	2.7	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.4	1.3	0.0	1.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	0.0	7.9	8.3	0.0	18.1	0.0
LnGrp LOS		A	A		B	
Approach Vol, veh/h	714			650	156	
Approach Delay, s/veh	7.9			8.3	18.1	
Approach LOS	A			A	B	
Timer - Assigned Phs	2		4		8	
Phs Duration (G+Y+Rc), s	12.0		26.7		26.7	
Change Period (Y+Rc), s	6.0		6.0		6.0	
Max Green Setting (Gmax), s	20.0		58.0		58.0	
Max Q Clear Time (g_c+l1), s	5.6		13.6		17.6	
Green Ext Time (p_c), s	0.4		3.2		3.1	
Intersection Summary						
HCM 7th Control Delay, s/veh			9.1			
HCM 7th LOS			A			

Lanes, Volumes, Timings  
9: Mooney Blvd & Seminole Ave

AM 2044+Project with Mitigation

09/12/2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	238	1571	94	308	1907
Future Volume (vph)	0	238	1571	94	308	1907
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	540	0		0	80	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.850		0.850		
Flt Protected					0.950	
Satd. Flow (prot)	1716	1458	3539	1458	1630	3539
Flt Permitted					0.950	
Satd. Flow (perm)	1716	1458	3539	1458	1630	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		331		74		
Link Speed (mph)	55		55			55
Link Distance (ft)	1719		2673			2617
Travel Time (s)	21.3		33.1			32.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	259	1708	102	335	2073
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	259	1708	102	335	2073
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		24			24
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	1	1	1	1
Detector Template						
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	24.0	24.0	24.0	24.0	10.0	24.0
Total Split (s)	24.0	24.0	65.0	65.0	31.0	96.0

Lanes, Volumes, Timings  
9: Mooney Blvd & Seminole Ave

AM 2044+Project with Mitigation  
09/12/2024

	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Split (%)	20.0%	20.0%	54.2%	54.2%	25.8%	80.0%
Maximum Green (s)	18.0	18.0	59.0	59.0	25.0	90.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	None	Min
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effect Green (s)		6.3	57.7	57.7	25.0	88.7
Actuated g/C Ratio		0.06	0.54	0.54	0.23	0.83
v/c Ratio		0.65	0.90	0.12	0.88	0.71
Control Delay (s/veh)		9.8	29.6	4.9	65.1	5.5
Queue Delay		0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		9.8	29.6	4.9	65.1	5.5
LOS		A	C	A	E	A
Approach Delay (s/veh)	9.8		28.2			13.8
Approach LOS	A		C			B

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 107

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay (s/veh): 19.4

Intersection LOS: B

Intersection Capacity Utilization 72.0%

ICU Level of Service C

Analysis Period (min) 15








Splits and Phases: 9: Mooney Blvd & Seminole Ave





# HCM 7th Signalized Intersection Summary 9: Mooney Blvd & Seminole Ave


















AM 2044+Project with Mitigation  
09/12/2024

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	238	1571	94	308	1907
Future Volume (veh/h)	0	238	1571	94	308	1907
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1723	1723	1870	1723	1723	1870
Adj Flow Rate, veh/h	0	259	1708	102	335	2073
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	246	219	1746	717	342	2665
Arrive On Green	0.00	0.15	0.49	0.49	0.21	0.75
Sat Flow, veh/h	1641	1460	3647	1460	1641	3647
Grp Volume(v), veh/h	0	259	1708	102	335	2073
Grp Sat Flow(s),veh/h/ln	1641	1460	1777	1460	1641	1777
Q Serve(g_s), s	0.0	18.0	56.4	4.6	24.3	42.0
Cycle Q Clear(g_c), s	0.0	18.0	56.4	4.6	24.3	42.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	246	219	1746	717	342	2665
V/C Ratio(X)	0.00	1.18	0.98	0.14	0.98	0.78
Avail Cap(c_a), veh/h	246	219	1749	718	342	2668
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	50.9	29.9	16.7	47.2	9.0
Incr Delay (d2), s/veh	0.0	118.6	16.6	0.1	42.9	1.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	13.5	25.3	1.4	13.5	11.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	0.0	169.5	46.5	16.8	90.1	10.5
LnGrp LOS		F	D	B	F	B
Approach Vol, veh/h	259		1810			2408
Approach Delay, s/veh	169.5		44.8			21.6
Approach LOS	F		D			C
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	31.0	64.9			95.9	24.0
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax), s	25.0	59.0			90.0	18.0
Max Q Clear Time (g_c+I1), s	26.3	58.4			44.0	20.0
Green Ext Time (p_c), s	0.0	0.4			17.3	0.0
<b>Intersection Summary</b>						
HCM 7th Control Delay, s/veh			39.5			
HCM 7th LOS			D			

Lanes, Volumes, Timings  
12: Morrison St & Tulare Ave

AM 2044+Project with Mitigation























09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	835	161	89	828	11	99	37	49	5	39	97
Future Volume (vph)	66	835	161	89	828	11	99	37	49	5	39	97
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	0		1	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997	0.850		0.998			0.964			0.907	
Flt Protected		0.996			0.995			0.974			0.998	
Satd. Flow (prot)	0	1757	1385	0	1850	0	0	1749	0	0	1686	0
Flt Permitted		0.996			0.995			0.974			0.998	
Satd. Flow (perm)	0	1757	1385	0	1850	0	0	1749	0	0	1686	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	908	175	97	900	12	108	40	53	5	42	105
Shared Lane Traffic (%)			10%									
Lane Group Flow (vph)	0	998	157	0	1009	0	0	201	0	0	152	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	
Intersection Summary												
Area Type:	Other											
Control Type:	Roundabout											
Intersection Capacity Utilization	132.1%						ICU Level of Service H					
Analysis Period (min)	15											

Intersection					
Intersection Delay, s/veh	22.9				
Intersection LOS	C				
Approach	EB		WB		NB SB
Entry Lanes	2		1		1 1
Conflicting Circle Lanes	1		1		1 1
Adj Approach Flow, veh/h	1155		1009		201 152
Demand Flow Rate, veh/h	1178		1029		205 155
Vehicles Circulating, veh/h	147		224		1004 1127
Vehicles Exiting, veh/h	1135		985		321 126
Ped Vol Crossing Leg, #/h	0		0		0 0
Ped Cap Adj	1.000		1.000		1.000 1.000
Approach Delay, s/veh	15.7		34.0		14.6 14.7
Approach LOS	C		D		B B
Lane	Left	Right	Left	Left	Left
Designated Moves	LT	R	LTR	LTR	LTR
Assumed Moves	LT	R	LTR	LTR	LTR
RT Channelized					
Lane Util	0.848	0.152	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.609
Critical Headway, s	4.544	4.544	4.976	4.976	4.976
A (Intercept)	1420	1420	1380	1380	1380
B (Slope)	9.101e-4	9.101e-4	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	999	179	1029	205	155
Cap Entry Lane, veh/h	1242	1242	1098	496	437
Entry HV Adj Factor	0.981	0.978	0.981	0.981	0.982
Flow Entry, veh/h	980	175	1009	201	152
Cap Entry, veh/h	1218	1215	1077	486	429
V/C Ratio	0.804	0.144	0.937	0.414	0.355
Control Delay, s/veh	17.8	4.2	34.0	14.6	14.7
LOS	C	A	D	B	B
95th %tile Queue, veh	9	1	16	2	2













Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

PM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	158	121	129	21	129	4	92	718	21	9	874	167
Future Volume (vph)	158	121	129	21	129	4	92	718	21	9	874	167
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.996			0.996			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1854	0	1630	3522	0	1630	3437	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1854	0	1630	3522	0	1630	3437	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			173		1			3			21	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	172	132	140	23	140	4	100	780	23	10	950	182
Shared Lane Traffic (%)												
Lane Group Flow (vph)	172	132	140	23	144	0	100	803	0	10	1132	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

PM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	20.0	48.7	48.7	10.3	39.0		14.0	51.5		9.5	47.0	
Total Split (%)	16.7%	40.6%	40.6%	8.6%	32.5%		11.7%	42.9%		7.9%	39.2%	
Maximum Green (s)	14.5	43.2	43.2	4.8	33.5		8.5	46.0		4.0	41.5	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Don't Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effect Green (s)	15.3	28.8	28.8	9.7	16.4		10.0	49.4		6.6	37.9	
Actuated g/C Ratio	0.16	0.30	0.30	0.10	0.17		0.10	0.52		0.07	0.40	
v/c Ratio	0.66	0.24	0.25	0.14	0.45		0.59	0.44		0.09	0.83	
Control Delay (s/veh)	54.5	30.8	3.7	44.1	40.8		60.3	18.1		48.4	32.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	54.5	30.8	3.7	44.1	40.8		60.3	18.1		48.4	32.7	
LOS	D	C	A	D	D		E	B		D	C	
Approach Delay (s/veh)		31.4			41.3			22.7			32.8	
Approach LOS		C			D			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 95.9

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay (s/veh): 29.7

Intersection LOS: C

Intersection Capacity Utilization 67.9%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Mooney Blvd & Cartmill Ave

























# HCM 7th Signalized Intersection Summary

PM 2027

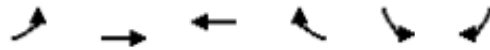
## 1: Mooney Blvd & Cartmill Ave

09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	158	121	129	21	129	4	92	718	21	9	874	167
Future Volume (veh/h)	158	121	129	21	129	4	92	718	21	9	874	167
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	172	132	140	23	140	4	100	780	23	10	950	182
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	238	294	224	232	277	8	156	1064	31	312	1176	225
Arrive On Green	0.15	0.16	0.16	0.14	0.15	0.13	0.09	0.30	0.28	0.19	0.40	0.38
Sat Flow, veh/h	1641	1870	1425	1641	1808	52	1641	3521	104	1641	2959	566
Grp Volume(v), veh/h	172	132	140	23	0	144	100	394	409	10	570	562
Grp Sat Flow(s),veh/h/ln	1641	1870	1425	1641	0	1859	1641	1777	1848	1641	1777	1749
Q Serve(g_s), s	7.7	4.9	5.0	0.9	0.0	5.4	4.5	15.2	15.2	0.4	21.8	21.9
Cycle Q Clear(g_c), s	7.7	4.9	5.0	0.9	0.0	5.4	4.5	15.2	15.2	0.4	21.8	21.9
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.06	1.00		0.32
Lane Grp Cap(c), veh/h	238	294	224	232	0	285	156	537	558	312	706	695
V/C Ratio(X)	0.72	0.45	0.62	0.10	0.00	0.50	0.64	0.73	0.73	0.03	0.81	0.81
Avail Cap(c_a), veh/h	343	1093	832	232	0	851	214	1103	1147	312	999	983
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.2	29.2	15.5	28.6	0.0	29.7	33.4	23.9	24.0	25.3	20.5	20.7
Incr Delay (d2), s/veh	4.1	1.1	2.8	0.2	0.0	1.4	4.4	2.0	1.9	0.0	3.4	3.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	2.1	2.3	0.3	0.0	2.3	1.8	5.7	6.0	0.1	8.1	8.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	35.4	30.3	18.3	28.8	0.0	31.1	37.8	25.9	25.8	25.3	23.8	24.2
LnGrp LOS	D	C	B	C		C	D	C	C	C	C	C
Approach Vol, veh/h	444					167		903		1142		
Approach Delay, s/veh	28.5					30.8		27.2		24.0		
Approach LOS	C					C		C		C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.5	27.1	14.8	16.0	11.3	34.4	15.1	15.7				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	4.0	46.0	4.8	43.2	8.5	41.5	14.5	33.5				
Max Q Clear Time (g_c+I1), s	2.4	17.2	2.9	7.0	6.5	23.9	9.7	7.4				
Green Ext Time (p_c), s	0.0	3.0	0.0	1.0	0.0	4.4	0.2	0.4				
Intersection Summary												
HCM 7th Control Delay, s/veh			26.3									
HCM 7th LOS			C									

## 2: Prosperity Ave/Blackstone St &amp; SR 99 SB Offramp

09/12/2024

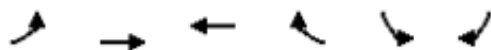


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (vph)	0	615	612	0	204	82
Future Volume (vph)	0	615	612	0	204	82
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Fr <sub>t</sub>						0.850
Fl <sub>t</sub> Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	1630	1458
Fl <sub>t</sub> Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	1630	1458
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						89
Link Speed (mph)		55	55		55	
Link Distance (ft)		349	727		300	
Travel Time (s)		4.3	9.0		3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	668	665	0	222	89
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	668	665	0	222	89
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors		1	1		1	1
Detector Template						
Leading Detector (ft)		50	50		50	50
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		50	50		50	50
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		4.0	4.0		4.0	4.0
Minimum Split (s)		24.0	24.0		24.0	24.0
Total Split (s)		53.0	53.0		47.0	47.0
Total Split (%)		53.0%	53.0%		47.0%	47.0%
Maximum Green (s)		47.0	47.0		41.0	41.0
Yellow Time (s)		5.0	5.0		5.0	5.0

# Lanes, Volumes, Timings

## 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

PM 2027  
09/12/2024

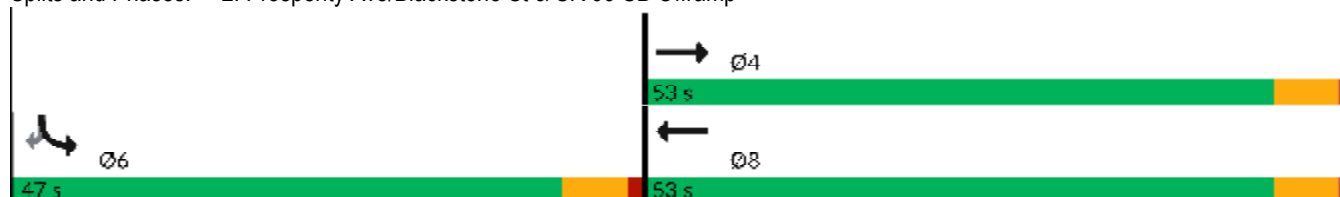


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		None	None		Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effect Green (s)		15.0	15.0		13.0	13.0
Actuated g/C Ratio		0.41	0.41		0.36	0.36
v/c Ratio		0.46	0.45		0.38	0.15
Control Delay (s/veh)		9.1	9.1		11.5	3.6
Queue Delay		0.0	0.0		0.0	0.0
Total Delay (s/veh)		9.1	9.1		11.5	3.6
LOS		A	A		B	A
Approach Delay (s/veh)		9.1	9.1		9.2	
Approach LOS		A	A		A	

### Intersection Summary

Area Type: Other  
Cycle Length: 100  
Actuated Cycle Length: 36.2  
Natural Cycle: 50  
Control Type: Actuated-Uncoordinated  
Maximum v/c Ratio: 0.46  
Intersection Signal Delay (s/veh): 9.1  
Intersection LOS: A  
Intersection Capacity Utilization 35.9%  
ICU Level of Service A  
Analysis Period (min) 15

Splits and Phases: 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

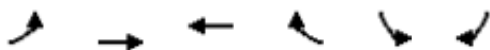




# HCM 7th Signalized Intersection Summary

## 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp
























PM 2027  
09/12/2024



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (veh/h)	0	615	612	0	204	82
Future Volume (veh/h)	0	615	612	0	204	82
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1723	1723
Adj Flow Rate, veh/h	0	668	665	0	222	89
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	1420	1420	0	495	440
Arrive On Green	0.00	0.40	0.40	0.00	0.30	0.30
Sat Flow, veh/h	0	3741	3741	0	1641	1460
Grp Volume(v), veh/h	0	668	665	0	222	89
Grp Sat Flow(s), veh/h/ln	0	1777	1777	0	1641	1460
Q Serve(g_s), s	0.0	3.7	3.7	0.0	2.9	1.2
Cycle Q Clear(g_c), s	0.0	3.7	3.7	0.0	2.9	1.2
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1420	1420	0	495	440
V/C Ratio(X)	0.00	0.47	0.47	0.00	0.45	0.20
Avail Cap(c_a), veh/h	0	6509	6509	0	2637	2347
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	5.9	5.9	0.0	7.5	7.0
Incr Delay (d2), s/veh	0.0	0.2	0.2	0.0	0.6	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.2	0.0	0.4	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	0.0	6.2	6.2	0.0	8.2	7.2
LnGrp LOS		A	A		A	A
Approach Vol, veh/h		668	665		311	
Approach Delay, s/veh		6.2	6.2		7.9	
Approach LOS		A	A		A	
Timer - Assigned Phs				4	6	8
Phs Duration (G+Y+Rc), s				14.7	12.1	14.7
Change Period (Y+Rc), s				6.0	6.0	6.0
Max Green Setting (Gmax), s				47.0	41.0	47.0
Max Q Clear Time (g_c+I1), s				5.7	4.9	5.7
Green Ext Time (p_c), s				3.0	1.1	3.0
<b>Intersection Summary</b>						
HCM 7th Control Delay, s/veh			6.5			
HCM 7th LOS			A			

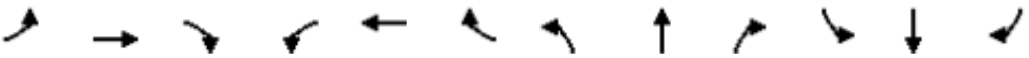
Lanes, Volumes, Timings  
3: Blackstone Ave/Blackstone St & Prosperity Ave

PM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	17	5	629	23	613	0	47	506	653	145	0
Future Volume (vph)	2	17	5	629	23	613	0	47	506	653	145	0
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	30		0	335		310	55		90	240		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor		1.00				0.98						
Frt		0.967				0.850			0.850			
Flt Protected	0.950			0.950	0.956					0.950		
Satd. Flow (prot)	1630	1793	0	1548	1692	1458	1716	1863	1458	3162	1863	0
Flt Permitted	0.950			0.950						0.950		
Satd. Flow (perm)	1630	1793	0	1548	1770	1427	1716	1863	1458	3162	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				666			550			
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		98			1229			643			727	
Travel Time (s)		1.2			15.2			8.0			9.0	
Confl. Peds. (#/hr)			5			5						
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	18	5	684	25	666	0	51	550	710	158	0
Shared Lane Traffic (%)				48%								
Lane Group Flow (vph)	2	23	0	356	353	666	0	51	550	710	158	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												

Lanes, Volumes, Timings  
3: Blackstone Ave/Blackstone St & Prosperity Ave

PM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	24.1		10.0	24.1	24.1	10.0	24.0	24.0	10.0	24.0	
Total Split (s)	13.0	27.1		26.9	41.0	41.0	10.0	24.0	24.0	22.0	36.0	
Total Split (%)	13.0%	27.1%		26.9%	41.0%	41.0%	10.0%	24.0%	24.0%	22.0%	36.0%	
Maximum Green (s)	7.0	21.1		20.9	35.0	35.0	4.0	18.0	18.0	16.0	30.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Don't Walk (s)		11.1			11.1	11.1		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		5			5	5		0	0		0	
Act Effect Green (s)	7.7	10.1		32.9	32.9	37.4		11.8	11.8	18.2	34.0	
Actuated g/C Ratio	0.09	0.12		0.40	0.40	0.46		0.14	0.14	0.22	0.42	
v/c Ratio	0.01	0.10		0.57	0.52	0.66		0.19	0.81	1.01	0.20	
Control Delay (s/veh)	38.5	28.3		28.3	26.5	5.3		32.6	13.5	69.8	16.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay (s/veh)	38.5	28.3		28.3	26.5	5.3		32.6	13.5	69.8	16.4	
LOS	D	C		C	C	A		C	B	E	B	
Approach Delay (s/veh)		29.1			16.7			15.1			60.1	
Approach LOS		C			B			B			E	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 81.5

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay (s/veh): 29.6

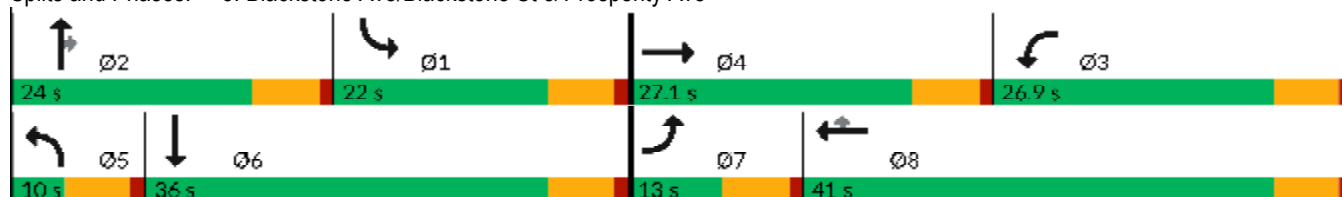
Intersection LOS: C

Intersection Capacity Utilization 69.4%

ICU Level of Service C

Analysis Period (min) 15
























Splits and Phases: 3: Blackstone Ave/Blackstone St & Prosperity Ave



# HCM 7th Signalized Intersection Summary

























## 3: Blackstone Ave/Blackstone St & Prosperity Ave

PM 2027  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	17	5	629	23	613	0	47	506	653	145	0
Future Volume (veh/h)	2	17	5	629	23	613	0	47	506	653	145	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	0
Adj Flow Rate, veh/h	2	18	5	702	0	666	0	51	550	710	158	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	0
Cap, veh/h	43	127	35	849	0	464	2	450	351	690	946	0
Arrive On Green	0.03	0.09	0.07	0.26	0.00	0.32	0.00	0.24	0.24	0.22	0.51	0.00
Sat Flow, veh/h	1641	1394	387	3281	0	1434	1641	1870	1460	3183	1870	0
Grp Volume(v), veh/h	2	0	23	702	0	666	0	51	550	710	158	0
Grp Sat Flow(s),veh/h/ln	1641	0	1781	1641	0	1434	1641	1870	1460	1591	1870	0
Q Serve(g_s), s	0.1	0.0	1.0	16.8	0.0	12.5	0.0	1.8	20.0	18.0	3.8	0.0
Cycle Q Clear(g_c), s	0.1	0.0	1.0	16.8	0.0	12.5	0.0	1.8	20.0	18.0	3.8	0.0
Prop In Lane	1.00		0.22	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	43	0	162	849	0	464	2	450	351	690	946	0
V/C Ratio(X)	0.05	0.00	0.14	0.83	0.00	1.43	0.00	0.11	1.56	1.03	0.17	0.00
Avail Cap(c_a), veh/h	178	0	495	905	0	639	119	450	351	690	946	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	39.4	0.0	35.0	29.0	0.0	6.1	0.0	24.6	31.5	32.5	11.1	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.4	6.1	0.0	207.8	0.0	0.1	267.6	42.0	0.1	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.4	6.6	0.0	32.9	0.0	0.7	32.4	10.2	1.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	39.9	0.0	35.4	35.1	0.0	213.9	0.0	24.7	299.2	74.6	11.2	0.0
LnGrp LOS	D		D	D		F		C	F	F	B	
Approach Vol, veh/h	25			1368			601			868		
Approach Delay, s/veh	35.7			122.1			275.9			63.0		
Approach LOS	D			F			F			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.0	24.0	25.5	11.6	0.0	46.0	6.2	30.9				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	16.0	18.0	20.9	21.1	4.0	30.0	7.0	35.0				
Max Q Clear Time (g_c+I1), s	20.0	22.0	18.8	3.0	0.0	5.8	2.1	14.5				
Green Ext Time (p_c), s	0.0	0.0	0.7	0.0	0.0	0.5	0.0	3.2				
Intersection Summary												
HCM 7th Control Delay, s/veh	135.7											
HCM 7th LOS	F											
Notes												
User approved volume balancing among the lanes for turning movement.												













Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

PM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	463	664	115	70	716	191	167	341	154	267	122	446
Future Volume (vph)	463	664	115	70	716	191	167	341	154	267	122	446
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	270		0	155		85	155		0	200		205
Storage Lanes	2		1	1		1	1		0	2		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	0.88
Ped Bike Factor			0.97			0.98		0.99				0.97
Fr't			0.850			0.850		0.953				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	1630	5085	1458	1630	3354	0	3162	1863	2567
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1410	1630	5085	1433	1630	3354	0	3162	1863	2489
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			150			56			485
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1229			2636			362			5336	
Travel Time (s)		15.2			32.7			4.5			66.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	503	722	125	76	778	208	182	371	167	290	133	485
Shared Lane Traffic (%)												
Lane Group Flow (vph)	503	722	125	76	778	208	182	538	0	290	133	485
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

PM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	32.7	32.7	10.0	45.6	45.6	10.0	47.0		10.0	49.9	49.9
Total Split (s)	31.9	43.1	43.1	35.9	47.1	47.1	11.0	31.0		10.0	30.0	30.0
Total Split (%)	26.6%	35.9%	35.9%	29.9%	39.3%	39.3%	9.2%	25.8%		8.3%	25.0%	25.0%
Maximum Green (s)	25.9	37.1	37.1	29.9	41.1	41.1	5.0	25.0		4.0	24.0	24.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Don't Walk (s)		19.7	19.7		32.6	32.6		34.0			36.9	36.9
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effect Green (s)	21.9	37.5	37.5	12.4	24.7	24.7	7.4	23.5		6.4	22.4	22.4
Actuated g/C Ratio	0.23	0.40	0.40	0.13	0.26	0.26	0.08	0.25		0.07	0.24	0.24
v/c Ratio	0.68	0.51	0.19	0.35	0.58	0.43	1.41	0.61		1.35	0.30	0.50
Control Delay (s/veh)	40.6	25.2	4.5	47.3	32.6	13.1	258.6	31.0		220.1	32.2	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	40.6	25.2	4.5	47.3	32.6	13.1	258.6	31.0		220.1	32.2	4.8
LOS	D	C	A	D	C	B	F	C		F	C	A
Approach Delay (s/veh)		29.0			29.8			88.6			77.6	
Approach LOS		C			C			F			E	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 93.4

Natural Cycle: 140

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.41

Intersection Signal Delay (s/veh): 50.7

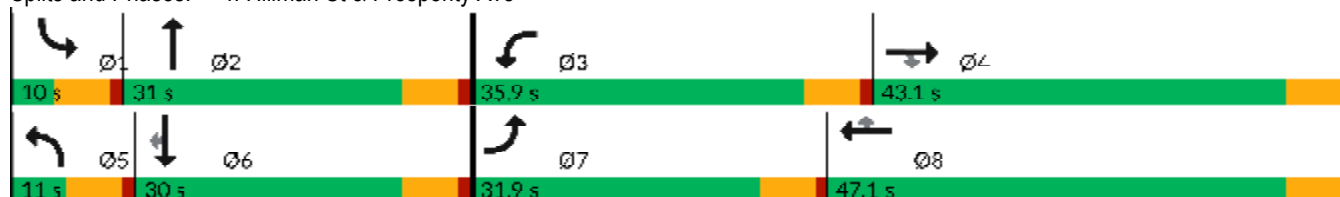
Intersection LOS: D

Intersection Capacity Utilization 70.3%

ICU Level of Service C

Analysis Period (min) 15

























Splits and Phases: 4: Hillman St & Prosperity Ave



# HCM 7th Signalized Intersection Summary

























## 4: Hillman St & Prosperity Ave

PM 2027  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	463	664	115	70	716	191	167	341	154	267	122	446
Future Volume (veh/h)	463	664	115	70	716	191	167	341	154	267	122	446
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	503	722	125	76	778	208	182	371	167	290	133	485
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	682	1400	559	135	1338	375	135	632	279	224	474	631
Arrive On Green	0.21	0.39	0.39	0.08	0.26	0.26	0.08	0.27	0.24	0.07	0.25	0.25
Sat Flow, veh/h	3183	3554	1419	1641	5106	1432	1641	2380	1053	3183	1870	2486
Grp Volume(v), veh/h	503	722	125	76	778	208	182	275	263	290	133	485
Grp Sat Flow(s),veh/h/ln	1591	1777	1419	1641	1702	1432	1641	1777	1656	1591	1870	1243
Q Serve(g_s), s	12.6	13.2	5.0	3.8	11.3	10.7	7.0	11.5	11.9	6.0	4.9	15.4
Cycle Q Clear(g_c), s	12.6	13.2	5.0	3.8	11.3	10.7	7.0	11.5	11.9	6.0	4.9	15.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.64	1.00		1.00
Lane Grp Cap(c), veh/h	682	1400	559	135	1338	375	135	472	439	224	474	631
V/C Ratio(X)	0.74	0.52	0.22	0.56	0.58	0.55	1.35	0.58	0.60	1.29	0.28	0.77
Avail Cap(c_a), veh/h	1043	1632	651	615	2584	725	135	563	525	224	571	759
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.2	19.6	17.1	37.6	27.4	27.1	39.1	27.2	27.9	39.6	25.5	29.5
Incr Delay (d2), s/veh	1.6	0.3	0.2	3.7	0.4	1.3	198.2	1.2	1.3	160.9	0.3	4.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	4.7	1.4	1.5	4.2	3.4	10.0	4.5	4.4	7.2	2.0	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.8	19.9	17.3	41.3	27.8	28.4	237.3	28.3	29.2	200.5	25.9	33.4
LnGrp LOS	C	B	B	D	C	C	F	C	C	F	C	C
Approach Vol, veh/h	1350			1062			720			908		
Approach Delay, s/veh	24.5			28.8			81.5			85.7		
Approach LOS	C			C			F			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	26.6	11.0	37.6	11.0	25.6	22.2	26.3				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	4.0	25.0	29.9	37.1	5.0	24.0	25.9	41.1				
Max Q Clear Time (g_c+l1), s	8.0	13.9	5.8	15.2	9.0	17.4	14.6	13.3				
Green Ext Time (p_c), s	0.0	1.6	0.2	3.6	0.0	1.6	1.7	4.6				
Intersection Summary												
HCM 7th Control Delay, s/veh				49.5								
HCM 7th LOS				D								
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave













PM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	118	665	289	75	581	51	212	159	105	122	213	73
Future Volume (vph)	118	665	289	75	581	51	212	159	105	122	213	73
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	235		115	230		100	100		100	160		100
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96			0.97			0.97			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	5085	1458	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1405	1630	5085	1410	1630	1863	1415	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			194			191			191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2636			2650			5387			713	
Travel Time (s)		32.7			32.9			66.8			8.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	128	723	314	82	632	55	230	173	114	133	232	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	128	723	314	82	632	55	230	173	114	133	232	79
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												



Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

PM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	27.0	27.0	10.0	34.1	34.1	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (s)	16.0	38.4	38.4	13.0	35.4	35.4	23.0	47.6	47.6	21.0	45.6	45.6
Total Split (%)	13.3%	32.0%	32.0%	10.8%	29.5%	29.5%	19.2%	39.7%	39.7%	17.5%	38.0%	38.0%
Maximum Green (s)	10.0	32.4	32.4	7.0	29.4	29.4	17.0	41.6	41.6	15.0	39.6	39.6
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		14.0	14.0		21.1	21.1		32.6	32.6		32.6	32.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effect Green (s)	12.1	29.1	29.1	9.2	22.9	22.9	18.7	19.1	19.1	20.9	21.3	21.3
Actuated g/C Ratio	0.13	0.32	0.32	0.10	0.25	0.25	0.20	0.21	0.21	0.23	0.23	0.23
v/c Ratio	0.60	0.64	0.54	0.50	0.50	0.11	0.69	0.45	0.26	0.36	0.54	0.16
Control Delay (s/veh)	54.6	32.3	15.6	56.0	31.6	0.5	49.3	35.5	1.4	37.7	35.9	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	54.6	32.3	15.6	56.0	31.6	0.5	49.3	35.5	1.4	37.7	35.9	0.7
LOS	D	C	B	E	C	A	D	D	A	D	D	A
Approach Delay (s/veh)		30.2			32.0			34.1			30.2	
Approach LOS		C			C			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 91.5

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay (s/veh): 31.4

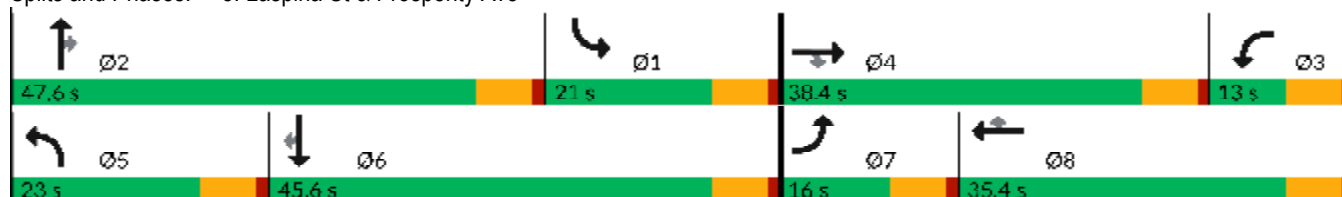
Intersection LOS: C

Intersection Capacity Utilization 63.5%

ICU Level of Service B

Analysis Period (min) 15





























Splits and Phases: 5: Laspina St & Prosperity Ave



# HCM 7th Signalized Intersection Summary
























## 5: Laspina St & Prosperity Ave

PM 2027  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  						 	
Traffic Volume (veh/h)	118	665	289	75	581	51	212	159	105	122	213	73
Future Volume (veh/h)	118	665	289	75	581	51	212	159	105	122	213	73
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.96	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	128	723	314	82	632	55	230	173	114	133	232	79
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	200	1040	414	145	1322	366	310	357	268	353	405	310
Arrive On Green	0.12	0.29	0.29	0.09	0.26	0.26	0.19	0.19	0.19	0.21	0.22	0.22
Sat Flow, veh/h	1641	3554	1415	1641	5106	1413	1641	1870	1406	1641	1870	1430
Grp Volume(v), veh/h	128	723	314	82	632	55	230	173	114	133	232	79
Grp Sat Flow(s),veh/h/ln	1641	1777	1415	1641	1702	1413	1641	1870	1406	1641	1870	1430
Q Serve(g_s), s	5.6	13.5	7.6	3.6	7.8	1.1	9.9	6.2	5.3	5.2	8.3	3.4
Cycle Q Clear(g_c), s	5.6	13.5	7.6	3.6	7.8	1.1	9.9	6.2	5.3	5.2	8.3	3.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	200	1040	414	145	1322	366	310	357	268	353	405	310
V/C Ratio(X)	0.64	0.70	0.76	0.57	0.48	0.15	0.74	0.49	0.43	0.38	0.57	0.25
Avail Cap(c_a), veh/h	263	1634	650	197	2142	593	417	1090	819	373	1040	795
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.3	23.5	6.2	32.8	23.4	5.2	28.6	27.0	26.7	25.1	26.2	24.3
Incr Delay (d2), s/veh	3.4	0.8	2.9	3.5	0.3	0.2	4.8	1.0	1.1	0.7	1.3	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	5.0	4.0	1.4	2.8	0.7	3.8	2.5	1.7	1.8	3.4	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.7	24.4	9.0	36.2	23.7	5.4	33.4	28.0	27.7	25.8	27.5	24.7
LnGrp LOS	C	C	A	D	C	A	C	C	C	C	C	C
Approach Vol, veh/h	1165			769			517			444		
Approach Delay, s/veh	21.4			23.7			30.4			26.5		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.1	18.3	10.6	25.9	18.1	20.2	13.1	23.4				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	41.6	7.0	32.4	17.0	39.6	10.0	29.4				
Max Q Clear Time (g_c+I1), s	7.2	8.2	5.6	15.5	11.9	10.3	7.6	9.8				
Green Ext Time (p_c), s	0.2	1.0	0.0	4.2	0.3	1.1	0.1	2.8				
Intersection Summary												
HCM 7th Control Delay, s/veh	24.4											
HCM 7th LOS	C											


Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

PM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	223	326	136	198	43	209	560	42	57	758	238
Future Volume (vph)	224	223	326	136	198	43	209	560	42	57	758	238
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98		1.00				0.97			0.98
Fr't			0.850		0.973				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1806	0	1630	3539	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1432	1630	1806	0	1630	3539	1409	1630	3539	1426
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			354		9				191			259
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2617			5285	
Travel Time (s)		32.9			36.1			32.4			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	243	242	354	148	215	47	227	609	46	62	824	259
Shared Lane Traffic (%)												
Lane Group Flow (vph)	243	242	354	148	262	0	227	609	46	62	824	259
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

PM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	24.0	39.7	39.7	17.0	32.7		23.0	46.3	46.3	17.0	40.3	40.3
Total Split (%)	20.0%	33.1%	33.1%	14.2%	27.3%		19.2%	38.6%	38.6%	14.2%	33.6%	33.6%
Maximum Green (s)	18.0	33.7	33.7	11.0	26.7		17.0	40.3	40.3	11.0	34.3	34.3
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Don't Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effect Green (s)	19.7	23.8	23.8	19.0	23.1		18.6	45.8	45.8	11.9	36.4	36.4
Actuated g/C Ratio	0.17	0.21	0.21	0.17	0.20		0.16	0.40	0.40	0.10	0.32	0.32
v/c Ratio	0.86	0.62	0.61	0.55	0.70		0.85	0.43	0.07	0.36	0.73	0.41
Control Delay (s/veh)	75.3	47.6	8.4	54.1	51.3		75.7	28.0	0.2	55.5	39.9	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	75.3	47.6	8.4	54.1	51.3		75.7	28.0	0.2	55.5	39.9	6.0
LOS	E	D	A	D	D		E	C	A	E	D	A
Approach Delay (s/veh)		39.0			52.3			38.8			33.0	
Approach LOS		D			D			D			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 113.9

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay (s/veh): 38.6

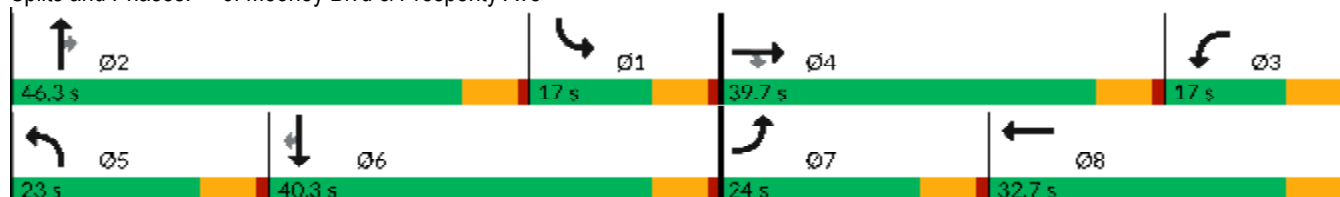
Intersection LOS: D

Intersection Capacity Utilization 74.9%

ICU Level of Service D

Analysis Period (min) 15
























Splits and Phases: 6: Mooney Blvd & Prosperity Ave



# HCM 7th Signalized Intersection Summary










## 6: Mooney Blvd & Prosperity Ave




PM 2027  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	224	223	326	136	198	43	209	560	42	57	758	238
Future Volume (veh/h)	224	223	326	136	198	43	209	560	42	57	758	238
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	243	242	354	148	215	47	227	609	46	62	824	259
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	291	393	300	258	281	61	277	1334	532	189	1145	462
Arrive On Green	0.18	0.21	0.21	0.16	0.19	0.17	0.17	0.38	0.38	0.12	0.32	0.32
Sat Flow, veh/h	1641	1870	1429	1641	1480	323	1641	3554	1418	1641	3554	1434
Grp Volume(v), veh/h	243	242	354	148	0	262	227	609	46	62	824	259
Grp Sat Flow(s),veh/h/ln	1641	1870	1429	1641	0	1803	1641	1777	1418	1641	1777	1434
Q Serve(g_s), s	16.1	13.2	15.4	9.4	0.0	15.5	15.0	14.6	2.4	3.9	23.1	16.8
Cycle Q Clear(g_c), s	16.1	13.2	15.4	9.4	0.0	15.5	15.0	14.6	2.4	3.9	23.1	16.8
Prop In Lane	1.00		1.00	1.00		0.18	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	291	393	300	258	0	342	277	1334	532	189	1145	462
V/C Ratio(X)	0.83	0.62	1.18	0.57	0.00	0.77	0.82	0.46	0.09	0.33	0.72	0.56
Avail Cap(c_a), veh/h	291	593	453	258	0	459	277	1334	532	189	1145	462
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.7	40.4	18.9	44.0	0.0	43.4	45.2	26.5	22.7	45.8	33.7	31.6
Incr Delay (d2), s/veh	18.5	1.6	101.7	3.0	0.0	5.3	17.6	1.1	0.3	1.0	3.9	4.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	5.9	13.1	3.9	0.0	7.1	7.2	5.9	0.8	1.6	9.9	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	63.2	42.0	120.6	47.0	0.0	48.8	62.8	27.7	23.0	46.8	37.6	36.5
LnGrp LOS	E	D	F	D		D	E	C	C	D	D	D
Approach Vol, veh/h	839		410			882			1145			
Approach Delay, s/veh	81.3		48.1			36.5			37.9			
Approach LOS	F		D			D			D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	46.3	21.7	27.7	23.0	40.3	24.0	25.4				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	11.0	40.3	11.0	33.7	17.0	34.3	18.0	26.7				
Max Q Clear Time (g_c+I1), s	5.9	16.6	11.4	17.4	17.0	25.1	18.1	17.5				
Green Ext Time (p_c), s	0.0	2.7	0.0	2.2	0.0	3.4	0.0	0.6				
Intersection Summary												
HCM 7th Control Delay, s/veh	49.9											
HCM 7th LOS	D											
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
7: Morrison St & Prosperity Ave
















PM 2027  
09/12/2024

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	311	22	40	314	18	24
Future Volume (vph)	311	22	40	314	18	24
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.991				0.924	
Flt Protected				0.994	0.979	
Satd. Flow (prot)	1846	0	0	1852	1552	0
Flt Permitted				0.994	0.979	
Satd. Flow (perm)	1846	0	0	1852	1552	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	338	24	43	341	20	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	362	0	0	384	46	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	49.8%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	1.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	311	22	40	314	18	24
Future Vol, veh/h	311	22	40	314	18	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	338	24	43	341	20	26
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	362	0	778	350
Stage 1	-	-	-	-	350	-
Stage 2	-	-	-	-	428	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1197	-	365	693
Stage 1	-	-	-	-	713	-
Stage 2	-	-	-	-	657	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1197	-	348	693
Mov Cap-2 Maneuver	-	-	-	-	348	-
Stage 1	-	-	-	-	713	-
Stage 2	-	-	-	-	628	-
Approach	EB	WB		NB		
HCM Control Delay, s/v	0	0.92		13.16		
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	487	-	-	203	-	
HCM Lane V/C Ratio	0.094	-	-	0.036	-	
HCM Control Delay (s/veh)	13.2	-	-	8.1	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-	

Lanes, Volumes, Timings  
8: Prosperity Ave & Oakmore Rd

PM 2027  
09/12/2024

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	78	227	0	0	175	25	0	0	0	18	0	136	
Future Volume (vph)	78	227	0	0	175	25	0	0	0	18	0	136	
Ideal Flow (vphpl)	1750	1900	1900	1900	1900	1750	1900	1900	1900	1750	1900	1750	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.983					0.865							
Flt Protected	0.987					0.950							
Satd. Flow (prot)	0	1839	0	0	1831	0	0	0	0	1630	0	0	
Flt Permitted	0.987					0.950							
Satd. Flow (perm)	0	1839	0	0	1831	0	0	0	0	1630	0	0	
Link Speed (mph)	55					55							
Link Distance (ft)	2108					329							
Travel Time (s)	26.1					4.1							
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	85	247	0	0	190	27	0	0	0	20	0	148	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	332	0	0	217	0	0	0	0	20	148	0	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No	
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(ft)	0					12							
Link Offset(ft)	0					0							
Crosswalk Width(ft)	16					16							
Two way Left Turn Lane													
Headway Factor	1.11	1.00	1.00	1.00	1.00	1.11	1.00	1.00	1.00	1.11	1.00	1.11	
Turning Speed (mph)	15		9	15		9	15		9	15		9	
Sign Control	Free					Free					Stop		Stop
Intersection Summary													
Area Type:	Other												
Control Type: Unsignalized													
Intersection Capacity Utilization Err%					ICU Level of Service H								
Analysis Period (min) 15													



Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			2					1		
Traffic Vol, veh/h	78	227	0	0	175	25	0	0	0	18	0	136
Future Vol, veh/h	78	227	0	0	175	25	0	0	0	18	0	136
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	85	247	0	0	190	27	0	0	0	20	0	148












Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	217	0	-	-	-	0	620	-	204
Stage 1	-	-	-	-	-	-	204	-	-
Stage 2	-	-	-	-	-	-	416	-	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	-	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	-	3.318
Pot Cap-1 Maneuver	1352	-	0	0	-	-	452	0	837
Stage 1	-	-	0	0	-	-	830	0	-
Stage 2	-	-	0	0	-	-	666	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1352	-	-	-	-	-	419	0	837
Mov Cap-2 Maneuver	-	-	-	-	-	-	419	0	-
Stage 1	-	-	-	-	-	-	770	0	-
Stage 2	-	-	-	-	-	-	666	0	-

Approach	EB	WB	SB
HCM Control Delay, s/v	2.01	0	11.18
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	460	-	-	-	749
HCM Lane V/C Ratio	0.063	-	-	-	0.223
HCM Control Delay (s/veh)	7.8	0	-	-	11.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.9

Lanes, Volumes, Timings  
9: Mooney Blvd & Seminole Ave
























PM 2027  
09/12/2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	131	948	57	175	1153
Future Volume (vph)	0	131	948	57	175	1153
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	540	0		0	80	
Storage Lanes	0	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.865		0.850		
Flt Protected					0.950	
Satd. Flow (prot)	0	1484	3539	1458	1630	3539
Flt Permitted					0.950	
Satd. Flow (perm)	0	1484	3539	1458	1630	3539
Link Speed (mph)	55		55			55
Link Distance (ft)	1719		2673			2617
Travel Time (s)	21.3		33.1			32.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	142	1030	62	190	1253
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	142	1030	62	190	1253
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	43.4%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	1.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗	↗	↗	↗↗
Traffic Vol, veh/h	0	131	948	57	175	1153
Future Vol, veh/h	0	131	948	57	175	1153
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	0	80	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	142	1030	62	190	1253
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	515	0	0	1092	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	505	-	-	635	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	505	-	-	635	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s/v14.92		0		1.72		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	505	635	-	
HCM Lane V/C Ratio	-	-	0.282	0.3	-	
HCM Control Delay (s/veh)	-	-	14.9	13.1	-	
HCM Lane LOS	-	-	B	B	-	
HCM 95th %tile Q(veh)	-	-	1.2	1.3	-	













Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

PM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	748	200	82	568	64	106	272	69	113	372	90
Future Volume (vph)	125	748	200	82	568	64	106	272	69	113	372	90
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		135	110		0	90		90	80		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97		1.00				0.98			0.98
Frt			0.850		0.985				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3473	0	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1408	1630	3473	0	1630	1863	1431	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191		10				191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		841			2671			726			5387	
Travel Time (s)		10.4			33.1			9.0			66.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	136	813	217	89	617	70	115	296	75	123	404	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	136	813	217	89	687	0	115	296	75	123	404	98
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

PM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.9	29.9	10.0	28.4		10.0	39.9	39.9	10.0	44.1	44.1
Total Split (s)	20.0	41.9	41.9	16.0	37.9		18.0	41.1	41.1	21.0	44.1	44.1
Total Split (%)	16.7%	34.9%	34.9%	13.3%	31.6%		15.0%	34.3%	34.3%	17.5%	36.8%	36.8%
Maximum Green (s)	14.0	35.9	35.9	10.0	31.9		12.0	35.1	35.1	15.0	38.1	38.1
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Don't Walk (s)		16.9	16.9		15.4			26.9	26.9		31.1	31.1
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effect Green (s)	14.9	34.1	34.1	11.3	27.0		12.8	27.9	27.9	14.3	29.3	29.3
Actuated g/C Ratio	0.15	0.34	0.34	0.11	0.27		0.13	0.28	0.28	0.14	0.29	0.29
v/c Ratio	0.56	0.68	0.36	0.49	0.73		0.56	0.57	0.14	0.53	0.74	0.18
Control Delay (s/veh)	53.5	34.4	8.0	56.8	39.3		56.5	37.5	0.6	52.8	42.4	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	53.5	34.4	8.0	56.8	39.3		56.5	37.5	0.6	52.8	42.4	0.7
LOS	D	C	A	E	D		E	D	A	D	D	A
Approach Delay (s/veh)		31.7			41.3			36.3			37.9	
Approach LOS		C			D			D			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 100.6

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay (s/veh): 36.2

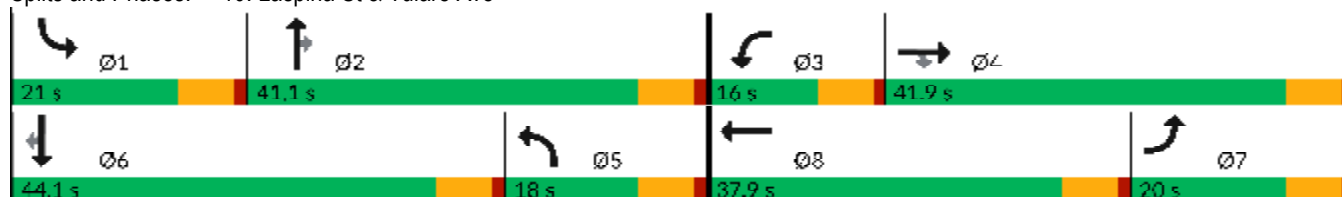
Intersection LOS: D

Intersection Capacity Utilization 66.8%

ICU Level of Service C

Analysis Period (min) 15


























Splits and Phases: 10: Laspina St & Tulare Ave



# HCM 7th Signalized Intersection Summary




























## 10: Laspina St & Tulare Ave

PM 2027  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 							
Traffic Volume (veh/h)	125	748	200	82	568	64	106	272	69	113	372	90
Future Volume (veh/h)	125	748	200	82	568	64	106	272	69	113	372	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	136	813	217	89	617	70	115	296	75	123	404	98
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	231	1096	437	151	832	94	182	533	408	192	545	417
Arrive On Green	0.14	0.31	0.31	0.09	0.26	0.24	0.11	0.29	0.29	0.12	0.29	0.29
Sat Flow, veh/h	1641	3554	1416	1641	3204	363	1641	1870	1433	1641	1870	1433
Grp Volume(v), veh/h	136	813	217	89	342	345	115	296	75	123	404	98
Grp Sat Flow(s),veh/h/ln	1641	1777	1416	1641	1777	1790	1641	1870	1433	1641	1870	1433
Q Serve(g_s), s	6.3	16.6	6.3	4.2	14.3	14.4	5.4	10.9	3.2	5.8	15.8	4.2
Cycle Q Clear(g_c), s	6.3	16.6	6.3	4.2	14.3	14.4	5.4	10.9	3.2	5.8	15.8	4.2
Prop In Lane	1.00		1.00	1.00		0.20	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	231	1096	437	151	462	465	182	533	408	192	545	417
V/C Ratio(X)	0.59	0.74	0.50	0.59	0.74	0.74	0.63	0.56	0.18	0.64	0.74	0.23
Avail Cap(c_a), veh/h	324	1664	663	243	744	750	284	857	657	345	926	710
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.6	25.1	8.9	35.3	27.5	27.7	34.4	24.6	21.8	34.1	25.9	21.8
Incr Delay (d2), s/veh	2.4	1.0	0.9	3.7	2.3	2.4	3.6	0.9	0.2	3.5	2.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	6.2	2.8	1.7	5.6	5.8	2.2	4.4	1.0	2.3	6.4	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	35.0	26.1	9.8	39.0	29.8	30.0	38.0	25.5	22.0	37.7	28.0	22.1
LnGrp LOS	C	C	A	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h	1166			776			486			625		
Approach Delay, s/veh	24.1			31.0			27.9			28.9		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.5	27.1	11.4	29.0	13.0	27.6	15.4	25.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	35.1	10.0	35.9	12.0	38.1	14.0	31.9				
Max Q Clear Time (g_c+I1), s	7.8	12.9	6.2	18.6	7.4	17.8	8.3	16.4				
Green Ext Time (p_c), s	0.2	1.3	0.1	4.3	0.1	1.8	0.2	2.3				
Intersection Summary												
HCM 7th Control Delay, s/veh	27.4											
HCM 7th LOS	C											

Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

PM 2027  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	225	510	220	73	389	229	112	552	66	279	573	296
Future Volume (vph)	225	510	220	73	389	229	112	552	66	279	573	296
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	420		185	125		125	80		0	475		475
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98		1.00				0.98
Frt			0.850			0.850		0.984				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3539	1458	1630	3471	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1412	1630	3539	1430	1630	3471	0	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			239			249		10				322
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2671			2887			1662			2673	
Travel Time (s)		33.1			35.8			20.6			33.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	245	554	239	79	423	249	122	600	72	303	623	322
Shared Lane Traffic (%)												
Lane Group Flow (vph)	245	554	239	79	423	249	122	672	0	303	623	322
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

PM 2027  
09/12/2024

	↖	→	↘	↙	←	↗	↖	↑	↗	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	37.0	37.0	10.0	37.0	37.0	10.0	39.9		10.0	42.7	42.7
Total Split (s)	20.0	40.0	40.0	17.0	37.0	37.0	19.0	32.0		31.0	44.0	44.0
Total Split (%)	16.7%	33.3%	33.3%	14.2%	30.8%	30.8%	15.8%	26.7%		25.8%	36.7%	36.7%
Maximum Green (s)	14.0	34.0	34.0	11.0	31.0	31.0	13.0	26.0		25.0	38.0	38.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Don't Walk (s)		24.0	24.0		24.0	24.0		26.9			29.7	29.7
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effect Green (s)	16.1	28.8	28.8	12.1	21.9	21.9	14.9	30.6		24.7	40.4	40.4
Actuated g/C Ratio	0.15	0.26	0.26	0.11	0.20	0.20	0.14	0.28		0.23	0.37	0.37
v/c Ratio	1.02	0.60	0.44	0.44	0.60	0.51	0.55	0.69		0.82	0.91	0.44
Control Delay (s/veh)	111.6	39.9	7.1	56.0	43.5	8.6	54.9	40.2		60.5	53.1	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	111.6	39.9	7.1	56.0	43.5	8.6	54.9	40.2		60.5	53.1	5.3
LOS	F	D	A	E	D	A	D	D		E	D	A
Approach Delay (s/veh)		49.3			33.2			42.4			42.5	
Approach LOS		D			C			D			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 109.5

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay (s/veh): 42.5

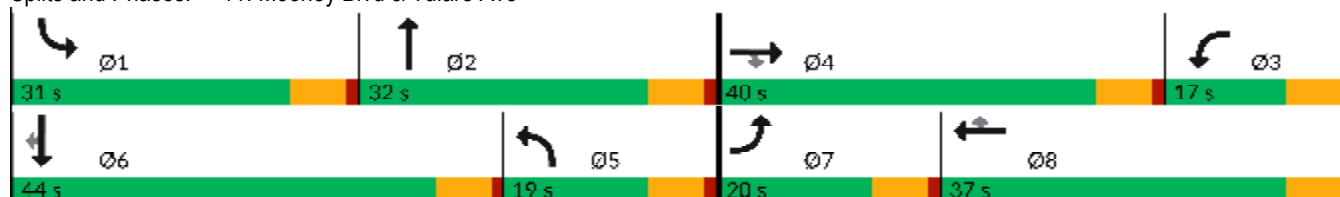
Intersection LOS: D

Intersection Capacity Utilization 76.9%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 11: Mooney Blvd & Tulare Ave
































# HCM 7th Signalized Intersection Summary

















## 11: Mooney Blvd & Tulare Ave

PM 2027  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (veh/h)	225	510	220	73	389	229	112	552	66	279	573	296
Future Volume (veh/h)	225	510	220	73	389	229	112	552	66	279	573	296
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	245	554	239	79	423	249	122	600	72	303	623	322
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	244	830	330	242	825	332	176	803	96	358	679	521
Arrive On Green	0.15	0.23	0.23	0.15	0.23	0.23	0.11	0.25	0.23	0.22	0.36	0.36
Sat Flow, veh/h	1641	3554	1411	1641	3554	1430	1641	3182	381	1641	1870	1435
Grp Volume(v), veh/h	245	554	239	79	423	249	122	334	338	303	623	322
Grp Sat Flow(s),veh/h/ln	1641	1777	1411	1641	1777	1430	1641	1777	1786	1641	1870	1435
Q Serve(g_s), s	16.0	15.2	16.8	4.6	11.2	17.4	7.7	18.6	18.8	19.0	34.2	11.7
Cycle Q Clear(g_c), s	16.0	15.2	16.8	4.6	11.2	17.4	7.7	18.6	18.8	19.0	34.2	11.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	244	830	330	242	825	332	176	448	451	358	679	521
V/C Ratio(X)	1.00	0.67	0.73	0.33	0.51	0.75	0.69	0.75	0.75	0.85	0.92	0.62
Avail Cap(c_a), veh/h	244	1190	472	242	1091	439	229	463	465	412	696	534
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.8	37.4	38.0	41.1	36.0	38.4	46.3	37.0	37.3	40.3	32.7	9.8
Incr Delay (d2), s/veh	58.5	0.9	3.2	0.8	0.5	5.0	5.9	6.3	6.4	13.6	17.0	2.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.1	6.3	5.7	1.8	4.6	6.2	3.3	8.3	8.5	8.5	17.2	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	104.3	38.4	41.2	41.8	36.5	43.4	52.2	43.4	43.7	53.9	49.7	11.9
LnGrp LOS	F	D	D	D	D	D	D	D	D	D	D	B
Approach Vol, veh/h	1038		751				794		1248			
Approach Delay, s/veh	54.6		39.3				44.9		41.0			
Approach LOS	D		D				D		D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	27.4	31.1	19.8	29.1	15.5	43.0	20.0	29.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	25.0	26.0	11.0	34.0	13.0	38.0	14.0	31.0				
Max Q Clear Time (g_c+I1), s	21.0	20.8	6.6	18.8	9.7	36.2	18.0	19.4				
Green Ext Time (p_c), s	0.4	1.3	0.1	3.0	0.1	0.8	0.0	2.2				
Intersection Summary												
HCM 7th Control Delay, s/veh			45.1									
HCM 7th LOS			D									
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
12: Morrison St & Tulare Ave

PM 2027  
09/12/2024























												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	596	136	56	526	4	63	24	31	0	25	29
Future Volume (vph)	14	596	136	56	526	4	63	24	31	0	25	29
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.975			0.999			0.964			0.927	
Flt Protected		0.999			0.995			0.974				
Satd. Flow (prot)	0	1814	0	0	1852	0	0	1749	0	0	1727	0
Flt Permitted		0.999			0.995			0.974				
Satd. Flow (perm)	0	1814	0	0	1852	0	0	1749	0	0	1727	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	648	148	61	572	4	68	26	34	0	27	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	811	0	0	637	0	0	128	0	0	59	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	
Intersection Summary												
Area Type:	Other											
Control Type:	Roundabout											
Intersection Capacity Utilization	78.8%				ICU Level of Service D							
Analysis Period (min)	15											

Intersection				
Intersection Delay, s/veh	10.0			
Intersection LOS	B			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	811	637	128	59
Demand Flow Rate, veh/h	827	649	131	61
Vehicles Circulating, veh/h	90	111	676	714
Vehicles Exiting, veh/h	685	696	241	46
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	11.6	8.9	7.5	6.6
Approach LOS	B	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	827	649	131	61
Cap Entry Lane, veh/h	1259	1232	692	666
Entry HV Adj Factor	0.981	0.981	0.981	0.975
Flow Entry, veh/h	811	637	128	59
Cap Entry, veh/h	1235	1209	679	649
V/C Ratio	0.657	0.527	0.189	0.092
Control Delay, s/veh	11.6	8.9	7.5	6.6
LOS	B	A	A	A
95th %tile Queue, veh	5	3	1	0















Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

PM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	158	121	131	21	129	4	93	722	21	9	881	167
Future Volume (vph)	158	121	131	21	129	4	93	722	21	9	881	167
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.996			0.996			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1854	0	1630	3522	0	1630	3437	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1854	0	1630	3522	0	1630	3437	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			173		1			3			20	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	172	132	142	23	140	4	101	785	23	10	958	182
Shared Lane Traffic (%)												
Lane Group Flow (vph)	172	132	142	23	144	0	101	808	0	10	1140	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

PM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	20.0	48.7	48.7	10.3	39.0		14.0	51.5		9.5	47.0	
Total Split (%)	16.7%	40.6%	40.6%	8.6%	32.5%		11.7%	42.9%		7.9%	39.2%	
Maximum Green (s)	14.5	43.2	43.2	4.8	33.5		8.5	46.0		4.0	41.5	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Don't Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effect Green (s)	15.3	28.8	28.8	9.8	16.4		10.0	49.9		6.6	38.3	
Actuated g/C Ratio	0.16	0.30	0.30	0.10	0.17		0.10	0.52		0.07	0.40	
v/c Ratio	0.67	0.24	0.26	0.14	0.46		0.60	0.44		0.09	0.83	
Control Delay (s/veh)	54.9	30.9	3.9	44.2	41.0		60.8	18.0		48.7	32.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	54.9	30.9	3.9	44.2	41.0		60.8	18.0		48.7	32.7	
LOS	D	C	A	D	D		E	B		D	C	
Approach Delay (s/veh)		31.5			41.4			22.8			32.9	
Approach LOS		C			D			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 96.3

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay (s/veh): 29.7

Intersection LOS: C

Intersection Capacity Utilization 68.1%

ICU Level of Service C

Analysis Period (min) 15























Splits and Phases: 1: Mooney Blvd & Cartmill Ave



# HCM 7th Signalized Intersection Summary

## 1: Mooney Blvd & Cartmill Ave

PM 2027+Project  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	158	121	131	21	129	4	93	722	21	9	881	167
Future Volume (veh/h)	158	121	131	21	129	4	93	722	21	9	881	167
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	172	132	142	23	140	4	101	785	23	10	958	182
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	238	295	225	230	277	8	157	1067	31	313	1182	224
Arrive On Green	0.15	0.16	0.16	0.14	0.15	0.13	0.10	0.30	0.28	0.19	0.40	0.38
Sat Flow, veh/h	1641	1870	1425	1641	1808	52	1641	3522	103	1641	2964	562
Grp Volume(v), veh/h	172	132	142	23	0	144	101	396	412	10	574	566
Grp Sat Flow(s),veh/h/ln	1641	1870	1425	1641	0	1859	1641	1777	1848	1641	1777	1750
Q Serve(g_s), s	7.7	4.9	5.1	0.9	0.0	5.5	4.6	15.4	15.4	0.4	22.1	22.2
Cycle Q Clear(g_c), s	7.7	4.9	5.1	0.9	0.0	5.5	4.6	15.4	15.4	0.4	22.1	22.2
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.06	1.00		0.32
Lane Grp Cap(c), veh/h	238	295	225	230	0	285	157	538	560	313	708	697
V/C Ratio(X)	0.72	0.45	0.63	0.10	0.00	0.51	0.65	0.74	0.74	0.03	0.81	0.81
Avail Cap(c_a), veh/h	341	1086	827	230	0	845	213	1096	1140	313	992	977
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.4	29.4	15.6	28.9	0.0	30.0	33.6	24.1	24.1	25.4	20.6	20.8
Incr Delay (d2), s/veh	4.3	1.1	2.9	0.2	0.0	1.4	4.4	2.0	1.9	0.0	3.5	3.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	2.1	2.3	0.3	0.0	2.3	1.8	5.8	6.1	0.1	8.2	8.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	35.7	30.4	18.5	29.1	0.0	31.3	38.0	26.0	26.0	25.4	24.1	24.5
LnGrp LOS	D	C	B	C		C	D	C	C	C	C	C
Approach Vol, veh/h	446					167		909		1150		
Approach Delay, s/veh	28.7					31.0		27.4		24.3		
Approach LOS	C					C		C		C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.7	27.3	14.8	16.2	11.3	34.7	15.2	15.8				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	4.0	46.0	4.8	43.2	8.5	41.5	14.5	33.5				
Max Q Clear Time (g_c+I1), s	2.4	17.4	2.9	7.1	6.6	24.2	9.7	7.5				
Green Ext Time (p_c), s	0.0	3.0	0.0	1.0	0.0	4.4	0.2	0.4				
Intersection Summary												
HCM 7th Control Delay, s/veh			26.5									
HCM 7th LOS			C									

# Lanes, Volumes, Timings

## 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

PM 2027+Project  
09/12/2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (vph)	0	622	620	0	210	82
Future Volume (vph)	0	622	620	0	210	82
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Fr t						0.850
Fl t Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	1630	1458
Fl t Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	1630	1458
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						89
Link Speed (mph)		55	55		55	
Link Distance (ft)		349	727		300	
Travel Time (s)		4.3	9.0		3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	676	674	0	228	89
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	676	674	0	228	89
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors		1	1		1	1
Detector Template						
Leading Detector (ft)		50	50		50	50
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		50	50		50	50
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		4.0	4.0		4.0	4.0
Minimum Split (s)		24.0	24.0		24.0	24.0
Total Split (s)		53.0	53.0		47.0	47.0
Total Split (%)		53.0%	53.0%		47.0%	47.0%
Maximum Green (s)		47.0	47.0		41.0	41.0
Yellow Time (s)		5.0	5.0		5.0	5.0



Lanes, Volumes, Timings  
2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

PM 2027+Project  
09/12/2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		None	None		Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effect Green (s)		15.2	15.2		13.2	13.2
Actuated g/C Ratio		0.42	0.42		0.36	0.36
v/c Ratio		0.46	0.46		0.39	0.15
Control Delay (s/veh)		9.2	9.2		11.6	3.6
Queue Delay		0.0	0.0		0.0	0.0
Total Delay (s/veh)		9.2	9.2		11.6	3.6
LOS		A	A		B	A
Approach Delay (s/veh)		9.2	9.2		9.4	
Approach LOS		A	A		A	

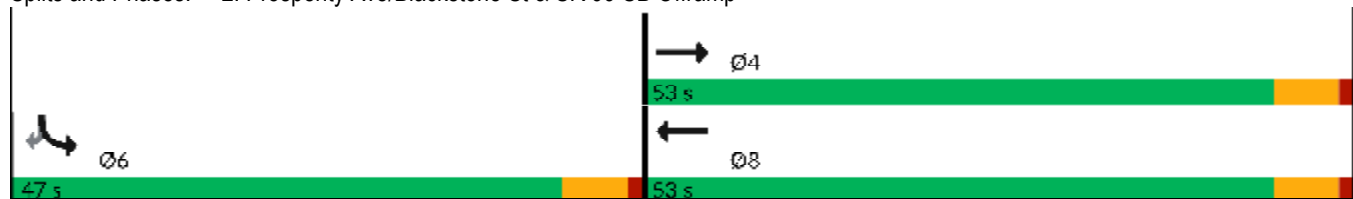
Intersection Summary

Area Type: Other  
Cycle Length: 100  
Actuated Cycle Length: 36.6  
Natural Cycle: 50  
Control Type: Actuated-Uncoordinated  
Maximum v/c Ratio: 0.46  
Intersection Signal Delay (s/veh): 9.2  
Intersection Capacity Utilization 36.5%  
Analysis Period (min) 15

Intersection LOS: A

ICU Level of Service A

Splits and Phases: 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp



# HCM 7th Signalized Intersection Summary

## 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp
























PM 2027+Project  
09/12/2024



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (veh/h)	0	622	620	0	210	82
Future Volume (veh/h)	0	622	620	0	210	82
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1723	1723
Adj Flow Rate, veh/h	0	676	674	0	228	89
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	1423	1423	0	498	443
Arrive On Green	0.00	0.40	0.40	0.00	0.30	0.30
Sat Flow, veh/h	0	3741	3741	0	1641	1460
Grp Volume(v), veh/h	0	676	674	0	228	89
Grp Sat Flow(s),veh/h/ln	0	1777	1777	0	1641	1460
Q Serve(g_s), s	0.0	3.8	3.8	0.0	3.0	1.2
Cycle Q Clear(g_c), s	0.0	3.8	3.8	0.0	3.0	1.2
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1423	1423	0	498	443
V/C Ratio(X)	0.00	0.48	0.47	0.00	0.46	0.20
Avail Cap(c_a), veh/h	0	6445	6445	0	2611	2324
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	6.0	6.0	0.0	7.6	7.0
Incr Delay (d2), s/veh	0.0	0.2	0.2	0.0	0.7	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.3	0.3	0.0	0.4	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	0.0	6.2	6.2	0.0	8.3	7.2
LnGrp LOS		A	A		A	A
Approach Vol, veh/h		676	674		317	
Approach Delay, s/veh		6.2	6.2		8.0	
Approach LOS		A	A		A	
Timer - Assigned Phs				4	6	8
Phs Duration (G+Y+Rc), s				14.8	12.2	14.8
Change Period (Y+Rc), s				6.0	6.0	6.0
Max Green Setting (Gmax), s				47.0	41.0	47.0
Max Q Clear Time (g_c+I1), s				5.8	5.0	5.8
Green Ext Time (p_c), s				3.0	1.2	3.0
Intersection Summary						
HCM 7th Control Delay, s/veh			6.6			
HCM 7th LOS			A			

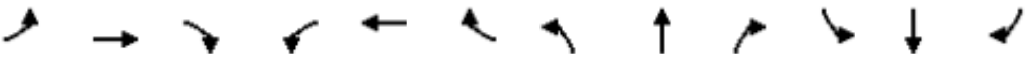
Lanes, Volumes, Timings  
3: Blackstone Ave/Blackstone St & Prosperity Ave

PM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	17	5	636	23	621	0	47	518	666	145	0
Future Volume (vph)	2	17	5	636	23	621	0	47	518	666	145	0
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	30		0	335		310	55		90	240		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor		1.00				0.98						
Frt		0.967				0.850			0.850			
Flt Protected	0.950			0.950	0.956					0.950		
Satd. Flow (prot)	1630	1793	0	1548	1692	1458	1716	1863	1458	3162	1863	0
Flt Permitted	0.950			0.950						0.950		
Satd. Flow (perm)	1630	1793	0	1548	1770	1427	1716	1863	1458	3162	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				675			563			
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		98			1229			643			727	
Travel Time (s)		1.2			15.2			8.0			9.0	
Confl. Peds. (#/hr)			5			5						
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	18	5	691	25	675	0	51	563	724	158	0
Shared Lane Traffic (%)				48%								
Lane Group Flow (vph)	2	23	0	359	357	675	0	51	563	724	158	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												

Lanes, Volumes, Timings  
3: Blackstone Ave/Blackstone St & Prosperity Ave

PM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	24.1		10.0	24.1	24.1	10.0	24.0	24.0	10.0	24.0	
Total Split (s)	13.0	27.1		26.9	41.0	41.0	10.0	24.0	24.0	22.0	36.0	
Total Split (%)	13.0%	27.1%		26.9%	41.0%	41.0%	10.0%	24.0%	24.0%	22.0%	36.0%	
Maximum Green (s)	7.0	21.1		20.9	35.0	35.0	4.0	18.0	18.0	16.0	30.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Don't Walk (s)		11.1			11.1	11.1		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		5			5	5		0	0		0	
Act Effect Green (s)	7.7	10.1		32.9	32.9	37.4		11.8	11.8	18.2	34.1	
Actuated g/C Ratio	0.09	0.12		0.40	0.40	0.46		0.14	0.14	0.22	0.42	
v/c Ratio	0.01	0.10		0.58	0.52	0.66		0.19	0.81	1.03	0.20	
Control Delay (s/veh)	38.5	28.3		28.5	26.7	5.4		32.6	13.6	74.9	16.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay (s/veh)	38.5	28.3		28.5	26.7	5.4		32.6	13.6	74.9	16.3	
LOS	D	C		C	C	A		C	B	E	B	
Approach Delay (s/veh)		29.1			16.8			15.2			64.4	
Approach LOS		C			B			B			E	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 81.6

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay (s/veh): 31.0

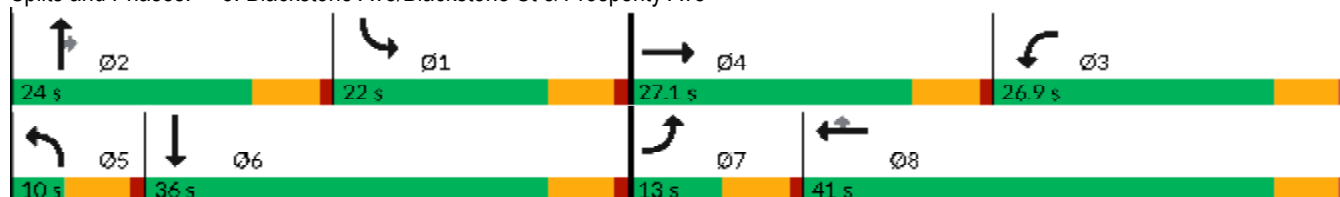
Intersection LOS: C

Intersection Capacity Utilization 70.6%

ICU Level of Service C

Analysis Period (min) 15
























Splits and Phases: 3: Blackstone Ave/Blackstone St & Prosperity Ave



# HCM 7th Signalized Intersection Summary

























## 3: Blackstone Ave/Blackstone St & Prosperity Ave

PM 2027+Project  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	17	5	636	23	621	0	47	518	666	145	0
Future Volume (veh/h)	2	17	5	636	23	621	0	47	518	666	145	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	0
Adj Flow Rate, veh/h	2	18	5	709	0	675	0	51	563	724	158	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	0
Cap, veh/h	43	127	35	854	0	466	2	449	351	688	944	0
Arrive On Green	0.03	0.09	0.07	0.26	0.00	0.32	0.00	0.24	0.24	0.22	0.50	0.00
Sat Flow, veh/h	1641	1394	387	3281	0	1434	1641	1870	1460	3183	1870	0
Grp Volume(v), veh/h	2	0	23	709	0	675	0	51	563	724	158	0
Grp Sat Flow(s),veh/h/ln	1641	0	1781	1641	0	1434	1641	1870	1460	1591	1870	0
Q Serve(g_s), s	0.1	0.0	1.0	17.0	0.0	12.6	0.0	1.8	20.0	18.0	3.8	0.0
Cycle Q Clear(g_c), s	0.1	0.0	1.0	17.0	0.0	12.6	0.0	1.8	20.0	18.0	3.8	0.0
Prop In Lane	1.00		0.22	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	43	0	162	854	0	466	2	449	351	688	944	0
V/C Ratio(X)	0.05	0.00	0.14	0.83	0.00	1.45	0.00	0.11	1.60	1.05	0.17	0.00
Avail Cap(c_a), veh/h	177	0	494	903	0	637	118	449	351	688	944	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	39.5	0.0	35.0	29.0	0.0	6.1	0.0	24.7	31.6	32.6	11.2	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.4	6.3	0.0	213.7	0.0	0.1	285.2	48.7	0.1	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.4	6.7	0.0	33.8	0.0	0.7	34.0	10.9	1.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.0	0.0	35.4	35.4	0.0	219.8	0.0	24.8	316.8	81.3	11.2	0.0
LnGrp LOS	D		D	D		F		C	F	F	B	
Approach Vol, veh/h	25			1384			614			882		
Approach Delay, s/veh	35.8			125.3			292.5			68.8		
Approach LOS	D			F			F			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.0	24.0	25.7	11.6	0.0	46.0	6.2	31.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	16.0	18.0	20.9	21.1	4.0	30.0	7.0	35.0				
Max Q Clear Time (g_c+I1), s	20.0	22.0	19.0	3.0	0.0	5.8	2.1	14.6				
Green Ext Time (p_c), s	0.0	0.0	0.7	0.0	0.0	0.5	0.0	3.2				
Intersection Summary												
HCM 7th Control Delay, s/veh	142.7											
HCM 7th LOS	F											
Notes												
User approved volume balancing among the lanes for turning movement.												













Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

PM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	463	689	115	85	731	194	167	341	179	273	122	446
Future Volume (vph)	463	689	115	85	731	194	167	341	179	273	122	446
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	270		0	155		85	155		0	200		205
Storage Lanes	2		1	1		1	1		0	2		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	0.88
Ped Bike Factor			0.97			0.98		0.99				0.97
Frt			0.850			0.850		0.948				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	1630	5085	1458	1630	3334	0	3162	1863	2567
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1410	1630	5085	1433	1630	3334	0	3162	1863	2489
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			149			73			485
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1229			2636			362			5336	
Travel Time (s)		15.2			32.7			4.5			66.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	503	749	125	92	795	211	182	371	195	297	133	485
Shared Lane Traffic (%)												
Lane Group Flow (vph)	503	749	125	92	795	211	182	566	0	297	133	485
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

PM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	32.7	32.7	10.0	45.6	45.6	10.0	47.0		10.0	49.9	49.9
Total Split (s)	31.9	43.1	43.1	35.9	47.1	47.1	11.0	31.0		10.0	30.0	30.0
Total Split (%)	26.6%	35.9%	35.9%	29.9%	39.3%	39.3%	9.2%	25.8%		8.3%	25.0%	25.0%
Maximum Green (s)	25.9	37.1	37.1	29.9	41.1	41.1	5.0	25.0		4.0	24.0	24.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Don't Walk (s)		19.7	19.7		32.6	32.6		34.0			36.9	36.9
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effect Green (s)	22.0	37.4	37.4	13.4	25.3	25.3	7.4	24.0		6.3	22.9	22.9
Actuated g/C Ratio	0.23	0.40	0.40	0.14	0.27	0.27	0.08	0.25		0.07	0.24	0.24
v/c Ratio	0.68	0.54	0.20	0.40	0.58	0.43	1.43	0.63		1.40	0.29	0.50
Control Delay (s/veh)	41.1	26.6	4.7	47.3	32.8	13.5	267.9	30.8		241.9	32.3	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	41.1	26.6	4.7	47.3	32.8	13.5	267.9	30.8		241.9	32.3	4.7
LOS	D	C	A	D	C	B	F	C		F	C	A
Approach Delay (s/veh)		29.9			30.3			88.5			85.7	
Approach LOS		C			C			F			F	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 94.5

Natural Cycle: 140

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.43

Intersection Signal Delay (s/veh): 52.9

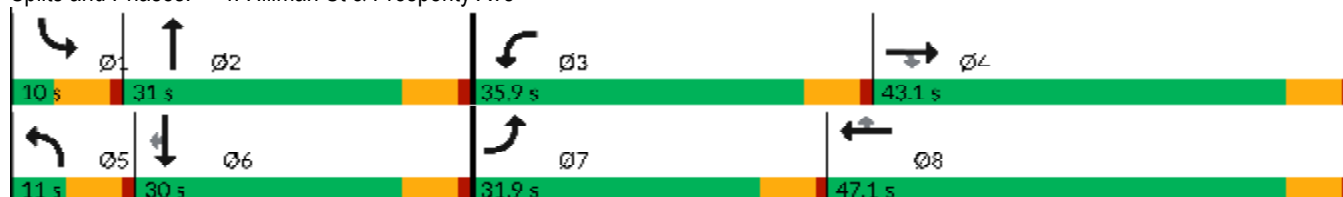
Intersection LOS: D

Intersection Capacity Utilization 71.4%

ICU Level of Service C

Analysis Period (min) 15

























Splits and Phases: 4: Hillman St & Prosperity Ave



# HCM 7th Signalized Intersection Summary

## 4: Hillman St & Prosperity Ave





























PM 2027+Project  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	463	689	115	85	731	194	167	341	179	273	122	446
Future Volume (veh/h)	463	689	115	85	731	194	167	341	179	273	122	446
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	503	749	125	92	795	211	182	371	195	297	133	485
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	680	1366	545	155	1353	379	134	595	307	223	473	629
Arrive On Green	0.21	0.38	0.38	0.09	0.26	0.26	0.08	0.26	0.24	0.07	0.25	0.25
Sat Flow, veh/h	3183	3554	1419	1641	5106	1432	1641	2249	1161	3183	1870	2486
Grp Volume(v), veh/h	503	749	125	92	795	211	182	292	274	297	133	485
Grp Sat Flow(s),veh/h/ln	1591	1777	1419	1641	1702	1432	1641	1777	1633	1591	1870	1243
Q Serve(g_s), s	12.7	14.1	5.1	4.6	11.6	10.9	7.0	12.4	12.8	6.0	4.9	15.5
Cycle Q Clear(g_c), s	12.7	14.1	5.1	4.6	11.6	10.9	7.0	12.4	12.8	6.0	4.9	15.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.71	1.00		1.00
Lane Grp Cap(c), veh/h	680	1366	545	155	1353	379	134	470	432	223	473	629
V/C Ratio(X)	0.74	0.55	0.23	0.59	0.59	0.56	1.36	0.62	0.63	1.33	0.28	0.77
Avail Cap(c_a), veh/h	1036	1621	647	611	2567	720	134	560	514	223	567	754
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.5	20.6	17.8	37.2	27.4	27.2	39.4	27.7	28.5	39.9	25.7	29.7
Incr Delay (d2), s/veh	1.6	0.3	0.2	3.6	0.4	1.3	202.0	1.5	1.9	177.3	0.3	4.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	5.1	1.5	1.9	4.3	3.5	10.1	4.9	4.8	7.7	2.0	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.1	20.9	18.0	40.9	27.8	28.4	241.4	29.3	30.4	217.2	26.1	33.8
LnGrp LOS	C	C	B	D	C	C	F	C	C	F	C	C
Approach Vol, veh/h	1377				1098				748			
Approach Delay, s/veh	25.1				29.0				81.3			
Approach LOS	C				C				F			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	26.7	12.1	36.9	11.0	25.7	22.3	26.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	4.0	25.0	29.9	37.1	5.0	24.0	25.9	41.1				
Max Q Clear Time (g_c+I1), s	8.0	14.8	6.6	16.1	9.0	17.5	14.7	13.6				
Green Ext Time (p_c), s	0.0	1.6	0.2	3.7	0.0	1.6	1.7	4.7				
Intersection Summary												
HCM 7th Control Delay, s/veh	51.1											
HCM 7th LOS	D											
Notes												
User approved pedestrian interval to be less than phase max green.												















Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

PM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  						 	
Traffic Volume (vph)	118	721	289	75	614	51	212	159	105	122	213	73
Future Volume (vph)	118	721	289	75	614	51	212	159	105	122	213	73
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	235		115	230		100	100		100	160		100
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96			0.97			0.97			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	5085	1458	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1405	1630	5085	1410	1630	1863	1415	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			191			191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2636			2650			5387			713	
Travel Time (s)		32.7			32.9			66.8			8.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	128	784	314	82	667	55	230	173	114	133	232	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	128	784	314	82	667	55	230	173	114	133	232	79
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

PM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	27.0	27.0	10.0	34.1	34.1	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (s)	16.0	38.4	38.4	13.0	35.4	35.4	23.0	47.6	47.6	21.0	45.6	45.6
Total Split (%)	13.3%	32.0%	32.0%	10.8%	29.5%	29.5%	19.2%	39.7%	39.7%	17.5%	38.0%	38.0%
Maximum Green (s)	10.0	32.4	32.4	7.0	29.4	29.4	17.0	41.6	41.6	15.0	39.6	39.6
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		14.0	14.0		21.1	21.1		32.6	32.6		32.6	32.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effect Green (s)	12.1	30.8	30.8	9.2	24.5	24.5	18.8	19.3	19.3	21.0	21.5	21.5
Actuated g/C Ratio	0.13	0.33	0.33	0.10	0.26	0.26	0.20	0.21	0.21	0.22	0.23	0.23
v/c Ratio	0.61	0.67	0.53	0.51	0.50	0.11	0.70	0.45	0.26	0.36	0.54	0.17
Control Delay (s/veh)	56.2	32.7	15.5	57.5	31.4	0.4	51.1	36.5	1.4	38.7	36.9	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	56.2	32.7	15.5	57.5	31.4	0.4	51.1	36.5	1.4	38.7	36.9	0.8
LOS	E	C	B	E	C	A	D	D	A	D	D	A
Approach Delay (s/veh)		30.8			31.9			35.3			31.0	
Approach LOS		C			C			D			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 93.4

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay (s/veh): 31.9

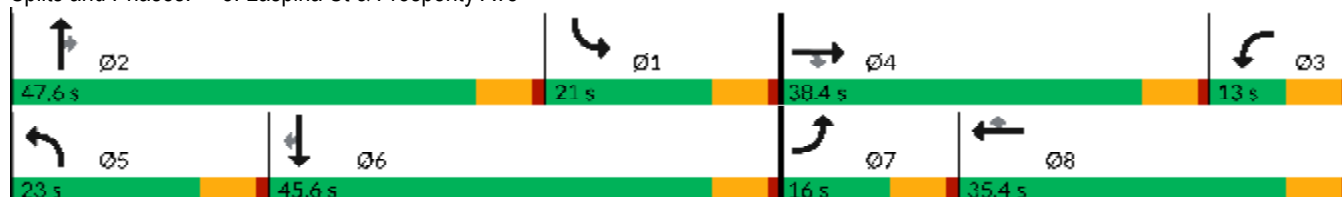
Intersection LOS: C

Intersection Capacity Utilization 65.1%

ICU Level of Service C





























Analysis Period (min) 15

Splits and Phases: 5: Laspina St & Prosperity Ave


























# HCM 7th Signalized Intersection Summary 5: Laspina St & Prosperity Ave

PM 2027+Project  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  						 	
Traffic Volume (veh/h)	118	721	289	75	614	51	212	159	105	122	213	73
Future Volume (veh/h)	118	721	289	75	614	51	212	159	105	122	213	73
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.96	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	128	784	314	82	667	55	230	173	114	133	232	79
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	198	1083	431	143	1386	384	307	352	265	350	401	306
Arrive On Green	0.12	0.30	0.30	0.09	0.27	0.27	0.19	0.19	0.19	0.21	0.21	0.21
Sat Flow, veh/h	1641	3554	1415	1641	5106	1414	1641	1870	1406	1641	1870	1429
Grp Volume(v), veh/h	128	784	314	82	667	55	230	173	114	133	232	79
Grp Sat Flow(s),veh/h/ln	1641	1777	1415	1641	1702	1414	1641	1870	1406	1641	1870	1429
Q Serve(g_s), s	5.8	15.2	7.8	3.7	8.5	1.1	10.3	6.4	5.5	5.4	8.6	3.6
Cycle Q Clear(g_c), s	5.8	15.2	7.8	3.7	8.5	1.1	10.3	6.4	5.5	5.4	8.6	3.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	198	1083	431	143	1386	384	307	352	265	350	401	306
V/C Ratio(X)	0.65	0.72	0.73	0.57	0.48	0.14	0.75	0.49	0.43	0.38	0.58	0.26
Avail Cap(c_a), veh/h	254	1578	629	191	2070	573	402	1053	792	360	1005	768
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.5	24.0	6.2	34.0	23.6	5.2	29.8	28.1	27.8	26.1	27.3	25.3
Incr Delay (d2), s/veh	3.6	0.9	2.4	3.6	0.3	0.2	5.5	1.1	1.1	0.7	1.3	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	5.6	4.0	1.5	3.0	0.7	4.1	2.7	1.7	1.9	3.6	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	36.1	24.9	8.6	37.5	23.9	5.4	35.2	29.2	28.9	26.8	28.6	25.7
LnGrp LOS	D	C	A	D	C	A	D	C	C	C	C	C
Approach Vol, veh/h	1226			804			517			444		
Approach Delay, s/veh	21.9			24.0			31.8			27.6		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.5	18.6	10.8	27.6	18.5	20.6	13.3	25.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	41.6	7.0	32.4	17.0	39.6	10.0	29.4				
Max Q Clear Time (g_c+I1), s	7.4	8.4	5.7	17.2	12.3	10.6	7.8	10.5				
Green Ext Time (p_c), s	0.2	1.0	0.0	4.4	0.3	1.1	0.1	3.0				
Intersection Summary												
HCM 7th Control Delay, s/veh	25.0											
HCM 7th LOS	C											

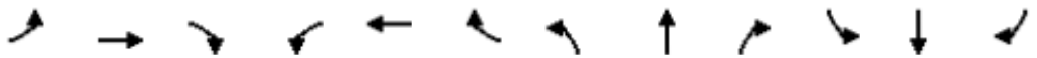
Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

PM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	279	326	138	231	48	209	560	45	66	758	238
Future Volume (vph)	224	279	326	138	231	48	209	560	45	66	758	238
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98		1.00				0.97			0.98
Frt			0.850		0.974				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1808	0	1630	3539	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1432	1630	1808	0	1630	3539	1409	1630	3539	1426
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			354		8				191			259
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2617			5285	
Travel Time (s)		32.9			36.1			32.4			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	243	303	354	150	251	52	227	609	49	72	824	259
Shared Lane Traffic (%)												
Lane Group Flow (vph)	243	303	354	150	303	0	227	609	49	72	824	259
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

PM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	24.0	39.7	39.7	17.0	32.7		23.0	46.3	46.3	17.0	40.3	40.3
Total Split (%)	20.0%	33.1%	33.1%	14.2%	27.3%		19.2%	38.6%	38.6%	14.2%	33.6%	33.6%
Maximum Green (s)	18.0	33.7	33.7	11.0	26.7		17.0	40.3	40.3	11.0	34.3	34.3
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Don't Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effect Green (s)	19.7	26.9	26.9	17.9	25.1		18.7	45.8	45.8	12.0	36.4	36.4
Actuated g/C Ratio	0.17	0.23	0.23	0.15	0.22		0.16	0.39	0.39	0.10	0.31	0.31
v/c Ratio	0.88	0.70	0.59	0.60	0.76		0.87	0.44	0.07	0.43	0.74	0.41
Control Delay (s/veh)	78.6	49.5	7.6	58.4	54.6		78.8	29.0	0.2	58.3	41.3	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	78.6	49.5	7.6	58.4	54.6		78.8	29.0	0.2	58.3	41.3	6.1
LOS	E	D	A	E	D		E	C	A	E	D	A
Approach Delay (s/veh)		40.9			55.9			40.2			34.5	
Approach LOS		D			E			D			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 116

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay (s/veh): 40.5

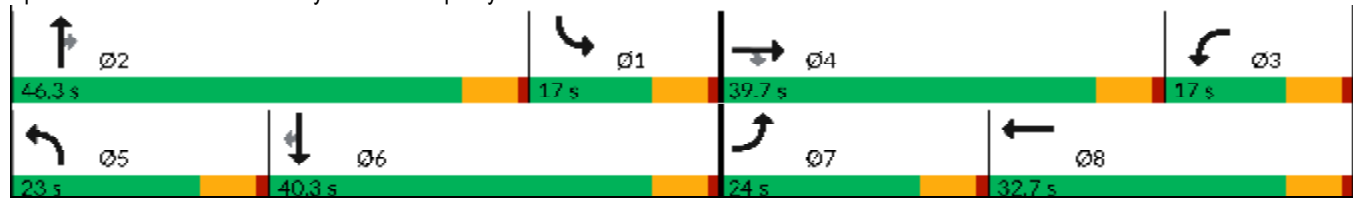
Intersection LOS: D

Intersection Capacity Utilization 76.6%

ICU Level of Service D

Analysis Period (min) 15
























Splits and Phases: 6: Mooney Blvd & Prosperity Ave



# HCM 7th Signalized Intersection Summary










## 6: Mooney Blvd & Prosperity Ave




PM 2027+Project  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	224	279	326	138	231	48	209	560	45	66	758	238
Future Volume (veh/h)	224	279	326	138	231	48	209	560	45	66	758	238
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	243	303	354	150	251	52	227	609	49	72	824	259
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	285	413	316	262	310	64	271	1306	521	185	1120	452
Arrive On Green	0.17	0.22	0.22	0.16	0.21	0.19	0.17	0.37	0.37	0.11	0.32	0.32
Sat Flow, veh/h	1641	1870	1430	1641	1496	310	1641	3554	1418	1641	3554	1434
Grp Volume(v), veh/h	243	303	354	150	0	303	227	609	49	72	824	259
Grp Sat Flow(s),veh/h/ln	1641	1870	1430	1641	0	1806	1641	1777	1418	1641	1777	1434
Q Serve(g_s), s	16.5	17.3	16.6	9.7	0.0	18.4	15.4	15.1	2.6	4.7	23.8	17.4
Cycle Q Clear(g_c), s	16.5	17.3	16.6	9.7	0.0	18.4	15.4	15.1	2.6	4.7	23.8	17.4
Prop In Lane	1.00		1.00	1.00		0.17	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	285	413	316	262	0	374	271	1306	521	185	1120	452
V/C Ratio(X)	0.85	0.73	1.12	0.57	0.00	0.81	0.84	0.47	0.09	0.39	0.74	0.57
Avail Cap(c_a), veh/h	285	580	443	262	0	450	271	1306	521	185	1120	452
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.1	41.7	19.2	44.7	0.0	43.7	46.6	27.8	23.9	47.4	35.1	32.9
Incr Delay (d2), s/veh	21.3	2.9	79.1	3.0	0.0	9.0	20.2	1.2	0.4	1.3	4.3	5.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.1	7.9	11.9	4.0	0.0	8.7	7.5	6.2	0.9	1.9	10.3	6.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	67.4	44.6	98.3	47.7	0.0	52.7	66.8	29.0	24.2	48.7	39.5	38.1
LnGrp LOS	E	D	F	D		D	E	C	C	D	D	D
Approach Vol, veh/h	900		453				885		1155			
Approach Delay, s/veh	71.9		51.1				38.4		39.7			
Approach LOS	E		D				D		D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	46.3	22.4	29.4	23.0	40.3	24.0	27.8				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	11.0	40.3	11.0	33.7	17.0	34.3	18.0	26.7				
Max Q Clear Time (g_c+I1), s	6.7	17.1	11.7	19.3	17.4	25.8	18.5	20.4				
Green Ext Time (p_c), s	0.1	2.7	0.0	2.3	0.0	3.2	0.0	0.6				
Intersection Summary												
HCM 7th Control Delay, s/veh	49.4											
HCM 7th LOS	D											
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
7: Morrison St & Prosperity Ave

PM 2027+Project  
09/12/2024
















						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	311	90	40	314	58	24
Future Volume (vph)	311	90	40	314	58	24
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.970				0.961	
Flt Protected				0.994	0.966	
Satd. Flow (prot)	1807	0	0	1852	1593	0
Flt Permitted				0.994	0.966	
Satd. Flow (perm)	1807	0	0	1852	1593	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	338	98	43	341	63	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	436	0	0	384	89	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	55.7%			ICU Level of Service B		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	2.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	311	90	40	314	58	24
Future Vol, veh/h	311	90	40	314	58	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	338	98	43	341	63	26
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	436	0	815	387
Stage 1	-	-	-	-	387	-
Stage 2	-	-	-	-	428	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1124	-	347	661
Stage 1	-	-	-	-	686	-
Stage 2	-	-	-	-	657	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1124	-	330	661
Mov Cap-2 Maneuver	-	-	-	-	330	-
Stage 1	-	-	-	-	686	-
Stage 2	-	-	-	-	626	-
Approach	EB	WB		NB		
HCM Control Delay, s/v	0	0.94		17.06		
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	387	-	-	203	-	
HCM Lane V/C Ratio	0.23	-	-	0.039	-	
HCM Control Delay (s/veh)	17.1	-	-	8.3	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	0.9	-	-	0.1	-	



Lanes, Volumes, Timings  
8: Prosperity Ave & Oakmore Rd

PM 2027+Project  
09/12/2024

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	78	227	0	0	175	25	0	0	0	18	0	136	
Future Volume (vph)	78	227	0	0	175	25	0	0	0	18	0	136	
Ideal Flow (vphpl)	1750	1900	1900	1900	1900	1750	1900	1900	1900	1750	1900	1750	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.983					0.865							
Flt Protected	0.987					0.950							
Satd. Flow (prot)	0	1839	0	0	1831	0	0	0	0	1630	0	0	
Flt Permitted	0.987					0.950							
Satd. Flow (perm)	0	1839	0	0	1831	0	0	0	0	1630	0	0	
Link Speed (mph)	55					55							
Link Distance (ft)	2108					329							
Travel Time (s)	26.1					4.1							
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	85	247	0	0	190	27	0	0	0	20	0	148	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	332	0	0	217	0	0	0	0	20	148	0	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No	
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(ft)	0					12							
Link Offset(ft)	0					0							
Crosswalk Width(ft)	16					16							
Two way Left Turn Lane													
Headway Factor	1.11	1.00	1.00	1.00	1.00	1.11	1.00	1.00	1.00	1.11	1.00	1.11	
Turning Speed (mph)	15		9	15		9	15		9	15		9	
Sign Control	Free					Free					Stop		Stop
Intersection Summary													
Area Type:	Other												
Control Type: Unsignalized													
Intersection Capacity Utilization Err%					ICU Level of Service H								
Analysis Period (min) 15													

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			2					2		
Traffic Vol, veh/h	78	227	0	0	175	25	0	0	0	18	0	136
Future Vol, veh/h	78	227	0	0	175	25	0	0	0	18	0	136
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	85	247	0	0	190	27	0	0	0	20	0	148












Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	217	0	-	-	-	0	620	-	204
Stage 1	-	-	-	-	-	-	204	-	-
Stage 2	-	-	-	-	-	-	416	-	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	-	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	-	3.318
Pot Cap-1 Maneuver	1352	-	0	0	-	-	452	0	837
Stage 1	-	-	0	0	-	-	830	0	-
Stage 2	-	-	0	0	-	-	666	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1352	-	-	-	-	-	419	0	837
Mov Cap-2 Maneuver	-	-	-	-	-	-	419	0	-
Stage 1	-	-	-	-	-	-	770	0	-
Stage 2	-	-	-	-	-	-	666	0	-






Approach	EB	WB	SB
HCM Control Delay, s/v	2.01	0	11.18
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	460	-	-	-	749
HCM Lane V/C Ratio	0.063	-	-	-	0.223
HCM Control Delay (s/veh)	7.8	0	-	-	11.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.9

Lanes, Volumes, Timings  
9: Mooney Blvd & Seminole Ave
























PM 2027+Project  
09/12/2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	134	949	57	177	1155
Future Volume (vph)	0	134	949	57	177	1155
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	540	0		0	80	
Storage Lanes	0	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.865		0.850		
Flt Protected					0.950	
Satd. Flow (prot)	0	1484	3539	1458	1630	3539
Flt Permitted					0.950	
Satd. Flow (perm)	0	1484	3539	1458	1630	3539
Link Speed (mph)	55		55			55
Link Distance (ft)	1719		2673			2617
Travel Time (s)	21.3		33.1			32.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	146	1032	62	192	1255
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	146	1032	62	192	1255
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	43.5%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	1.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	134	949	57	177	1155
Future Vol, veh/h	0	134	949	57	177	1155
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	0	80	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	146	1032	62	192	1255
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	516	0	0	1093	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	504	-	-	634	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	504	-	-	634	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s/v15.02			0		1.75	
HCM LOS	C					
Minor Lane/Major Mvmt	NBT		NBRWBLn1		SBL	SBT
Capacity (veh/h)	-		-		504	634
HCM Lane V/C Ratio	-		-		0.289	0.303
HCM Control Delay (s/veh)	-		-		15	13.1
HCM Lane LOS	-		-		C	B
HCM 95th %tile Q(veh)	-		-		1.2	1.3













Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

PM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	787	200	82	592	64	106	272	69	113	372	90
Future Volume (vph)	125	787	200	82	592	64	106	272	69	113	372	90
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		135	110		0	90		90	80		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97		1.00				0.98			0.98
Frt			0.850		0.985				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3474	0	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1408	1630	3474	0	1630	1863	1431	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191		10				191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		841			2671			726			5387	
Travel Time (s)		10.4			33.1			9.0			66.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	136	855	217	89	643	70	115	296	75	123	404	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	136	855	217	89	713	0	115	296	75	123	404	98
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

PM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.9	29.9	10.0	28.4		10.0	39.9	39.9	10.0	44.1	44.1
Total Split (s)	20.0	41.9	41.9	16.0	37.9		18.0	41.1	41.1	21.0	44.1	44.1
Total Split (%)	16.7%	34.9%	34.9%	13.3%	31.6%		15.0%	34.3%	34.3%	17.5%	36.8%	36.8%
Maximum Green (s)	14.0	35.9	35.9	10.0	31.9		12.0	35.1	35.1	15.0	38.1	38.1
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Don't Walk (s)		16.9	16.9		15.4			26.9	26.9		31.1	31.1
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effect Green (s)	14.9	35.0	35.0	11.3	27.9		12.8	28.1	28.1	14.3	29.6	29.6
Actuated g/C Ratio	0.15	0.34	0.34	0.11	0.27		0.13	0.28	0.28	0.14	0.29	0.29
v/c Ratio	0.57	0.70	0.36	0.49	0.74		0.56	0.58	0.14	0.54	0.75	0.18
Control Delay (s/veh)	54.4	35.0	7.9	57.6	39.6		57.3	38.0	0.6	53.4	43.0	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	54.4	35.0	7.9	57.6	39.6		57.3	38.0	0.6	53.4	43.0	0.7
LOS	D	D	A	E	D		E	D	A	D	D	A
Approach Delay (s/veh)		32.3			41.6			36.8			38.4	
Approach LOS		C			D			D			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 101.7

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay (s/veh): 36.6

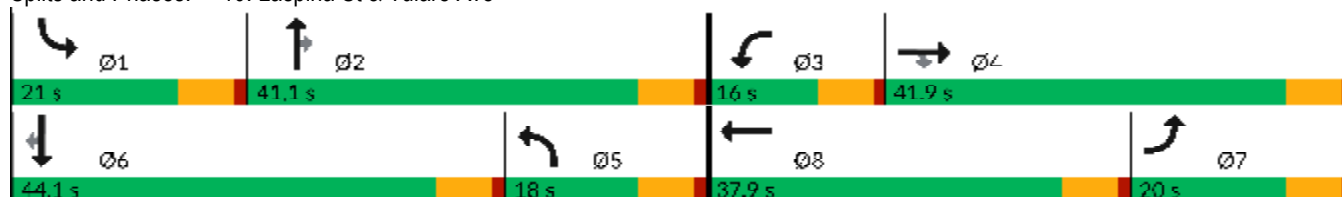
Intersection LOS: D

Intersection Capacity Utilization 67.8%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 10: Laspina St & Tulare Ave


























# HCM 7th Signalized Intersection Summary

## 10: Laspina St & Tulare Ave



























PM 2027+Project

09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	787	200	82	592	64	106	272	69	113	372	90
Future Volume (veh/h)	125	787	200	82	592	64	106	272	69	113	372	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	136	855	217	89	643	70	115	296	75	123	404	98
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	236	1126	449	150	851	92	181	530	406	191	541	414
Arrive On Green	0.14	0.32	0.32	0.09	0.26	0.24	0.11	0.28	0.28	0.12	0.29	0.29
Sat Flow, veh/h	1641	3554	1416	1641	3220	350	1641	1870	1433	1641	1870	1433
Grp Volume(v), veh/h	136	855	217	89	354	359	115	296	75	123	404	98
Grp Sat Flow(s),veh/h/ln	1641	1777	1416	1641	1777	1793	1641	1870	1433	1641	1870	1433
Q Serve(g_s), s	6.4	18.0	6.4	4.3	15.2	15.3	5.6	11.2	3.3	5.9	16.3	4.3
Cycle Q Clear(g_c), s	6.4	18.0	6.4	4.3	15.2	15.3	5.6	11.2	3.3	5.9	16.3	4.3
Prop In Lane	1.00		1.00	1.00		0.20	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	236	1126	449	150	469	474	181	530	406	191	541	414
V/C Ratio(X)	0.58	0.76	0.48	0.60	0.75	0.76	0.64	0.56	0.18	0.65	0.75	0.24
Avail Cap(c_a), veh/h	316	1622	646	237	725	732	277	836	640	336	903	692
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.2	25.5	9.0	36.3	28.1	28.3	35.4	25.4	22.5	35.1	26.8	22.5
Incr Delay (d2), s/veh	2.2	1.3	0.8	3.7	2.5	2.5	3.7	0.9	0.2	3.6	2.1	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	6.8	2.9	1.8	6.1	6.2	2.2	4.5	1.0	2.4	6.7	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	35.4	26.8	9.8	40.0	30.6	30.8	39.1	26.3	22.7	38.7	28.8	22.8
LnGrp LOS	D	C	A	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h	1208			802			486			625		
Approach Delay, s/veh	24.7			31.7			28.8			29.8		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.6	27.5	11.6	30.3	13.1	28.0	16.0	25.9				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	35.1	10.0	35.9	12.0	38.1	14.0	31.9				
Max Q Clear Time (g_c+I1), s	7.9	13.2	6.3	20.0	7.6	18.3	8.4	17.3				
Green Ext Time (p_c), s	0.2	1.3	0.1	4.3	0.1	1.8	0.2	2.3				
Intersection Summary												
HCM 7th Control Delay, s/veh	28.2											
HCM 7th LOS	C											

Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

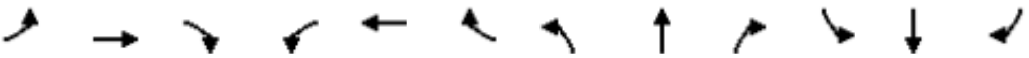
PM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 				
Traffic Volume (vph)	225	549	220	75	413	230	112	552	70	281	573	296
Future Volume (vph)	225	549	220	75	413	230	112	552	70	281	573	296
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	420		185	125		125	80		0	475		475
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98		1.00				0.98
Fr't			0.850			0.850		0.983				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3539	1458	1630	3467	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1412	1630	3539	1430	1630	3467	0	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			239			250			11			322
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2671			2887			1662			2673	
Travel Time (s)		33.1			35.8			20.6			33.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	245	597	239	82	449	250	122	600	76	305	623	322
Shared Lane Traffic (%)												
Lane Group Flow (vph)	245	597	239	82	449	250	122	676	0	305	623	322
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												



Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

PM 2027+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	37.0	37.0	10.0	37.0	37.0	10.0	39.9		10.0	42.7	42.7
Total Split (s)	20.0	40.0	40.0	17.0	37.0	37.0	19.0	32.0		31.0	44.0	44.0
Total Split (%)	16.7%	33.3%	33.3%	14.2%	30.8%	30.8%	15.8%	26.7%		25.8%	36.7%	36.7%
Maximum Green (s)	14.0	34.0	34.0	11.0	31.0	31.0	13.0	26.0		25.0	38.0	38.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Don't Walk (s)		24.0	24.0		24.0	24.0		26.9			29.7	29.7
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effect Green (s)	16.1	30.3	30.3	11.6	22.9	22.9	14.9	30.4		24.9	40.3	40.3
Actuated g/C Ratio	0.15	0.27	0.27	0.10	0.21	0.21	0.13	0.28		0.23	0.36	0.36
v/c Ratio	1.03	0.62	0.43	0.48	0.61	0.51	0.55	0.70		0.83	0.92	0.44
Control Delay (s/veh)	114.8	39.7	6.9	58.7	43.6	8.4	55.7	41.2		61.7	54.8	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	114.8	39.7	6.9	58.7	43.6	8.4	55.7	41.2		61.7	54.8	5.4
LOS	F	D	A	E	D	A	E	D		E	D	A
Approach Delay (s/veh)		49.4			33.9			43.4			43.8	
Approach LOS		D			C			D			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 110.5

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay (s/veh): 43.3

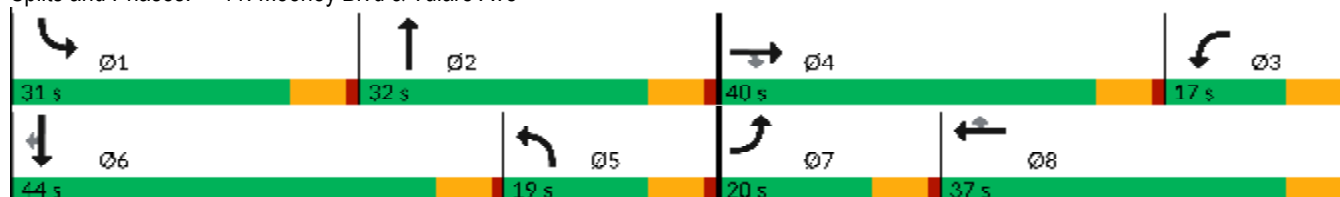
Intersection LOS: D

Intersection Capacity Utilization 77.5%

ICU Level of Service D

Analysis Period (min) 15




























Splits and Phases: 11: Mooney Blvd & Tulare Ave



# HCM 7th Signalized Intersection Summary

















## 11: Mooney Blvd & Tulare Ave

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (veh/h)	225	549	220	75	413	230	112	552	70	281	573	296
Future Volume (veh/h)	225	549	220	75	413	230	112	552	70	281	573	296
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	245	597	239	82	449	250	122	600	76	305	623	322
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	244	834	331	241	829	334	176	793	100	359	678	520
Arrive On Green	0.15	0.23	0.23	0.15	0.23	0.23	0.11	0.25	0.23	0.22	0.36	0.36
Sat Flow, veh/h	1641	3554	1411	1641	3554	1430	1641	3160	399	1641	1870	1435
Grp Volume(v), veh/h	245	597	239	82	449	250	122	337	339	305	623	322
Grp Sat Flow(s),veh/h/ln	1641	1777	1411	1641	1777	1430	1641	1777	1782	1641	1870	1435
Q Serve(g_s), s	16.0	16.7	16.8	4.8	12.0	17.5	7.7	18.9	19.0	19.2	34.3	11.8
Cycle Q Clear(g_c), s	16.0	16.7	16.8	4.8	12.0	17.5	7.7	18.9	19.0	19.2	34.3	11.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.22	1.00		1.00
Lane Grp Cap(c), veh/h	244	834	331	241	829	334	176	446	447	359	678	520
V/C Ratio(X)	1.01	0.72	0.72	0.34	0.54	0.75	0.69	0.76	0.76	0.85	0.92	0.62
Avail Cap(c_a), veh/h	244	1187	471	241	1088	438	228	462	463	411	694	533
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.9	37.9	38.0	41.3	36.3	38.4	46.4	37.3	37.6	40.4	32.8	9.9
Incr Delay (d2), s/veh	59.2	1.2	3.1	0.8	0.6	5.1	6.0	6.8	6.9	13.9	17.1	2.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.1	6.9	5.7	1.9	4.9	6.2	3.3	8.5	8.6	8.6	17.3	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	105.0	39.1	41.1	42.1	36.8	43.5	52.4	44.1	44.5	54.3	50.0	12.0
LnGrp LOS	F	D	D	D	D	D	D	D	D	D	D	B
Approach Vol, veh/h	1081				781				798		1250	
Approach Delay, s/veh	54.5				39.5				45.5		41.2	
Approach LOS	D				D				D		D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	27.6	31.0	19.8	29.3	15.6	43.1	20.0	29.1				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	25.0	26.0	11.0	34.0	13.0	38.0	14.0	31.0				
Max Q Clear Time (g_c+I1), s	21.2	21.0	6.8	18.8	9.7	36.3	18.0	19.5				
Green Ext Time (p_c), s	0.4	1.2	0.1	3.2	0.1	0.8	0.0	2.3				
Intersection Summary												
HCM 7th Control Delay, s/veh	45.4											
HCM 7th LOS	D											
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
12: Morrison St & Tulare Ave

PM 2027+Project  
09/12/2024























												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	596	136	56	526	8	63	24	31	2	25	56
Future Volume (vph)	59	596	136	56	526	8	63	24	31	2	25	56
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.977			0.998			0.964			0.908	
Flt Protected		0.996			0.995			0.974			0.999	
Satd. Flow (prot)	0	1813	0	0	1850	0	0	1749	0	0	1690	0
Flt Permitted		0.996			0.995			0.974			0.999	
Satd. Flow (perm)	0	1813	0	0	1850	0	0	1749	0	0	1690	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	64	648	148	61	572	9	68	26	34	2	27	61
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	860	0	0	642	0	0	128	0	0	90	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	
Intersection Summary												
Area Type:	Other											
Control Type:	Roundabout											
Intersection Capacity Utilization	73.3%						ICU Level of Service D					
Analysis Period (min)	15											

Intersection				
Intersection Delay, s/veh	11.1			
Intersection LOS	B			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	860	642	128	90
Demand Flow Rate, veh/h	877	654	131	92
Vehicles Circulating, veh/h	92	161	728	714
Vehicles Exiting, veh/h	714	698	241	101
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	12.9	9.8	8.0	7.1
Approach LOS	B	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	877	654	131	92
Cap Entry Lane, veh/h	1256	1171	657	666
Entry HV Adj Factor	0.981	0.981	0.981	0.983
Flow Entry, veh/h	860	642	128	90
Cap Entry, veh/h	1232	1149	644	655
V/C Ratio	0.698	0.559	0.199	0.138
Control Delay, s/veh	12.9	9.8	8.0	7.1
LOS	B	A	A	A
95th %tile Queue, veh	6	4	1	0















Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

PM 2029  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	128	136	22	136	5	97	757	22	9	922	176
Future Volume (vph)	167	128	136	22	136	5	97	757	22	9	922	176
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.995			0.996			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1852	0	1630	3522	0	1630	3437	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1852	0	1630	3522	0	1630	3437	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			173		1			3			20	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	182	139	148	24	148	5	105	823	24	10	1002	191
Shared Lane Traffic (%)												
Lane Group Flow (vph)	182	139	148	24	153	0	105	847	0	10	1193	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

PM 2029  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	20.0	48.7	48.7	10.3	39.0		14.0	51.5		9.5	47.0	
Total Split (%)	16.7%	40.6%	40.6%	8.6%	32.5%		11.7%	42.9%		7.9%	39.2%	
Maximum Green (s)	14.5	43.2	43.2	4.8	33.5		8.5	46.0		4.0	41.5	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Don't Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effect Green (s)	15.6	29.3	29.3	9.8	16.9		10.1	52.5		6.4	40.7	
Actuated g/C Ratio	0.16	0.29	0.29	0.10	0.17		0.10	0.53		0.06	0.41	
v/c Ratio	0.72	0.25	0.27	0.15	0.49		0.64	0.46		0.10	0.84	
Control Delay (s/veh)	58.9	31.5	4.5	44.9	42.5		64.4	18.0		49.8	33.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	58.9	31.5	4.5	44.9	42.5		64.4	18.0		49.8	33.6	
LOS	E	C	A	D	D		E	B		D	C	
Approach Delay (s/veh)		33.6			42.8			23.1			33.8	
Approach LOS		C			D			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 99.5

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay (s/veh): 30.7

Intersection LOS: C

Intersection Capacity Utilization 70.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Mooney Blvd & Cartmill Ave

























# HCM 7th Signalized Intersection Summary

PM 2029

## 1: Mooney Blvd & Cartmill Ave

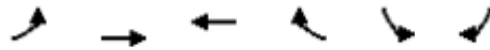
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	167	128	136	22	136	5	97	757	22	9	922	176
Future Volume (veh/h)	167	128	136	22	136	5	97	757	22	9	922	176
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	182	139	148	24	148	5	105	823	24	10	1002	191
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	245	295	225	238	277	9	159	1085	32	318	1200	228
Arrive On Green	0.15	0.16	0.16	0.15	0.15	0.14	0.10	0.31	0.29	0.19	0.41	0.39
Sat Flow, veh/h	1641	1870	1425	1641	1797	61	1641	3522	103	1641	2963	564
Grp Volume(v), veh/h	182	139	148	24	0	153	105	415	432	10	600	593
Grp Sat Flow(s),veh/h/ln	1641	1870	1425	1641	0	1858	1641	1777	1848	1641	1777	1750
Q Serve(g_s), s	8.7	5.5	5.8	1.0	0.0	6.2	5.1	17.3	17.3	0.4	24.9	25.1
Cycle Q Clear(g_c), s	8.7	5.5	5.8	1.0	0.0	6.2	5.1	17.3	17.3	0.4	24.9	25.1
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.06	1.00		0.32
Lane Grp Cap(c), veh/h	245	295	225	238	0	286	159	547	569	318	720	709
V/C Ratio(X)	0.74	0.47	0.66	0.10	0.00	0.53	0.66	0.76	0.76	0.03	0.83	0.84
Avail Cap(c_a), veh/h	320	1019	776	238	0	792	200	1028	1069	318	931	917
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.4	31.4	17.1	30.4	0.0	32.0	35.8	25.6	25.7	26.8	21.9	22.2
Incr Delay (d2), s/veh	6.6	1.2	3.3	0.2	0.0	1.6	5.4	2.2	2.1	0.0	5.2	5.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	2.4	2.6	0.4	0.0	2.7	2.1	6.7	7.0	0.1	9.7	9.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.0	32.6	20.4	30.6	0.0	33.6	41.2	27.8	27.8	26.9	27.1	27.6
LnGrp LOS	D	C	C	C		C	D	C	C	C	C	C
Approach Vol, veh/h	469			177			952			1203		
Approach Delay, s/veh	31.6			33.2			29.3			27.4		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.9	29.3	15.9	17.0	12.0	37.3	16.2	16.6				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	4.0	46.0	4.8	43.2	8.5	41.5	14.5	33.5				
Max Q Clear Time (g_c+I1), s	2.4	19.3	3.0	7.8	7.1	27.1	10.7	8.2				
Green Ext Time (p_c), s	0.0	3.2	0.0	1.1	0.0	4.4	0.2	0.5				
Intersection Summary												
HCM 7th Control Delay, s/veh	29.1											
HCM 7th LOS	C											

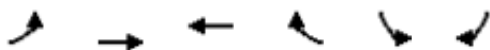


## 2: Prosperity Ave/Blackstone St &amp; SR 99 SB Offramp

09/12/2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (vph)	0	649	646	0	215	87
Future Volume (vph)	0	649	646	0	215	87
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Fr t						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	1630	1458
Flt Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	1630	1458
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						95
Link Speed (mph)		55	55		55	
Link Distance (ft)		349	727		300	
Travel Time (s)		4.3	9.0		3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	705	702	0	234	95
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	705	702	0	234	95
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors		1	1		1	1
Detector Template						
Leading Detector (ft)		50	50		50	50
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		50	50		50	50
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		4.0	4.0		4.0	4.0
Minimum Split (s)		24.0	24.0		24.0	24.0
Total Split (s)		53.0	53.0		47.0	47.0
Total Split (%)		53.0%	53.0%		47.0%	47.0%
Maximum Green (s)		47.0	47.0		41.0	41.0
Yellow Time (s)		5.0	5.0		5.0	5.0



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		None	None		Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effect Green (s)		15.9	15.9		13.5	13.5
Actuated g/C Ratio		0.42	0.42		0.36	0.36
v/c Ratio		0.47	0.47		0.40	0.16
Control Delay (s/veh)		9.4	9.3		12.1	3.6
Queue Delay		0.0	0.0		0.0	0.0
Total Delay (s/veh)		9.4	9.3		12.1	3.6
LOS		A	A		B	A
Approach Delay (s/veh)		9.4	9.3		9.6	
Approach LOS		A	A		A	

## Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 37.6

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.47

Intersection Signal Delay (s/veh): 9.4

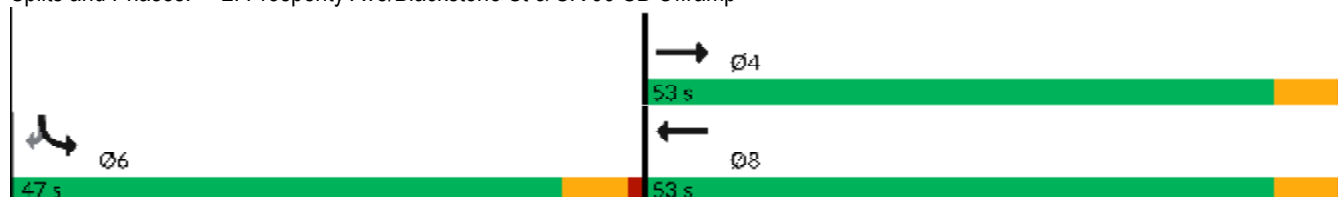
Intersection LOS: A

Intersection Capacity Utilization 37.5%

ICU Level of Service A

Analysis Period (min) 15

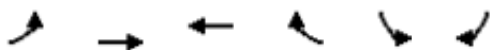
Splits and Phases: 2: Prosperity Ave/Blackstone St &amp; SR 99 SB Offramp



# HCM 7th Signalized Intersection Summary

## 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

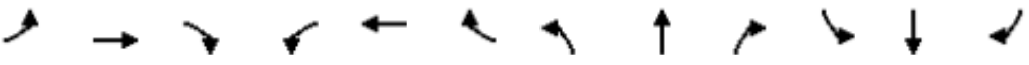











PM 2029  
09/12/2024



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (veh/h)	0	649	646	0	215	87
Future Volume (veh/h)	0	649	646	0	215	87
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1723	1723
Adj Flow Rate, veh/h	0	705	702	0	234	95
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	1444	1444	0	499	444
Arrive On Green	0.00	0.41	0.41	0.00	0.30	0.30
Sat Flow, veh/h	0	3741	3741	0	1641	1460
Grp Volume(v), veh/h	0	705	702	0	234	95
Grp Sat Flow(s), veh/h/ln	0	1777	1777	0	1641	1460
Q Serve(g_s), s	0.0	4.1	4.0	0.0	3.2	1.3
Cycle Q Clear(g_c), s	0.0	4.1	4.0	0.0	3.2	1.3
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1444	1444	0	499	444
V/C Ratio(X)	0.00	0.49	0.49	0.00	0.47	0.21
Avail Cap(c_a), veh/h	0	6300	6300	0	2553	2271
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	6.1	6.1	0.0	7.8	7.2
Incr Delay (d2), s/veh	0.0	0.3	0.3	0.0	0.7	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.3	0.3	0.0	0.5	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	0.0	6.3	6.3	0.0	8.5	7.4
LnGrp LOS		A	A		A	A
Approach Vol, veh/h		705	702		329	
Approach Delay, s/veh		6.3	6.3		8.2	
Approach LOS		A	A		A	
Timer - Assigned Phs				4	6	8
Phs Duration (G+Y+Rc), s				15.2	12.4	15.2
Change Period (Y+Rc), s				6.0	6.0	6.0
Max Green Setting (Gmax), s				47.0	41.0	47.0
Max Q Clear Time (g_c+I1), s				6.1	5.2	6.0
Green Ext Time (p_c), s				3.2	1.2	3.1
Intersection Summary						
HCM 7th Control Delay, s/veh			6.7			
HCM 7th LOS			A			

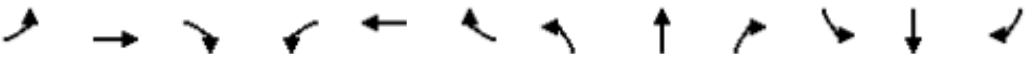
Lanes, Volumes, Timings  
3: Blackstone Ave/Blackstone St & Prosperity Ave

PM 2029  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	18	6	664	24	647	0	47	508	656	145	0
Future Volume (vph)	2	18	6	664	24	647	0	47	508	656	145	0
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	30		0	335		310	55		90	240		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor		0.99				0.98						
Frt		0.961				0.850			0.850			
Flt Protected	0.950			0.950	0.956					0.950		
Satd. Flow (prot)	1630	1780	0	1548	1692	1458	1716	1863	1458	3162	1863	0
Flt Permitted	0.950			0.950						0.950		
Satd. Flow (perm)	1630	1780	0	1548	1770	1427	1716	1863	1458	3162	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				703			552			
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		98			1229			643			727	
Travel Time (s)		1.2			15.2			8.0			9.0	
Confl. Peds. (#/hr)			5			5						
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	20	7	722	26	703	0	51	552	713	158	0
Shared Lane Traffic (%)				48%								
Lane Group Flow (vph)	2	27	0	375	373	703	0	51	552	713	158	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												

Lanes, Volumes, Timings  
3: Blackstone Ave/Blackstone St & Prosperity Ave

PM 2029  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	24.1		10.0	24.1	24.1	10.0	24.0	24.0	10.0	24.0	
Total Split (s)	13.0	27.1		26.9	41.0	41.0	10.0	24.0	24.0	22.0	36.0	
Total Split (%)	13.0%	27.1%		26.9%	41.0%	41.0%	10.0%	24.0%	24.0%	22.0%	36.0%	
Maximum Green (s)	7.0	21.1		20.9	35.0	35.0	4.0	18.0	18.0	16.0	30.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Don't Walk (s)		11.1			11.1	11.1		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		5			5	5		0	0		0	
Act Effect Green (s)	7.7	10.2		32.8	32.8	37.4		11.8	11.8	18.2	34.0	
Actuated g/C Ratio	0.09	0.13		0.40	0.40	0.46		0.14	0.14	0.22	0.42	
v/c Ratio	0.01	0.12		0.60	0.55	0.68		0.19	0.81	1.01	0.20	
Control Delay (s/veh)	38.5	27.3		29.2	27.2	5.6		32.6	13.5	70.8	16.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay (s/veh)	38.5	27.3		29.2	27.2	5.6		32.6	13.5	70.8	16.4	
LOS	D	C		C	C	A		C	B	E	B	
Approach Delay (s/veh)		28.1			17.3			15.2			60.9	
Approach LOS		C			B			B			E	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 81.5

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay (s/veh): 29.8

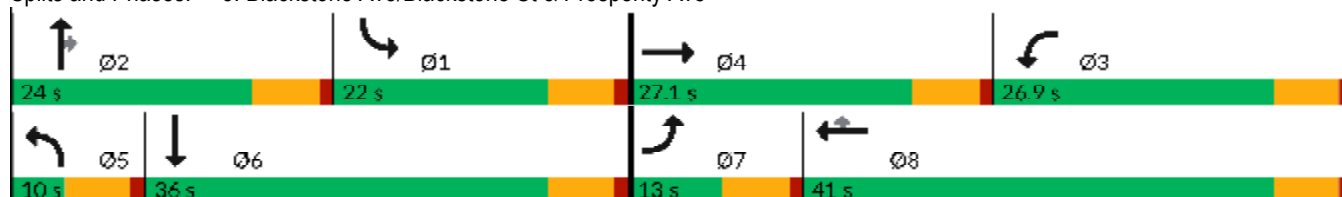
Intersection LOS: C

Intersection Capacity Utilization 69.6%

ICU Level of Service C

Analysis Period (min) 15





















Splits and Phases: 3: Blackstone Ave/Blackstone St & Prosperity Ave



# HCM 7th Signalized Intersection Summary

























## 3: Blackstone Ave/Blackstone St & Prosperity Ave

PM 2029  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	18	6	664	24	647	0	47	508	656	145	0
Future Volume (veh/h)	2	18	6	664	24	647	0	47	508	656	145	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	0
Adj Flow Rate, veh/h	2	20	7	741	0	703	0	51	552	713	158	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	0
Cap, veh/h	43	118	41	873	0	474	2	446	348	683	936	0
Arrive On Green	0.03	0.09	0.07	0.27	0.00	0.33	0.00	0.24	0.24	0.21	0.50	0.00
Sat Flow, veh/h	1641	1308	458	3281	0	1434	1641	1870	1460	3183	1870	0
Grp Volume(v), veh/h	2	0	27	741	0	703	0	51	552	713	158	0
Grp Sat Flow(s),veh/h/ln	1641	0	1765	1641	0	1434	1641	1870	1460	1591	1870	0
Q Serve(g_s), s	0.1	0.0	1.2	18.0	0.0	12.9	0.0	1.8	20.0	18.0	3.9	0.0
Cycle Q Clear(g_c), s	0.1	0.0	1.2	18.0	0.0	12.9	0.0	1.8	20.0	18.0	3.9	0.0
Prop In Lane	1.00		0.26	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	43	0	159	873	0	474	2	446	348	683	936	0
V/C Ratio(X)	0.05	0.00	0.17	0.85	0.00	1.48	0.00	0.11	1.59	1.04	0.17	0.00
Avail Cap(c_a), veh/h	176	0	486	895	0	632	117	446	348	683	936	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	39.9	0.0	35.5	29.2	0.0	6.1	0.0	25.0	32.0	33.0	11.4	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.5	7.6	0.0	228.6	0.0	0.1	277.2	46.6	0.1	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.5	7.2	0.0	36.3	0.0	0.7	33.1	10.6	1.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.3	0.0	36.0	36.8	0.0	234.7	0.0	25.1	309.2	79.5	11.5	0.0
LnGrp LOS	D		D	D		F		C	F	F	B	
Approach Vol, veh/h	29			1444			603			871		
Approach Delay, s/veh	36.3			133.1			285.2			67.2		
Approach LOS	D			F			F			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.0	24.0	26.3	11.6	0.0	46.0	6.2	31.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	16.0	18.0	20.9	21.1	4.0	30.0	7.0	35.0				
Max Q Clear Time (g_c+I1), s	20.0	22.0	20.0	3.2	0.0	5.9	2.1	14.9				
Green Ext Time (p_c), s	0.0	0.0	0.4	0.0	0.0	0.5	0.0	3.4				
Intersection Summary												
HCM 7th Control Delay, s/veh	143.8											
HCM 7th LOS	F											
Notes												
User approved volume balancing among the lanes for turning movement.												













Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

PM 2029  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	488	700	121	74	755	201	168	342	155	268	122	447
Future Volume (vph)	488	700	121	74	755	201	168	342	155	268	122	447
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	270		0	155		85	155		0	200		205
Storage Lanes	2		1	1		1	1		0	2		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	0.88
Ped Bike Factor			0.97			0.98		0.99				0.97
Frt			0.850			0.850		0.953				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	1630	5085	1458	1630	3354	0	3162	1863	2567
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1410	1630	5085	1433	1630	3354	0	3162	1863	2489
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			149			56			486
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1229			2636			362			5336	
Travel Time (s)		15.2			32.7			4.5			66.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	530	761	132	80	821	218	183	372	168	291	133	486
Shared Lane Traffic (%)												
Lane Group Flow (vph)	530	761	132	80	821	218	183	540	0	291	133	486
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

PM 2029  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	32.7	32.7	10.0	45.6	45.6	10.0	47.0		10.0	49.9	49.9
Total Split (s)	31.9	43.1	43.1	35.9	47.1	47.1	11.0	31.0		10.0	30.0	30.0
Total Split (%)	26.6%	35.9%	35.9%	29.9%	39.3%	39.3%	9.2%	25.8%		8.3%	25.0%	25.0%
Maximum Green (s)	25.9	37.1	37.1	29.9	41.1	41.1	5.0	25.0		4.0	24.0	24.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Don't Walk (s)		19.7	19.7		32.6	32.6		34.0			36.9	36.9
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effect Green (s)	22.7	39.2	39.2	12.7	25.8	25.8	7.4	23.8		6.3	22.7	22.7
Actuated g/C Ratio	0.24	0.41	0.41	0.13	0.27	0.27	0.08	0.25		0.07	0.24	0.24
v/c Ratio	0.71	0.52	0.20	0.37	0.60	0.44	1.45	0.62		1.39	0.30	0.51
Control Delay (s/veh)	41.6	25.6	5.0	48.2	33.3	14.2	278.7	31.9		238.6	32.9	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	41.6	25.6	5.0	48.2	33.3	14.2	278.7	31.9		238.6	32.9	4.8
LOS	D	C	A	D	C	B	F	C		F	C	A
Approach Delay (s/veh)		29.6			30.6			94.4			83.7	
Approach LOS		C			C			F			F	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 95.5

Natural Cycle: 140

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.45

Intersection Signal Delay (s/veh): 52.9

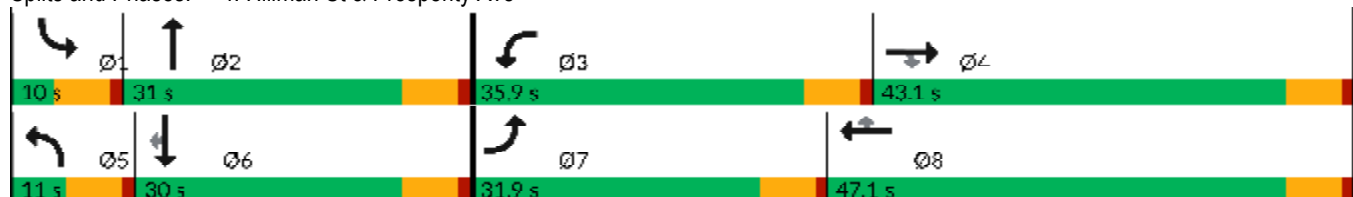
Intersection LOS: D

Intersection Capacity Utilization 71.8%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 4: Hillman St & Prosperity Ave





























# HCM 7th Signalized Intersection Summary





























## 4: Hillman St & Prosperity Ave

PM 2029  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	488	700	121	74	755	201	168	342	155	268	122	447
Future Volume (veh/h)	488	700	121	74	755	201	168	342	155	268	122	447
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	530	761	132	80	821	218	183	372	168	291	133	486
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	701	1434	573	139	1367	383	130	623	277	217	469	623
Arrive On Green	0.22	0.40	0.40	0.08	0.27	0.27	0.08	0.26	0.24	0.07	0.25	0.25
Sat Flow, veh/h	3183	3554	1419	1641	5106	1432	1641	2377	1055	3183	1870	2485
Grp Volume(v), veh/h	530	761	132	80	821	218	183	276	264	291	133	486
Grp Sat Flow(s),veh/h/ln	1591	1777	1419	1641	1702	1432	1641	1777	1655	1591	1870	1243
Q Serve(g_s), s	13.7	14.3	5.4	4.1	12.4	11.6	7.0	12.0	12.4	6.0	5.1	16.0
Cycle Q Clear(g_c), s	13.7	14.3	5.4	4.1	12.4	11.6	7.0	12.0	12.4	6.0	5.1	16.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.64	1.00		1.00
Lane Grp Cap(c), veh/h	701	1434	573	139	1367	383	130	466	434	217	469	623
V/C Ratio(X)	0.76	0.53	0.23	0.58	0.60	0.57	1.40	0.59	0.61	1.34	0.28	0.78
Avail Cap(c_a), veh/h	1008	1578	630	594	2499	701	130	545	507	217	552	734
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.1	19.9	17.3	38.8	28.1	27.9	40.5	28.4	29.1	41.0	26.6	30.7
Incr Delay (d2), s/veh	2.0	0.3	0.2	3.8	0.4	1.3	220.9	1.3	1.6	181.5	0.3	4.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	5.2	1.6	1.7	4.6	3.7	10.6	4.8	4.7	7.6	2.1	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.1	20.2	17.5	42.5	28.6	29.2	261.4	29.7	30.7	222.5	26.9	35.3
LnGrp LOS	C	C	B	D	C	C	F	C	C	F	C	D
Approach Vol, veh/h	1423		1119				723		910			
Approach Delay, s/veh	25.1		29.7				88.7		94.0			
Approach LOS	C		C				F		F			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	27.1	11.4	39.5	11.0	26.1	23.4	27.6				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	4.0	25.0	29.9	37.1	5.0	24.0	25.9	41.1				
Max Q Clear Time (g_c+I1), s	8.0	14.4	6.1	16.3	9.0	18.0	15.7	14.4				
Green Ext Time (p_c), s	0.0	1.5	0.2	3.8	0.0	1.5	1.7	4.8				
Intersection Summary												
HCM 7th Control Delay, s/veh	52.4											
HCM 7th LOS	D											
Notes												
User approved pedestrian interval to be less than phase max green.												













Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

PM 2029  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  						 	
Traffic Volume (vph)	125	701	305	79	612	54	213	160	105	122	214	74
Future Volume (vph)	125	701	305	79	612	54	213	160	105	122	214	74
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	235		115	230		100	100		100	160		100
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96			0.97			0.97			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	5085	1458	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1405	1630	5085	1410	1630	1863	1415	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			195			191			191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2636			2650			5387			713	
Travel Time (s)		32.7			32.9			66.8			8.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	136	762	332	86	665	59	232	174	114	133	233	80
Shared Lane Traffic (%)												
Lane Group Flow (vph)	136	762	332	86	665	59	232	174	114	133	233	80
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

PM 2029  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	27.0	27.0	10.0	34.1	34.1	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (s)	16.0	38.4	38.4	13.0	35.4	35.4	23.0	47.6	47.6	21.0	45.6	45.6
Total Split (%)	13.3%	32.0%	32.0%	10.8%	29.5%	29.5%	19.2%	39.7%	39.7%	17.5%	38.0%	38.0%
Maximum Green (s)	10.0	32.4	32.4	7.0	29.4	29.4	17.0	41.6	41.6	15.0	39.6	39.6
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		14.0	14.0		21.1	21.1		32.6	32.6		32.6	32.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effect Green (s)	12.3	30.6	30.6	9.3	24.2	24.2	18.8	19.2	19.2	21.1	21.5	21.5
Actuated g/C Ratio	0.13	0.33	0.33	0.10	0.26	0.26	0.20	0.21	0.21	0.23	0.23	0.23
v/c Ratio	0.64	0.66	0.56	0.53	0.50	0.12	0.71	0.45	0.26	0.36	0.54	0.17
Control Delay (s/veh)	57.2	32.4	16.5	58.2	31.6	0.5	51.0	36.4	1.4	38.4	36.7	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	57.2	32.4	16.5	58.2	31.6	0.5	51.0	36.4	1.4	38.4	36.7	0.8
LOS	E	C	B	E	C	A	D	D	A	D	D	A
Approach Delay (s/veh)		30.9			32.1			35.2			30.8	
Approach LOS		C			C			D			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 93.2

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay (s/veh): 32.0

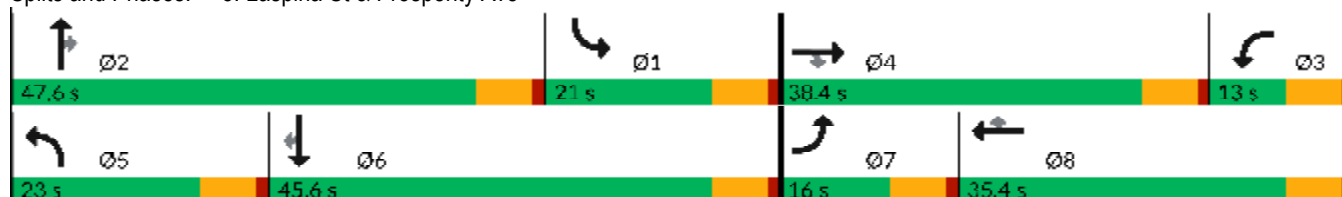
Intersection LOS: C

Intersection Capacity Utilization 64.9%

ICU Level of Service C

Analysis Period (min) 15




























Splits and Phases: 5: Laspina St & Prosperity Ave



# HCM 7th Signalized Intersection Summary
























## 5: Laspina St & Prosperity Ave

PM 2029  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  						 	
Traffic Volume (veh/h)	125	701	305	79	612	54	213	160	105	122	214	74
Future Volume (veh/h)	125	701	305	79	612	54	213	160	105	122	214	74
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.96	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	136	762	332	86	665	59	232	174	114	133	233	80
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	207	1065	424	148	1348	373	309	353	265	352	402	307
Arrive On Green	0.13	0.30	0.30	0.09	0.26	0.26	0.19	0.19	0.19	0.21	0.21	0.21
Sat Flow, veh/h	1641	3554	1415	1641	5106	1413	1641	1870	1406	1641	1870	1429
Grp Volume(v), veh/h	136	762	332	86	665	59	232	174	114	133	233	80
Grp Sat Flow(s),veh/h/ln	1641	1777	1415	1641	1702	1413	1641	1870	1406	1641	1870	1429
Q Serve(g_s), s	6.1	14.8	8.5	3.9	8.5	1.2	10.3	6.4	5.5	5.4	8.6	3.6
Cycle Q Clear(g_c), s	6.1	14.8	8.5	3.9	8.5	1.2	10.3	6.4	5.5	5.4	8.6	3.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	207	1065	424	148	1348	373	309	353	265	352	402	307
V/C Ratio(X)	0.66	0.72	0.78	0.58	0.49	0.16	0.75	0.49	0.43	0.38	0.58	0.26
Avail Cap(c_a), veh/h	254	1580	629	191	2073	574	403	1054	792	361	1006	769
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.2	24.1	6.4	33.8	24.1	5.4	29.7	28.1	27.7	26.0	27.2	25.3
Incr Delay (d2), s/veh	4.4	0.9	3.8	3.6	0.3	0.2	5.6	1.1	1.1	0.7	1.3	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	5.5	4.5	1.6	3.0	0.7	4.1	2.7	1.7	1.9	3.6	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	36.6	25.1	10.2	37.4	24.4	5.6	35.3	29.1	28.8	26.6	28.6	25.7
LnGrp LOS	D	C	B	D	C	A	D	C	C	C	C	C
Approach Vol, veh/h	1230			810			520			446		
Approach Delay, s/veh	22.3			24.4			31.8			27.5		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.6	18.6	11.0	27.2	18.6	20.6	13.7	24.4				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	41.6	7.0	32.4	17.0	39.6	10.0	29.4				
Max Q Clear Time (g_c+I1), s	7.4	8.4	5.9	16.8	12.3	10.6	8.1	10.5				
Green Ext Time (p_c), s	0.2	1.0	0.0	4.4	0.3	1.1	0.1	3.0				
Intersection Summary												
HCM 7th Control Delay, s/veh	25.3											
HCM 7th LOS	C											

Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

PM 2029  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	236	235	344	144	209	46	221	591	45	61	800	251
Future Volume (vph)	236	235	344	144	209	46	221	591	45	61	800	251
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98		1.00				0.97			0.98
Frt			0.850		0.973				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1806	0	1630	3539	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1432	1630	1806	0	1630	3539	1409	1630	3539	1426
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			371		9				191			273
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2617			5285	
Travel Time (s)		32.9			36.1			32.4			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	257	255	374	157	227	50	240	642	49	66	870	273
Shared Lane Traffic (%)												
Lane Group Flow (vph)	257	255	374	157	277	0	240	642	49	66	870	273
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

PM 2029  
09/12/2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	24.0	39.7	39.7	17.0	32.7		23.0	46.3	46.3	17.0	40.3	40.3
Total Split (%)	20.0%	33.1%	33.1%	14.2%	27.3%		19.2%	38.6%	38.6%	14.2%	33.6%	33.6%
Maximum Green (s)	18.0	33.7	33.7	11.0	26.7		17.0	40.3	40.3	11.0	34.3	34.3
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Don't Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effect Green (s)	20.1	24.6	24.6	19.4	24.0		19.0	46.1	46.1	12.0	36.4	36.4
Actuated g/C Ratio	0.17	0.21	0.21	0.17	0.21		0.16	0.40	0.40	0.10	0.32	0.32
v/c Ratio	0.91	0.64	0.63	0.58	0.73		0.90	0.45	0.07	0.39	0.78	0.43
Control Delay (s/veh)	82.9	48.4	8.6	55.5	52.6		82.1	28.9	0.2	56.7	42.5	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	82.9	48.4	8.6	55.5	52.6		82.1	28.9	0.2	56.7	42.5	6.1
LOS	F	D	A	E	D		F	C	A	E	D	A
Approach Delay (s/veh)		41.6			53.6			41.1			35.1	
Approach LOS		D			D			D			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 115.5

Natural Cycle: 105

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay (s/veh): 40.7

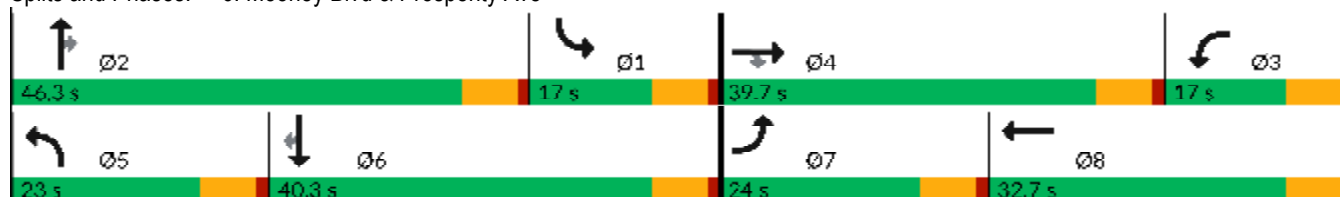
Intersection LOS: D

Intersection Capacity Utilization 78.1%

ICU Level of Service D

Analysis Period (min) 15
























Splits and Phases: 6: Mooney Blvd & Prosperity Ave



# HCM 7th Signalized Intersection Summary










## 6: Mooney Blvd & Prosperity Ave

PM 2029  
09/12/2024




												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	236	235	344	144	209	46	221	591	45	61	800	251
Future Volume (veh/h)	236	235	344	144	209	46	221	591	45	61	800	251
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	257	255	374	157	227	50	240	642	49	66	870	273
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	289	396	302	264	290	64	274	1323	528	188	1136	458
Arrive On Green	0.18	0.21	0.21	0.16	0.20	0.18	0.17	0.37	0.37	0.11	0.32	0.32
Sat Flow, veh/h	1641	1870	1429	1641	1477	325	1641	3554	1418	1641	3554	1434
Grp Volume(v), veh/h	257	255	374	157	0	277	240	642	49	66	870	273
Grp Sat Flow(s),veh/h/ln	1641	1870	1429	1641	0	1803	1641	1777	1418	1641	1777	1434
Q Serve(g_s), s	17.4	14.1	15.7	10.1	0.0	16.6	16.2	15.7	2.6	4.2	25.1	18.2
Cycle Q Clear(g_c), s	17.4	14.1	15.7	10.1	0.0	16.6	16.2	15.7	2.6	4.2	25.1	18.2
Prop In Lane	1.00		1.00	1.00		0.18	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	289	396	302	264	0	354	274	1323	528	188	1136	458
V/C Ratio(X)	0.89	0.64	1.24	0.60	0.00	0.78	0.87	0.49	0.09	0.35	0.77	0.60
Avail Cap(c_a), veh/h	289	588	449	264	0	455	274	1323	528	188	1136	458
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.7	40.9	19.1	44.2	0.0	43.5	46.1	27.3	23.2	46.4	34.8	32.5
Incr Delay (d2), s/veh	27.0	1.8	126.1	3.6	0.0	6.6	25.4	1.3	0.3	1.1	5.0	5.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.9	6.4	15.3	4.2	0.0	7.7	8.2	6.4	0.9	1.7	10.8	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	72.7	42.6	145.2	47.8	0.0	50.1	71.5	28.6	23.5	47.5	39.8	38.1
LnGrp LOS	E	D	F	D		D	E	C	C	D	D	D
Approach Vol, veh/h	886				434				931			
Approach Delay, s/veh	94.6				49.3				39.4			
Approach LOS	F				D				D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	46.3	22.3	28.0	23.0	40.3	24.0	26.3				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	11.0	40.3	11.0	33.7	17.0	34.3	18.0	26.7				
Max Q Clear Time (g_c+I1), s	6.2	17.7	12.1	17.7	18.2	27.1	19.4	18.6				
Green Ext Time (p_c), s	0.0	2.9	0.0	2.3	0.0	3.1	0.0	0.6				
Intersection Summary												
HCM 7th Control Delay, s/veh	54.9											
HCM 7th LOS	D											
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
7: Morrison St & Prosperity Ave

PM 2029  
09/12/2024
















						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	328	23	42	331	19	25
Future Volume (vph)	328	23	42	331	19	25
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.991				0.924	
Flt Protected				0.994	0.979	
Satd. Flow (prot)	1846	0	0	1852	1552	0
Flt Permitted				0.994	0.979	
Satd. Flow (perm)	1846	0	0	1852	1552	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	357	25	46	360	21	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	382	0	0	406	48	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	51.7%			ICU Level of Service A		
Analysis Period (min)	15					



Intersection						
Int Delay, s/veh	1.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	328	23	42	331	19	25
Future Vol, veh/h	328	23	42	331	19	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	357	25	46	360	21	27
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	382	0	820	369
Stage 1	-	-	-	-	369	-
Stage 2	-	-	-	-	451	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1177	-	345	677
Stage 1	-	-	-	-	699	-
Stage 2	-	-	-	-	642	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1177	-	328	677
Mov Cap-2 Maneuver	-	-	-	-	328	-
Stage 1	-	-	-	-	699	-
Stage 2	-	-	-	-	611	-
Approach	EB	WB		NB		
HCM Control Delay, s/v	0	0.92		13.66		
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	464	-	-	203	-	
HCM Lane V/C Ratio	0.103	-	-	0.039	-	
HCM Control Delay (s/veh)	13.7	-	-	8.2	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-	

Lanes, Volumes, Timings  
8: Prosperity Ave & Oakmore Rd

PM 2029  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	240	0	0	185	26	0	0	0	19	0	144
Future Volume (vph)	82	240	0	0	185	26	0	0	0	19	0	144
Ideal Flow (vphpl)	1750	1900	1900	1900	1900	1750	1900	1900	1900	1750	1900	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.983			0.865				
Flt Protected		0.987									0.950	
Satd. Flow (prot)	0	1839	0	0	1831	0	0	0	0	1630	0	0
Flt Permitted		0.987									0.950	
Satd. Flow (perm)	0	1839	0	0	1831	0	0	0	0	1630	0	0
Link Speed (mph)	55				55				55			
Link Distance (ft)	2108				5202				329			
Travel Time (s)	26.1				64.5				4.1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	89	261	0	0	201	28	0	0	0	21	0	157
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	350	0	0	229	0	0	0	0	21	157	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)	0				0				12			
Link Offset(ft)	0				0				0			
Crosswalk Width(ft)	16				16				16			
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.00	1.00	1.00	1.11	1.00	1.00	1.00	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control	Free		Free				Stop				Stop	
Intersection Summary												
Area Type:	Other											
Control Type: Unsignalized												
Intersection Capacity Utilization Err%					ICU Level of Service H							
Analysis Period (min) 15												

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			2					1		
Traffic Vol, veh/h	82	240	0	0	185	26	0	0	0	19	0	144
Future Vol, veh/h	82	240	0	0	185	26	0	0	0	19	0	144
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	89	261	0	0	201	28	0	0	0	21	0	157












Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	229	0	-	-	-	0	654	-	215
Stage 1	-	-	-	-	-	-	215	-	-
Stage 2	-	-	-	-	-	-	439	-	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	-	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	-	3.318
Pot Cap-1 Maneuver	1339	-	0	0	-	-	431	0	825
Stage 1	-	-	0	0	-	-	821	0	-
Stage 2	-	-	0	0	-	-	650	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1339	-	-	-	-	-	398	0	825
Mov Cap-2 Maneuver	-	-	-	-	-	-	398	0	-
Stage 1	-	-	-	-	-	-	757	0	-
Stage 2	-	-	-	-	-	-	650	0	-






Approach	EB	WB	SB
HCM Control Delay, s/v	2.01	0	11.47
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	458	-	-	-	733
HCM Lane V/C Ratio	0.067	-	-	-	0.242
HCM Control Delay (s/veh)	7.9	0	-	-	11.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.9

Lanes, Volumes, Timings  
9: Mooney Blvd & Seminole Ave

PM 2029  
09/12/2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	139	1006	60	185	1223
Future Volume (vph)	0	139	1006	60	185	1223
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	540	0		0	80	
Storage Lanes	0	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.865		0.850		
Flt Protected					0.950	
Satd. Flow (prot)	0	1484	3539	1458	1630	3539
Flt Permitted					0.950	
Satd. Flow (perm)	0	1484	3539	1458	1630	3539
Link Speed (mph)	55		55			55
Link Distance (ft)	1719		2673			2617
Travel Time (s)	21.3		33.1			32.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	151	1093	65	201	1329
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	151	1093	65	201	1329
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	45.6%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	1.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	139	1006	60	185	1223
Future Vol, veh/h	0	139	1006	60	185	1223
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	0	80	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	151	1093	65	201	1329


























Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	547	0 0 1159 0
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	6.94	- - 4.14 -
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	3.32	- - 2.22 -
Pot Cap-1 Maneuver	0	481	- - 599 -
Stage 1	0	-	- - -
Stage 2	0	-	- - -
Platoon blocked, %		-	- -
Mov Cap-1 Maneuver	-	481	- - 599 -
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	WB	NB	SB
HCM Control Delay, s/v15.87		0	1.84
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 481	599	-
HCM Lane V/C Ratio	-	- 0.314	0.336	-
HCM Control Delay (s/veh)	-	- 15.9	14	-
HCM Lane LOS	-	- C	B	-
HCM 95th %tile Q(veh)	-	- 1.3	1.5	-













Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

PM 2029  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 							
Traffic Volume (vph)	131	789	211	87	599	67	106	273	70	113	374	90
Future Volume (vph)	131	789	211	87	599	67	106	273	70	113	374	90
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		135	110		0	90		90	80		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97		1.00				0.98			0.98
Frt			0.850		0.985				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3474	0	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1408	1630	3474	0	1630	1863	1431	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191		10				191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		841			2671			726			5387	
Travel Time (s)		10.4			33.1			9.0			66.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	142	858	229	95	651	73	115	297	76	123	407	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	142	858	229	95	724	0	115	297	76	123	407	98
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

PM 2029  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.9	29.9	10.0	28.4		10.0	39.9	39.9	10.0	44.1	44.1
Total Split (s)	20.0	41.9	41.9	16.0	37.9		18.0	41.1	41.1	21.0	44.1	44.1
Total Split (%)	16.7%	34.9%	34.9%	13.3%	31.6%		15.0%	34.3%	34.3%	17.5%	36.8%	36.8%
Maximum Green (s)	14.0	35.9	35.9	10.0	31.9		12.0	35.1	35.1	15.0	38.1	38.1
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Don't Walk (s)		16.9	16.9		15.4			26.9	26.9		31.1	31.1
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effect Green (s)	15.1	35.5	35.5	11.4	28.2		12.8	28.3	28.3	14.3	29.8	29.8
Actuated g/C Ratio	0.15	0.35	0.35	0.11	0.28		0.13	0.28	0.28	0.14	0.29	0.29
v/c Ratio	0.59	0.70	0.37	0.52	0.75		0.56	0.58	0.14	0.54	0.75	0.18
Control Delay (s/veh)	55.6	35.1	8.8	58.9	39.9		57.7	38.2	0.6	53.8	43.5	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	55.6	35.1	8.8	58.9	39.9		57.7	38.2	0.6	53.8	43.5	0.7
LOS	E	D	A	E	D		E	D	A	D	D	A
Approach Delay (s/veh)		32.5			42.1			36.9			38.8	
Approach LOS		C			D			D			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 102.4

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay (s/veh): 37.0

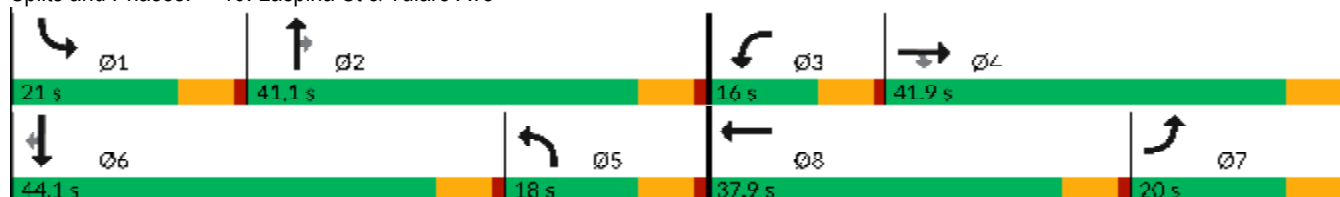
Intersection LOS: D

Intersection Capacity Utilization 68.3%

ICU Level of Service C
























Analysis Period (min) 15

Splits and Phases: 10: Laspina St & Tulare Ave



HCM 7th Signalized Intersection Summary  
10: Laspina St & Tulare Ave




























PM 2029  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	131	789	211	87	599	67	106	273	70	113	374	90
Future Volume (veh/h)	131	789	211	87	599	67	106	273	70	113	374	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	142	858	229	95	651	73	115	297	76	123	407	98
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	240	1125	448	156	852	95	180	530	406	190	541	415
Arrive On Green	0.15	0.32	0.32	0.10	0.27	0.24	0.11	0.28	0.28	0.12	0.29	0.29
Sat Flow, veh/h	1641	3554	1416	1641	3209	359	1641	1870	1433	1641	1870	1433
Grp Volume(v), veh/h	142	858	229	95	360	364	115	297	76	123	407	98
Grp Sat Flow(s),veh/h/ln	1641	1777	1416	1641	1777	1791	1641	1870	1433	1641	1870	1433
Q Serve(g_s), s	6.8	18.4	7.0	4.7	15.8	15.8	5.7	11.4	3.4	6.1	16.7	4.4
Cycle Q Clear(g_c), s	6.8	18.4	7.0	4.7	15.8	15.8	5.7	11.4	3.4	6.1	16.7	4.4
Prop In Lane	1.00		1.00	1.00		0.20	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	240	1125	448	156	472	476	180	530	406	190	541	415
V/C Ratio(X)	0.59	0.76	0.51	0.61	0.76	0.77	0.64	0.56	0.19	0.65	0.75	0.24
Avail Cap(c_a), veh/h	311	1594	635	233	713	719	272	821	629	330	888	680
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.7	26.0	9.4	36.7	28.6	28.8	36.0	25.8	22.9	35.7	27.3	22.9
Incr Delay (d2), s/veh	2.3	1.4	0.9	3.8	2.7	2.7	3.8	0.9	0.2	3.7	2.1	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	7.0	3.1	1.9	6.3	6.4	2.3	4.7	1.0	2.4	6.9	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	36.0	27.4	10.3	40.5	31.2	31.5	39.8	26.7	23.1	39.4	29.4	23.2
LnGrp LOS	D	C	B	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h	1229			819			488			628		
Approach Delay, s/veh	25.2			32.4			29.2			30.4		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.8	27.9	12.0	30.7	13.3	28.4	16.3	26.4				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	35.1	10.0	35.9	12.0	38.1	14.0	31.9				
Max Q Clear Time (g_c+I1), s	8.1	13.4	6.7	20.4	7.7	18.7	8.8	17.8				
Green Ext Time (p_c), s	0.2	1.3	0.1	4.4	0.1	1.8	0.2	2.3				
Intersection Summary												
HCM 7th Control Delay, s/veh	28.7											
HCM 7th LOS	C											















Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

PM 2029  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	238	538	232	77	410	241	118	583	70	288	604	312
Future Volume (vph)	238	538	232	77	410	241	118	583	70	288	604	312
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	420		185	125		125	80		0	475		475
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98		1.00				0.98
Frt			0.850			0.850		0.984				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3539	1458	1630	3471	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1412	1630	3539	1430	1630	3471	0	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			252			262			10			339
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2671			2887			1662			2673	
Travel Time (s)		33.1			35.8			20.6			33.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	259	585	252	84	446	262	128	634	76	313	657	339
Shared Lane Traffic (%)												
Lane Group Flow (vph)	259	585	252	84	446	262	128	710	0	313	657	339
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

PM 2029  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	37.0	37.0	10.0	37.0	37.0	10.0	39.9		10.0	42.7	42.7
Total Split (s)	20.0	40.0	40.0	17.0	37.0	37.0	19.0	32.0		31.0	44.0	44.0
Total Split (%)	16.7%	33.3%	33.3%	14.2%	30.8%	30.8%	15.8%	26.7%		25.8%	36.7%	36.7%
Maximum Green (s)	14.0	34.0	34.0	11.0	31.0	31.0	13.0	26.0		25.0	38.0	38.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Don't Walk (s)		24.0	24.0		24.0	24.0		26.9			29.7	29.7
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effect Green (s)	16.1	30.0	30.0	11.8	22.8	22.8	15.1	30.1		25.3	40.3	40.3
Actuated g/C Ratio	0.15	0.27	0.27	0.11	0.21	0.21	0.14	0.27		0.23	0.36	0.36
v/c Ratio	1.09	0.61	0.45	0.49	0.61	0.52	0.57	0.75		0.84	0.97	0.46
Control Delay (s/veh)	130.3	39.7	6.9	58.8	43.7	8.5	56.4	42.8		62.0	63.6	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	130.3	39.7	6.9	58.8	43.7	8.5	56.4	42.8		62.0	63.6	5.4
LOS	F	D	A	E	D	A	E	D		E	E	A
Approach Delay (s/veh)		53.6			33.6			44.9			48.1	
Approach LOS		D			C			D			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 110.5

Natural Cycle: 130

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.09

Intersection Signal Delay (s/veh): 46.1

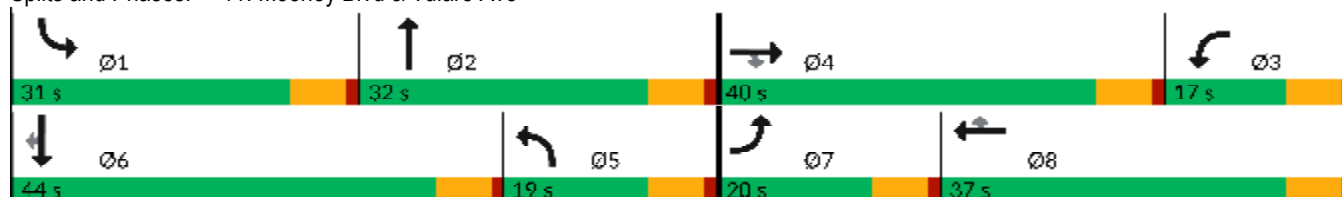
Intersection LOS: D

Intersection Capacity Utilization 80.1%

ICU Level of Service D

Analysis Period (min) 15




























Splits and Phases: 11: Mooney Blvd & Tulare Ave



# HCM 7th Signalized Intersection Summary

















## 11: Mooney Blvd & Tulare Ave

PM 2029  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (veh/h)	238	538	232	77	410	241	118	583	70	288	604	312
Future Volume (veh/h)	238	538	232	77	410	241	118	583	70	288	604	312
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	259	585	252	84	446	262	128	634	76	313	657	339
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	238	851	338	235	844	340	181	796	95	365	677	520
Arrive On Green	0.14	0.24	0.24	0.14	0.24	0.24	0.11	0.25	0.23	0.22	0.36	0.36
Sat Flow, veh/h	1641	3554	1411	1641	3554	1431	1641	3182	381	1641	1870	1435
Grp Volume(v), veh/h	259	585	252	84	446	262	128	353	357	313	657	339
Grp Sat Flow(s),veh/h/ln	1641	1777	1411	1641	1777	1431	1641	1777	1786	1641	1870	1435
Q Serve(g_s), s	16.0	16.5	18.3	5.1	12.1	18.9	8.3	20.6	20.7	20.2	38.1	13.1
Cycle Q Clear(g_c), s	16.0	16.5	18.3	5.1	12.1	18.9	8.3	20.6	20.7	20.2	38.1	13.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	238	851	338	235	844	340	181	445	447	365	677	520
V/C Ratio(X)	1.09	0.69	0.75	0.36	0.53	0.77	0.71	0.80	0.80	0.86	0.97	0.65
Avail Cap(c_a), veh/h	238	1158	460	235	1062	428	223	451	453	401	677	520
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.2	38.2	38.9	42.7	36.7	39.3	47.4	38.7	39.0	41.3	34.6	10.7
Incr Delay (d2), s/veh	84.3	1.0	4.4	0.9	0.5	6.6	7.5	9.4	9.6	15.7	27.1	2.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.7	6.9	6.3	2.0	5.0	6.8	3.6	9.5	9.7	9.3	20.9	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	131.5	39.3	43.3	43.7	37.2	45.9	54.9	48.2	48.6	56.9	61.7	13.6
LnGrp LOS	F	D	D	D	D	D	D	D	D	E	E	B
Approach Vol, veh/h	1096			792			838			1309		
Approach Delay, s/veh	62.0			40.8			49.4			48.1		
Approach LOS	E			D			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	28.6	31.6	19.8	30.4	16.2	44.0	20.0	30.2				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	25.0	26.0	11.0	34.0	13.0	38.0	14.0	31.0				
Max Q Clear Time (g_c+I1), s	22.2	22.7	7.1	20.3	10.3	40.1	18.0	20.9				
Green Ext Time (p_c), s	0.3	1.0	0.1	3.1	0.1	0.0	0.0	2.2				
Intersection Summary												
HCM 7th Control Delay, s/veh	50.7											
HCM 7th LOS	D											
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
12: Morrison St & Tulare Ave

PM 2029  
09/12/2024























												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	620	139	59	555	5	66	25	33	0	26	31
Future Volume (vph)	15	620	139	59	555	5	66	25	33	0	26	31
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.976			0.999			0.964			0.926	
Flt Protected		0.999			0.995			0.974				
Satd. Flow (prot)	0	1816	0	0	1852	0	0	1749	0	0	1725	0
Flt Permitted		0.999			0.995			0.974				
Satd. Flow (perm)	0	1816	0	0	1852	0	0	1749	0	0	1725	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	674	151	64	603	5	72	27	36	0	28	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	841	0	0	672	0	0	135	0	0	62	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	
Intersection Summary												
Area Type:	Other											
Control Type:	Roundabout											
Intersection Capacity Utilization	82.0%						ICU Level of Service E					
Analysis Period (min)	15											

Intersection				
Intersection Delay, s/veh	10.7			
Intersection LOS	B			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	841	672	135	62
Demand Flow Rate, veh/h	857	685	138	64
Vehicles Circulating, veh/h	94	117	703	753
Vehicles Exiting, veh/h	723	724	248	49
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	12.4	9.5	7.9	6.9
Approach LOS	B	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	857	685	138	64
Cap Entry Lane, veh/h	1254	1225	674	640
Entry HV Adj Factor	0.981	0.981	0.982	0.975
Flow Entry, veh/h	841	672	135	62
Cap Entry, veh/h	1230	1201	661	625
V/C Ratio	0.684	0.559	0.205	0.100
Control Delay, s/veh	12.4	9.5	7.9	6.9
LOS	B	A	A	A
95th %tile Queue, veh	6	4	1	0















Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

PM 2029+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	128	140	22	136	5	100	764	22	9	935	176
Future Volume (vph)	167	128	140	22	136	5	100	764	22	9	935	176
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.995			0.996			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1852	0	1630	3522	0	1630	3437	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1852	0	1630	3522	0	1630	3437	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			173		1			3			20	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	182	139	152	24	148	5	109	830	24	10	1016	191
Shared Lane Traffic (%)												
Lane Group Flow (vph)	182	139	152	24	153	0	109	854	0	10	1207	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

PM 2029+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	20.0	48.7	48.7	10.3	39.0		14.0	51.5		9.5	47.0	
Total Split (%)	16.7%	40.6%	40.6%	8.6%	32.5%		11.7%	42.9%		7.9%	39.2%	
Maximum Green (s)	14.5	43.2	43.2	4.8	33.5		8.5	46.0		4.0	41.5	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Don't Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effect Green (s)	15.5	29.3	29.3	9.8	16.9		10.1	53.4		6.3	41.6	
Actuated g/C Ratio	0.15	0.29	0.29	0.10	0.17		0.10	0.53		0.06	0.41	
v/c Ratio	0.72	0.26	0.28	0.15	0.49		0.66	0.46		0.10	0.84	
Control Delay (s/veh)	59.7	31.7	4.9	45.0	42.8		66.7	17.9		50.0	33.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	59.7	31.7	4.9	45.0	42.8		66.7	17.9		50.0	33.5	
LOS	E	C	A	D	D		E	B		D	C	
Approach Delay (s/veh)		33.9			43.1			23.4			33.7	
Approach LOS		C			D			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 100.3

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay (s/veh): 30.8

Intersection LOS: C

Intersection Capacity Utilization 71.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Mooney Blvd & Cartmill Ave



























# HCM 7th Signalized Intersection Summary

## 1: Mooney Blvd & Cartmill Ave

PM 2029+Project

09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	167	128	140	22	136	5	100	764	22	9	935	176
Future Volume (veh/h)	167	128	140	22	136	5	100	764	22	9	935	176
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	182	139	152	24	148	5	109	830	24	10	1016	191
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	244	297	226	234	275	9	163	1087	31	324	1209	227
Arrive On Green	0.15	0.16	0.16	0.14	0.15	0.14	0.10	0.31	0.29	0.20	0.41	0.39
Sat Flow, veh/h	1641	1870	1425	1641	1797	61	1641	3523	102	1641	2971	557
Grp Volume(v), veh/h	182	139	152	24	0	153	109	419	435	10	607	600
Grp Sat Flow(s),veh/h/ln	1641	1870	1425	1641	0	1858	1641	1777	1848	1641	1777	1751
Q Serve(g_s), s	8.8	5.6	6.1	1.1	0.0	6.3	5.3	17.7	17.8	0.4	25.6	25.8
Cycle Q Clear(g_c), s	8.8	5.6	6.1	1.1	0.0	6.3	5.3	17.7	17.8	0.4	25.6	25.8
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.06	1.00		0.32
Lane Grp Cap(c), veh/h	244	297	226	234	0	285	163	548	570	324	723	712
V/C Ratio(X)	0.75	0.47	0.67	0.10	0.00	0.54	0.67	0.76	0.76	0.03	0.84	0.84
Avail Cap(c_a), veh/h	315	1004	765	234	0	781	197	1013	1054	324	917	904
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.0	31.8	17.3	31.1	0.0	32.6	36.2	26.0	26.1	27.0	22.3	22.5
Incr Delay (d2), s/veh	6.9	1.1	3.4	0.2	0.0	1.6	6.4	2.2	2.2	0.0	5.7	5.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	2.4	2.7	0.4	0.0	2.7	2.3	6.9	7.2	0.2	10.1	10.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.9	33.0	20.8	31.2	0.0	34.1	42.6	28.3	28.2	27.0	27.9	28.4
LnGrp LOS	D	C	C	C		C	D	C	C	C	C	C
Approach Vol, veh/h	473			177			963			1217		
Approach Delay, s/veh	32.1			33.8			29.9			28.2		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.5	29.7	15.9	17.2	12.3	37.9	16.4	16.8				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	4.0	46.0	4.8	43.2	8.5	41.5	14.5	33.5				
Max Q Clear Time (g_c+I1), s	2.4	19.8	3.1	8.1	7.3	27.8	10.8	8.3				
Green Ext Time (p_c), s	0.0	3.2	0.0	1.1	0.0	4.4	0.2	0.5				
Intersection Summary												
HCM 7th Control Delay, s/veh	29.8											
HCM 7th LOS	C											

Lanes, Volumes, Timings  
2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

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Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (vph)	0	663	661	0	226	87
Future Volume (vph)	0	663	661	0	226	87
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Fr <sub>t</sub>						0.850
Fl <sub>t</sub> Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	1630	1458
Fl <sub>t</sub> Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	1630	1458
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						95
Link Speed (mph)		55	55		55	
Link Distance (ft)		349	727		300	
Travel Time (s)		4.3	9.0		3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	721	718	0	246	95
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	721	718	0	246	95
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors		1	1		1	1
Detector Template						
Leading Detector (ft)		50	50		50	50
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		50	50		50	50
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		4.0	4.0		4.0	4.0
Minimum Split (s)		24.0	24.0		24.0	24.0
Total Split (s)		53.0	53.0		47.0	47.0
Total Split (%)		53.0%	53.0%		47.0%	47.0%
Maximum Green (s)		47.0	47.0		41.0	41.0
Yellow Time (s)		5.0	5.0		5.0	5.0

Lanes, Volumes, Timings  
2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

PM 2029+Project  
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Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		None	None		Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effect Green (s)		16.3	16.3		14.0	14.0
Actuated g/C Ratio		0.42	0.42		0.36	0.36
v/c Ratio		0.48	0.48		0.42	0.16
Control Delay (s/veh)		9.6	9.6		12.4	3.6
Queue Delay		0.0	0.0		0.0	0.0
Total Delay (s/veh)		9.6	9.6		12.4	3.6
LOS		A	A		B	A
Approach Delay (s/veh)		9.6	9.6		9.9	
Approach LOS		A	A		A	

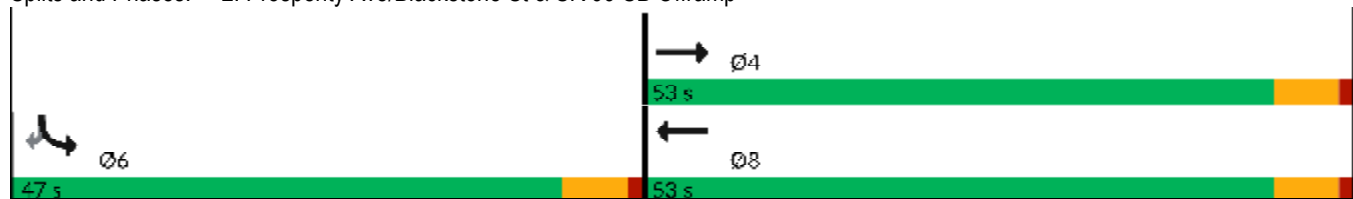
Intersection Summary

Area Type: Other  
Cycle Length: 100  
Actuated Cycle Length: 38.5  
Natural Cycle: 50  
Control Type: Actuated-Uncoordinated  
Maximum v/c Ratio: 0.48  
Intersection Signal Delay (s/veh): 9.7  
Intersection Capacity Utilization 38.6%  
Analysis Period (min) 15

Intersection LOS: A

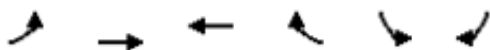
ICU Level of Service A

Splits and Phases: 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp



# HCM 7th Signalized Intersection Summary 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

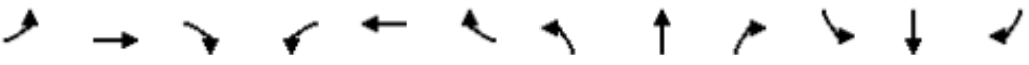
PM 2029+Project  
09/12/2024



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (veh/h)	0	663	661	0	226	87
Future Volume (veh/h)	0	663	661	0	226	87
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1723	1723
Adj Flow Rate, veh/h	0	721	718	0	246	95
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	1449	1449	0	506	450
Arrive On Green	0.00	0.41	0.41	0.00	0.31	0.31
Sat Flow, veh/h	0	3741	3741	0	1641	1460
Grp Volume(v), veh/h	0	721	718	0	246	95
Grp Sat Flow(s),veh/h/ln	0	1777	1777	0	1641	1460
Q Serve(g_s), s	0.0	4.3	4.2	0.0	3.4	1.4
Cycle Q Clear(g_c), s	0.0	4.3	4.2	0.0	3.4	1.4
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1449	1449	0	506	450
V/C Ratio(X)	0.00	0.50	0.50	0.00	0.49	0.21
Avail Cap(c_a), veh/h	0	6174	6174	0	2501	2226
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	6.2	6.2	0.0	7.9	7.2
Incr Delay (d2), s/veh	0.0	0.3	0.3	0.0	0.7	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.3	0.3	0.0	0.5	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	0.0	6.5	6.5	0.0	8.7	7.4
LnGrp LOS		A	A		A	A
Approach Vol, veh/h		721	718		341	
Approach Delay, s/veh		6.5	6.5		8.3	
Approach LOS		A	A		A	
Timer - Assigned Phs				4	6	8
Phs Duration (G+Y+Rc), s				15.5	12.7	15.5
Change Period (Y+Rc), s				6.0	6.0	6.0
Max Green Setting (Gmax), s				47.0	41.0	47.0
Max Q Clear Time (g_c+I1), s				6.3	5.4	6.2
Green Ext Time (p_c), s				3.3	1.3	3.2
<b>Intersection Summary</b>						
HCM 7th Control Delay, s/veh			6.8			
HCM 7th LOS			A			

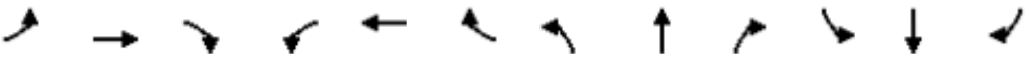
Lanes, Volumes, Timings  
3: Blackstone Ave/Blackstone St & Prosperity Ave

PM 2029+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	18	6	678	24	662	0	47	532	681	145	0
Future Volume (vph)	2	18	6	678	24	662	0	47	532	681	145	0
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	30		0	335		310	55		90	240		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor		0.99				0.98						
Frt		0.961				0.850			0.850			
Flt Protected	0.950			0.950	0.955					0.950		
Satd. Flow (prot)	1630	1780	0	1548	1690	1458	1716	1863	1458	3162	1863	0
Flt Permitted	0.950			0.950						0.950		
Satd. Flow (perm)	1630	1780	0	1548	1770	1427	1716	1863	1458	3162	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				720			578			
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		98			1229			643			727	
Travel Time (s)		1.2			15.2			8.0			9.0	
Confl. Peds. (#/hr)			5			5						
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	20	7	737	26	720	0	51	578	740	158	0
Shared Lane Traffic (%)				48%								
Lane Group Flow (vph)	2	27	0	383	380	720	0	51	578	740	158	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												

Lanes, Volumes, Timings  
3: Blackstone Ave/Blackstone St & Prosperity Ave

PM 2029+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	24.1		10.0	24.1	24.1	10.0	24.0	24.0	10.0	24.0	
Total Split (s)	13.0	27.1		26.9	41.0	41.0	10.0	24.0	24.0	22.0	36.0	
Total Split (%)	13.0%	27.1%		26.9%	41.0%	41.0%	10.0%	24.0%	24.0%	22.0%	36.0%	
Maximum Green (s)	7.0	21.1		20.9	35.0	35.0	4.0	18.0	18.0	16.0	30.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Don't Walk (s)		11.1			11.1	11.1		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		5			5	5		0	0		0	
Act Effect Green (s)	7.7	10.2		32.9	32.9	37.4		11.9	11.9	18.2	34.2	
Actuated g/C Ratio	0.09	0.12		0.40	0.40	0.46		0.15	0.15	0.22	0.42	
v/c Ratio	0.01	0.12		0.62	0.56	0.69		0.19	0.82	1.05	0.20	
Control Delay (s/veh)	38.5	27.4		29.8	27.7	5.7		32.5	13.7	81.6	16.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay (s/veh)	38.5	27.4		29.8	27.7	5.7		32.5	13.7	81.6	16.3	
LOS	D	C		C	C	A		C	B	F	B	
Approach Delay (s/veh)		28.2			17.6			15.2			70.1	
Approach LOS		C			B			B			E	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 81.7

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay (s/veh): 32.7

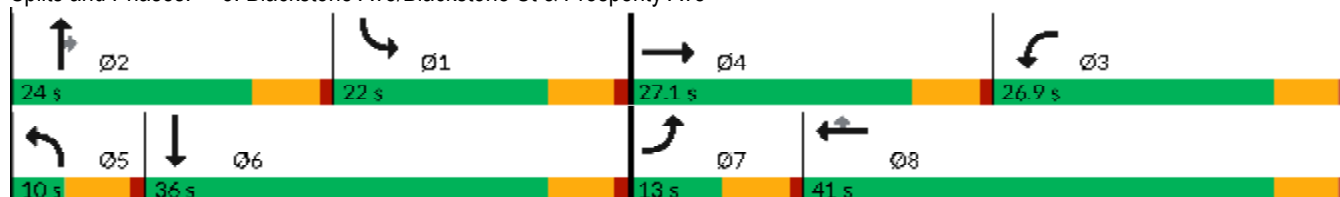
Intersection LOS: C

Intersection Capacity Utilization 72.0%

ICU Level of Service C

Analysis Period (min) 15
























Splits and Phases: 3: Blackstone Ave/Blackstone St & Prosperity Ave



# HCM 7th Signalized Intersection Summary

























## 3: Blackstone Ave/Blackstone St & Prosperity Ave

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	18	6	678	24	662	0	47	532	681	145	0
Future Volume (veh/h)	2	18	6	678	24	662	0	47	532	681	145	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	0
Adj Flow Rate, veh/h	2	20	7	756	0	720	0	51	578	740	158	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	0
Cap, veh/h	43	118	41	882	0	477	2	444	347	680	933	0
Arrive On Green	0.03	0.09	0.07	0.27	0.00	0.33	0.00	0.24	0.24	0.21	0.50	0.00
Sat Flow, veh/h	1641	1308	458	3281	0	1434	1641	1870	1460	3183	1870	0
Grp Volume(v), veh/h	2	0	27	756	0	720	0	51	578	740	158	0
Grp Sat Flow(s),veh/h/ln	1641	0	1765	1641	0	1434	1641	1870	1460	1591	1870	0
Q Serve(g_s), s	0.1	0.0	1.2	18.4	0.0	13.1	0.0	1.8	20.0	18.0	3.9	0.0
Cycle Q Clear(g_c), s	0.1	0.0	1.2	18.4	0.0	13.1	0.0	1.8	20.0	18.0	3.9	0.0
Prop In Lane	1.00		0.26	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	43	0	159	882	0	477	2	444	347	680	933	0
V/C Ratio(X)	0.05	0.00	0.17	0.86	0.00	1.51	0.00	0.11	1.67	1.09	0.17	0.00
Avail Cap(c_a), veh/h	175	0	484	892	0	630	117	444	347	680	933	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	40.0	0.0	35.6	29.3	0.0	6.1	0.0	25.2	32.1	33.1	11.6	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.5	8.3	0.0	239.5	0.0	0.1	312.7	60.8	0.1	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.5	7.4	0.0	38.0	0.0	0.7	36.4	12.0	1.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.5	0.0	36.1	37.5	0.0	245.6	0.0	25.3	344.8	93.9	11.6	0.0
LnGrp LOS	D		D	D		F		C	F	F	B	
Approach Vol, veh/h	29			1476			629			898		
Approach Delay, s/veh	36.4			139.0			318.9			79.4		
Approach LOS	D			F			F			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.0	24.0	26.6	11.6	0.0	46.0	6.2	32.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	16.0	18.0	20.9	21.1	4.0	30.0	7.0	35.0				
Max Q Clear Time (g_c+I1), s	20.0	22.0	20.4	3.2	0.0	5.9	2.1	15.1				
Green Ext Time (p_c), s	0.0	0.0	0.2	0.0	0.0	0.5	0.0	3.5				
Intersection Summary												
HCM 7th Control Delay, s/veh	157.7											
HCM 7th LOS	F											
Notes												
User approved volume balancing among the lanes for turning movement.												

Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave













PM 2029+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	488	749	121	102	784	207	168	342	204	279	122	447
Future Volume (vph)	488	749	121	102	784	207	168	342	204	279	122	447
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	270		0	155		85	155		0	200		205
Storage Lanes	2		1	1		1	1		0	2		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	0.88
Ped Bike Factor			0.97			0.98		0.99				0.97
Fr't			0.850			0.850		0.944				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	1630	5085	1458	1630	3318	0	3162	1863	2567
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1410	1630	5085	1433	1630	3318	0	3162	1863	2489
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			149			94			486
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1229			2636			362			5336	
Travel Time (s)		15.2			32.7			4.5			66.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	530	814	132	111	852	225	183	372	222	303	133	486
Shared Lane Traffic (%)												
Lane Group Flow (vph)	530	814	132	111	852	225	183	594	0	303	133	486
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												



Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

PM 2029+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	32.7	32.7	10.0	45.6	45.6	10.0	47.0		10.0	49.9	49.9
Total Split (s)	31.9	43.1	43.1	35.9	47.1	47.1	11.0	31.0		10.0	30.0	30.0
Total Split (%)	26.6%	35.9%	35.9%	29.9%	39.3%	39.3%	9.2%	25.8%		8.3%	25.0%	25.0%
Maximum Green (s)	25.9	37.1	37.1	29.9	41.1	41.1	5.0	25.0		4.0	24.0	24.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Don't Walk (s)		19.7	19.7		32.6	32.6		34.0			36.9	36.9
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effect Green (s)	22.9	35.0	35.0	14.7	26.7	26.7	7.4	24.6		6.3	23.6	23.6
Actuated g/C Ratio	0.24	0.36	0.36	0.15	0.27	0.27	0.08	0.25		0.06	0.24	0.24
v/c Ratio	0.71	0.64	0.22	0.45	0.61	0.45	1.49	0.65		1.48	0.30	0.50
Control Delay (s/veh)	42.6	30.3	5.6	48.1	33.9	14.9	292.8	31.2		274.8	33.1	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	42.6	30.3	5.6	48.1	33.9	14.9	292.8	31.2		274.8	33.1	4.8
LOS	D	C	A	D	C	B	F	C		F	C	A
Approach Delay (s/veh)		32.5			31.6			92.8			97.6	
Approach LOS		C			C			F			F	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 97.4

Natural Cycle: 140

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.49

Intersection Signal Delay (s/veh): 56.8

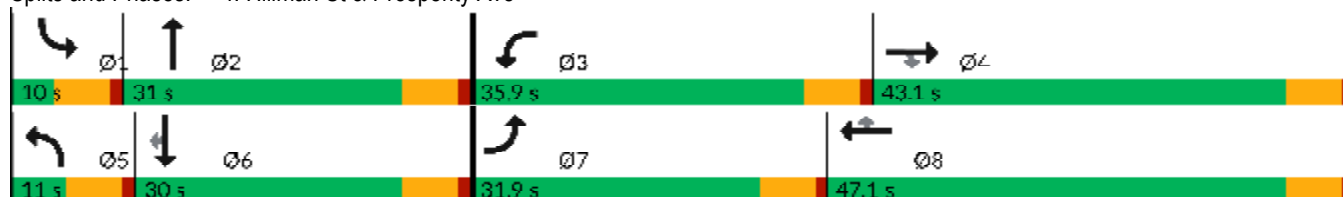
Intersection LOS: E

Intersection Capacity Utilization 73.9%

ICU Level of Service D

Analysis Period (min) 15

























Splits and Phases: 4: Hillman St & Prosperity Ave



# HCM 7th Signalized Intersection Summary




























## 4: Hillman St & Prosperity Ave

PM 2029+Project  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	488	749	121	102	784	207	168	342	204	279	122	447
Future Volume (veh/h)	488	749	121	102	784	207	168	342	204	279	122	447
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	530	814	132	111	852	225	183	372	222	303	133	486
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	699	1369	546	176	1393	391	129	558	327	214	467	620
Arrive On Green	0.22	0.39	0.39	0.11	0.27	0.27	0.08	0.26	0.24	0.07	0.25	0.25
Sat Flow, veh/h	3183	3554	1419	1641	5106	1432	1641	2138	1254	3183	1870	2485
Grp Volume(v), veh/h	530	814	132	111	852	225	183	308	286	303	133	486
Grp Sat Flow(s),veh/h/ln	1591	1777	1419	1641	1702	1432	1641	1777	1614	1591	1870	1243
Q Serve(g_s), s	13.9	16.3	5.6	5.8	13.0	12.1	7.0	13.8	14.3	6.0	5.1	16.3
Cycle Q Clear(g_c), s	13.9	16.3	5.6	5.8	13.0	12.1	7.0	13.8	14.3	6.0	5.1	16.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.78	1.00		1.00
Lane Grp Cap(c), veh/h	699	1369	546	176	1393	391	129	463	421	214	467	620
V/C Ratio(X)	0.76	0.59	0.24	0.63	0.61	0.58	1.42	0.66	0.68	1.41	0.28	0.78
Avail Cap(c_a), veh/h	996	1559	622	587	2468	692	129	538	489	214	545	725
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.6	21.9	18.6	38.1	28.3	28.0	41.1	29.5	30.3	41.6	27.0	31.2
Incr Delay (d2), s/veh	2.1	0.5	0.2	3.7	0.4	1.3	228.4	2.5	3.1	211.8	0.3	4.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	6.0	1.7	2.3	4.8	3.9	10.8	5.7	5.5	8.5	2.1	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.7	22.3	18.8	41.8	28.7	29.3	269.5	32.0	33.4	253.4	27.4	36.0
LnGrp LOS	C	C	B	D	C	C	F	C	C	F	C	D
Approach Vol, veh/h	1476				1188				777		922	
Approach Delay, s/veh	26.5				30.1				88.4		106.2	
Approach LOS	C				C				F		F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	27.3	13.6	38.3	11.0	26.3	23.6	28.3				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	4.0	25.0	29.9	37.1	5.0	24.0	25.9	41.1				
Max Q Clear Time (g_c+I1), s	8.0	16.3	7.8	18.3	9.0	18.3	15.9	15.0				
Green Ext Time (p_c), s	0.0	1.6	0.3	4.0	0.0	1.5	1.7	5.0				
Intersection Summary												
HCM 7th Control Delay, s/veh	55.3											
HCM 7th LOS	E											
Notes												
User approved pedestrian interval to be less than phase max green.												













Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

PM 2029+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  							
Traffic Volume (vph)	125	810	305	79	675	54	213	160	105	122	214	74
Future Volume (vph)	125	810	305	79	675	54	213	160	105	122	214	74
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	235		115	230		100	100		100	160		100
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96			0.97			0.97			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	5085	1458	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1405	1630	5085	1410	1630	1863	1415	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			191			191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2636			2650			5387			713	
Travel Time (s)		32.7			32.9			66.8			8.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	136	880	332	86	734	59	232	174	114	133	233	80
Shared Lane Traffic (%)												
Lane Group Flow (vph)	136	880	332	86	734	59	232	174	114	133	233	80
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

PM 2029+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	27.0	27.0	10.0	34.1	34.1	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (s)	16.0	38.4	38.4	13.0	35.4	35.4	23.0	47.6	47.6	21.0	45.6	45.6
Total Split (%)	13.3%	32.0%	32.0%	10.8%	29.5%	29.5%	19.2%	39.7%	39.7%	17.5%	38.0%	38.0%
Maximum Green (s)	10.0	32.4	32.4	7.0	29.4	29.4	17.0	41.6	41.6	15.0	39.6	39.6
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		14.0	14.0		21.1	21.1		32.6	32.6		32.6	32.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effect Green (s)	12.2	31.2	31.2	9.2	28.2	28.2	18.7	19.4	19.4	21.0	21.7	21.7
Actuated g/C Ratio	0.13	0.32	0.32	0.09	0.29	0.29	0.19	0.20	0.20	0.22	0.22	0.22
v/c Ratio	0.67	0.77	0.57	0.56	0.50	0.11	0.74	0.47	0.26	0.38	0.56	0.17
Control Delay (s/veh)	60.9	36.5	16.8	61.2	31.0	0.4	54.9	38.2	1.5	40.0	38.8	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	60.9	36.5	16.8	61.2	31.0	0.4	54.9	38.2	1.5	40.0	38.8	0.8
LOS	E	D	B	E	C	A	D	D	A	D	D	A
Approach Delay (s/veh)		34.1			31.9			37.6			32.3	
Approach LOS		C			C			D			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 97.1

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay (s/veh): 33.8

Intersection LOS: C

Intersection Capacity Utilization 67.9%

ICU Level of Service C

Analysis Period (min) 15

























Splits and Phases: 5: Laspina St & Prosperity Ave



# HCM 7th Signalized Intersection Summary
























## 5: Laspina St & Prosperity Ave

PM 2029+Project  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	810	305	79	675	54	213	160	105	122	214	74
Future Volume (veh/h)	125	810	305	79	675	54	213	160	105	122	214	74
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.96	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	136	880	332	86	734	59	232	174	114	133	233	80
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	203	1150	458	145	1474	408	303	344	259	346	393	300
Arrive On Green	0.12	0.32	0.32	0.09	0.29	0.29	0.18	0.18	0.18	0.21	0.21	0.21
Sat Flow, veh/h	1641	3554	1416	1641	5106	1415	1641	1870	1405	1641	1870	1429
Grp Volume(v), veh/h	136	880	332	86	734	59	232	174	114	133	233	80
Grp Sat Flow(s),veh/h/ln	1641	1777	1416	1641	1702	1415	1641	1870	1405	1641	1870	1429
Q Serve(g_s), s	6.6	18.5	8.8	4.2	9.9	1.3	11.1	6.9	6.0	5.8	9.3	3.9
Cycle Q Clear(g_c), s	6.6	18.5	8.8	4.2	9.9	1.3	11.1	6.9	6.0	5.8	9.3	3.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	203	1150	458	145	1474	408	303	344	259	346	393	300
V/C Ratio(X)	0.67	0.77	0.72	0.59	0.50	0.14	0.76	0.51	0.44	0.38	0.59	0.27
Avail Cap(c_a), veh/h	237	1474	587	178	1933	535	376	983	739	346	938	717
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.7	25.2	6.5	36.4	24.5	5.5	32.1	30.5	30.1	28.1	29.6	27.4
Incr Delay (d2), s/veh	5.8	1.8	3.2	3.8	0.3	0.2	7.2	1.2	1.2	0.7	1.4	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	7.1	4.6	1.7	3.6	0.8	4.6	2.9	1.9	2.1	3.9	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.5	27.1	9.7	40.2	24.8	5.6	39.3	31.6	31.2	28.8	31.0	27.9
LnGrp LOS	D	C	A	D	C	A	D	C	C	C	C	C
Approach Vol, veh/h	1348			879			520			446		
Approach Delay, s/veh	24.2			25.0			35.0			29.8		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.5	19.3	11.3	30.8	19.3	21.4	14.2	27.9				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	41.6	7.0	32.4	17.0	39.6	10.0	29.4				
Max Q Clear Time (g_c+I1), s	7.8	8.9	6.2	20.5	13.1	11.3	8.6	11.9				
Green Ext Time (p_c), s	0.2	1.0	0.0	4.4	0.3	1.1	0.1	3.2				
Intersection Summary												
HCM 7th Control Delay, s/veh	26.9											
HCM 7th LOS	C											

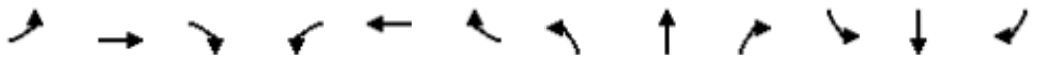
Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

PM 2029+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	236	344	344	148	272	56	221	591	51	78	800	251
Future Volume (vph)	236	344	344	148	272	56	221	591	51	78	800	251
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98		1.00				0.97			0.98
Frt			0.850		0.974				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1808	0	1630	3539	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1432	1630	1808	0	1630	3539	1409	1630	3539	1426
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			370		8				191			273
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2617			5285	
Travel Time (s)		32.9			36.1			32.4			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	257	374	374	161	296	61	240	642	55	85	870	273
Shared Lane Traffic (%)												
Lane Group Flow (vph)	257	374	374	161	357	0	240	642	55	85	870	273
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

PM 2029+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	24.0	39.7	39.7	17.0	32.7		23.0	46.3	46.3	17.0	40.3	40.3
Total Split (%)	20.0%	33.1%	33.1%	14.2%	27.3%		19.2%	38.6%	38.6%	14.2%	33.6%	33.6%
Maximum Green (s)	18.0	33.7	33.7	11.0	26.7		17.0	40.3	40.3	11.0	34.3	34.3
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Don't Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effect Green (s)	20.0	30.9	30.9	16.6	27.5		19.0	45.9	45.9	12.1	36.3	36.3
Actuated g/C Ratio	0.17	0.26	0.26	0.14	0.23		0.16	0.39	0.39	0.10	0.31	0.31
v/c Ratio	0.94	0.77	0.58	0.71	0.84		0.92	0.47	0.08	0.51	0.80	0.44
Control Delay (s/veh)	90.4	51.8	7.3	68.0	61.0		89.0	30.4	0.3	62.5	45.2	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	90.4	51.8	7.3	68.0	61.0		89.0	30.4	0.3	62.5	45.2	6.2
LOS	F	D	A	E	E		F	C	A	E	D	A
Approach Delay (s/veh)		45.1			63.2			43.7			37.7	
Approach LOS		D			E			D			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 118.9

Natural Cycle: 105

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay (s/veh): 44.8

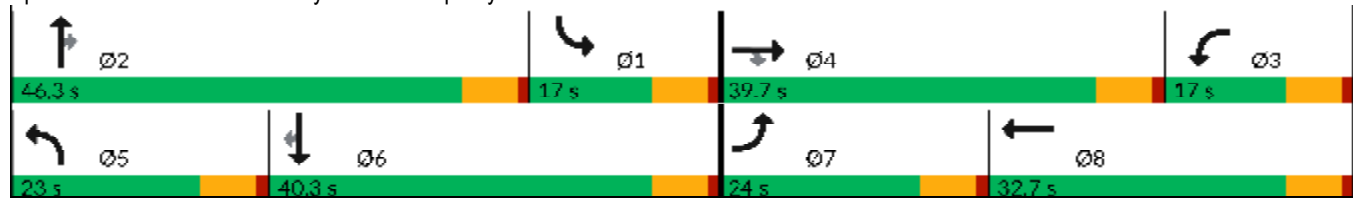
Intersection LOS: D

Intersection Capacity Utilization 81.4%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 6: Mooney Blvd & Prosperity Ave




























# HCM 7th Signalized Intersection Summary

## 6: Mooney Blvd & Prosperity Ave










PM 2029+Project  
09/12/2024




												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	236	344	344	148	272	56	221	591	51	78	800	251
Future Volume (veh/h)	236	344	344	148	272	56	221	591	51	78	800	251
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	257	374	374	161	296	61	240	642	55	85	870	273
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	277	467	357	243	343	71	263	1270	507	180	1090	439
Arrive On Green	0.17	0.25	0.25	0.15	0.23	0.21	0.16	0.36	0.36	0.11	0.31	0.31
Sat Flow, veh/h	1641	1870	1431	1641	1498	309	1641	3554	1418	1641	3554	1433
Grp Volume(v), veh/h	257	374	374	161	0	357	240	642	55	85	870	273
Grp Sat Flow(s),veh/h/ln	1641	1870	1431	1641	0	1807	1641	1777	1418	1641	1777	1433
Q Serve(g_s), s	18.3	22.2	19.2	11.0	0.0	22.5	17.0	16.8	3.1	5.8	26.6	19.3
Cycle Q Clear(g_c), s	18.3	22.2	19.2	11.0	0.0	22.5	17.0	16.8	3.1	5.8	26.6	19.3
Prop In Lane	1.00		1.00	1.00		0.17	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	277	467	357	243	0	414	263	1270	507	180	1090	439
V/C Ratio(X)	0.93	0.80	1.05	0.66	0.00	0.86	0.91	0.51	0.11	0.47	0.80	0.62
Avail Cap(c_a), veh/h	277	564	432	243	0	438	263	1270	507	180	1090	439
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.5	41.7	18.8	47.6	0.0	44.0	48.9	29.8	25.4	49.5	37.7	35.2
Incr Delay (d2), s/veh	35.3	6.8	55.3	6.5	0.0	15.6	33.1	1.4	0.4	1.9	6.1	6.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.8	10.6	11.2	4.7	0.0	11.3	9.1	7.0	1.0	2.4	11.8	7.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	83.8	48.5	74.2	54.1	0.0	59.6	82.0	31.3	25.9	51.4	43.8	41.6
LnGrp LOS	F	D	F	D		E	F	C	C	D	D	D
Approach Vol, veh/h	1005			518			937			1228		
Approach Delay, s/veh	67.1			57.9			44.0			43.9		
Approach LOS	E			E			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	46.3	21.6	33.5	23.0	40.3	24.0	31.1				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	11.0	40.3	11.0	33.7	17.0	34.3	18.0	26.7				
Max Q Clear Time (g_c+I1), s	7.8	18.8	13.0	24.2	19.0	28.6	20.3	24.5				
Green Ext Time (p_c), s	0.1	2.9	0.0	2.2	0.0	2.6	0.0	0.3				
Intersection Summary												
HCM 7th Control Delay, s/veh	52.2											
HCM 7th LOS	D											
Notes												
User approved pedestrian interval to be less than phase max green.												



Lanes, Volumes, Timings  
7: Morrison St & Prosperity Ave
















PM 2029+Project  
09/12/2024

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	328	155	42	331	96	25
Future Volume (vph)	328	155	42	331	96	25
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.957				0.972	
Flt Protected				0.994	0.962	
Satd. Flow (prot)	1783	0	0	1852	1604	0
Flt Permitted				0.994	0.962	
Satd. Flow (perm)	1783	0	0	1852	1604	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	357	168	46	360	104	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	525	0	0	406	131	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	63.9%			ICU Level of Service B		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	3.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	328	155	42	331	96	25
Future Vol, veh/h	328	155	42	331	96	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	357	168	46	360	104	27
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	525	0	892	441
Stage 1	-	-	-	-	441	-
Stage 2	-	-	-	-	451	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1042	-	313	616
Stage 1	-	-	-	-	649	-
Stage 2	-	-	-	-	642	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1042	-	295	616
Mov Cap-2 Maneuver	-	-	-	-	295	-
Stage 1	-	-	-	-	649	-
Stage 2	-	-	-	-	606	-
Approach	EB	WB		NB		
HCM Control Delay, s/v	0	0.97		22.87		
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	331	-	-	203	-	
HCM Lane V/C Ratio	0.397	-	-	0.044	-	
HCM Control Delay (s/veh)	22.9	-	-	8.6	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	1.8	-	-	0.1	-	

Lanes, Volumes, Timings  
8: Prosperity Ave & Oakmore Rd

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	82	240	0	0	185	26	0	0	0	19	0	144	
Future Volume (vph)	82	240	0	0	185	26	0	0	0	19	0	144	
Ideal Flow (vphpl)	1750	1900	1900	1900	1900	1750	1900	1900	1900	1750	1900	1750	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.983					0.865							
Flt Protected	0.987					0.950							
Satd. Flow (prot)	0	1839	0	0	1831	0	0	0	0	1630	0	0	
Flt Permitted	0.987					0.950							
Satd. Flow (perm)	0	1839	0	0	1831	0	0	0	0	1630	0	0	
Link Speed (mph)	55					55							
Link Distance (ft)	2108					329							
Travel Time (s)	26.1					4.1							
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	89	261	0	0	201	28	0	0	0	21	0	157	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	350	0	0	229	0	0	0	0	21	157	0	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No	
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(ft)	0					12							
Link Offset(ft)	0					0							
Crosswalk Width(ft)	16					16							
Two way Left Turn Lane													
Headway Factor	1.11	1.00	1.00	1.00	1.00	1.11	1.00	1.00	1.00	1.11	1.00	1.11	
Turning Speed (mph)	15		9	15		9	15		9	15		9	
Sign Control	Free					Free					Stop		Stop
Intersection Summary													
Area Type:	Other												
Control Type: Unsignalized													
Intersection Capacity Utilization Err%					ICU Level of Service H								
Analysis Period (min) 15													

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			2					1		
Traffic Vol, veh/h	82	240	0	0	185	26	0	0	0	19	0	144
Future Vol, veh/h	82	240	0	0	185	26	0	0	0	19	0	144
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	89	261	0	0	201	28	0	0	0	21	0	157












Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	229	0	-	-	-	0	654	-	215
Stage 1	-	-	-	-	-	-	215	-	-
Stage 2	-	-	-	-	-	-	439	-	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	-	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	-	3.318
Pot Cap-1 Maneuver	1339	-	0	0	-	-	431	0	825
Stage 1	-	-	0	0	-	-	821	0	-
Stage 2	-	-	0	0	-	-	650	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1339	-	-	-	-	-	398	0	825
Mov Cap-2 Maneuver	-	-	-	-	-	-	398	0	-
Stage 1	-	-	-	-	-	-	757	0	-
Stage 2	-	-	-	-	-	-	650	0	-






Approach	EB	WB	SB
HCM Control Delay, s/v	2.01	0	11.47
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	458	-	-	-	733
HCM Lane V/C Ratio	0.067	-	-	-	0.242
HCM Control Delay (s/veh)	7.9	0	-	-	11.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.9

Lanes, Volumes, Timings  
9: Mooney Blvd & Seminole Ave



























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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	145	1009	60	189	1227
Future Volume (vph)	0	145	1009	60	189	1227
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	540	0		0	80	
Storage Lanes	0	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.865		0.850		
Flt Protected					0.950	
Satd. Flow (prot)	0	1484	3539	1458	1630	3539
Flt Permitted					0.950	
Satd. Flow (perm)	0	1484	3539	1458	1630	3539
Link Speed (mph)	55		55			55
Link Distance (ft)	1719		2673			2617
Travel Time (s)	21.3		33.1			32.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	158	1097	65	205	1334
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	158	1097	65	205	1334
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	45.9%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	1.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	145	1009	60	189	1227
Future Vol, veh/h	0	145	1009	60	189	1227
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	0	80	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	158	1097	65	205	1334
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	548	0	0	1162	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	480	-	-	597	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	480	-	-	597	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s/v16.12		0		1.89		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	480	597	-	
HCM Lane V/C Ratio	-	-	0.328	0.344	-	
HCM Control Delay (s/veh)	-	-	16.1	14.2	-	
HCM Lane LOS	-	-	C	B	-	
HCM 95th %tile Q(veh)	-	-	1.4	1.5	-	













Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Traffic Volume (vph)	131	864	211	87	643	67	106	273	70	113	374	90
Future Volume (vph)	131	864	211	87	643	67	106	273	70	113	374	90
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		135	110		0	90		90	80		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97		1.00				0.98			0.98
Frt			0.850		0.986				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3478	0	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1408	1630	3478	0	1630	1863	1431	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191		9				191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		841			2671			726			5387	
Travel Time (s)		10.4			33.1			9.0			66.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	142	939	229	95	699	73	115	297	76	123	407	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	142	939	229	95	772	0	115	297	76	123	407	98
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

PM 2029+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.9	29.9	10.0	28.4		10.0	39.9	39.9	10.0	44.1	44.1
Total Split (s)	20.0	41.9	41.9	16.0	37.9		18.0	41.1	41.1	21.0	44.1	44.1
Total Split (%)	16.7%	34.9%	34.9%	13.3%	31.6%		15.0%	34.3%	34.3%	17.5%	36.8%	36.8%
Maximum Green (s)	14.0	35.9	35.9	10.0	31.9		12.0	35.1	35.1	15.0	38.1	38.1
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Don't Walk (s)		16.9	16.9		15.4			26.9	26.9		31.1	31.1
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effect Green (s)	15.5	37.1	37.1	11.4	29.4		12.9	28.6	28.6	14.4	30.1	30.1
Actuated g/C Ratio	0.15	0.36	0.36	0.11	0.28		0.12	0.27	0.27	0.14	0.29	0.29
v/c Ratio	0.59	0.75	0.37	0.53	0.78		0.57	0.58	0.14	0.55	0.76	0.18
Control Delay (s/veh)	55.5	36.5	8.7	60.1	41.6		59.0	39.1	0.6	54.9	44.6	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	55.5	36.5	8.7	60.1	41.6		59.0	39.1	0.6	54.9	44.6	0.7
LOS	E	D	A	E	D		E	D	A	D	D	A
Approach Delay (s/veh)		33.7			43.6			37.8			39.8	
Approach LOS		C			D			D			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 104.4

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay (s/veh): 38.1

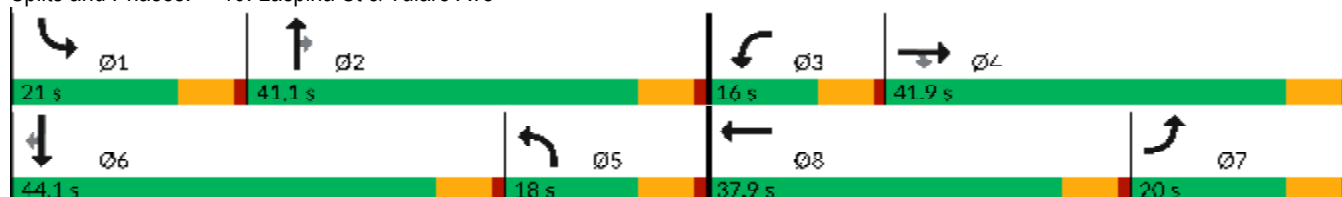
Intersection LOS: D

Intersection Capacity Utilization 70.4%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 10: Laspina St & Tulare Ave





























# HCM 7th Signalized Intersection Summary

## 10: Laspina St & Tulare Ave





























PM 2029+Project

09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	131	864	211	87	643	67	106	273	70	113	374	90
Future Volume (veh/h)	131	864	211	87	643	67	106	273	70	113	374	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	142	939	229	95	699	73	115	297	76	123	407	98
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	253	1184	472	154	882	92	177	522	400	187	534	409
Arrive On Green	0.15	0.33	0.33	0.09	0.27	0.25	0.11	0.28	0.28	0.11	0.29	0.29
Sat Flow, veh/h	1641	3554	1417	1641	3235	338	1641	1870	1432	1641	1870	1433
Grp Volume(v), veh/h	142	939	229	95	384	388	115	297	76	123	407	98
Grp Sat Flow(s),veh/h/ln	1641	1777	1417	1641	1777	1796	1641	1870	1432	1641	1870	1433
Q Serve(g_s), s	7.1	21.3	7.3	5.0	17.8	17.9	6.0	12.1	3.6	6.4	17.7	4.7
Cycle Q Clear(g_c), s	7.1	21.3	7.3	5.0	17.8	17.9	6.0	12.1	3.6	6.4	17.7	4.7
Prop In Lane	1.00		1.00	1.00		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	253	1184	472	154	485	490	177	522	400	187	534	409
V/C Ratio(X)	0.56	0.79	0.49	0.62	0.79	0.79	0.65	0.57	0.19	0.66	0.76	0.24
Avail Cap(c_a), veh/h	295	1513	603	221	677	684	258	780	597	313	843	645
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.9	26.9	9.5	38.8	30.0	30.2	38.1	27.5	24.4	37.8	29.1	24.4
Incr Delay (d2), s/veh	1.9	2.3	0.8	4.0	4.3	4.3	4.0	1.0	0.2	3.9	2.3	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	8.3	3.2	2.0	7.4	7.6	2.4	5.0	1.1	2.6	7.5	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	36.8	29.2	10.3	42.8	34.3	34.6	42.0	28.5	24.6	41.7	31.3	24.7
LnGrp LOS	D	C	B	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h	1310			867			488			628		
Approach Delay, s/veh	26.7			35.4			31.1			32.3		
Approach LOS	C			D			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.1	28.9	12.3	33.7	13.6	29.4	17.7	28.3				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	35.1	10.0	35.9	12.0	38.1	14.0	31.9				
Max Q Clear Time (g_c+I1), s	8.4	14.1	7.0	23.3	8.0	19.7	9.1	19.9				
Green Ext Time (p_c), s	0.2	1.2	0.1	4.3	0.1	1.7	0.2	2.4				
Intersection Summary												
HCM 7th Control Delay, s/veh	30.7											
HCM 7th LOS	C											













Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

PM 2029+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	238	613	232	81	454	244	118	583	78	292	604	312
Future Volume (vph)	238	613	232	81	454	244	118	583	78	292	604	312
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	420		185	125		125	80		0	475		475
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98		1.00				0.98
Fr't			0.850			0.850		0.982				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3539	1458	1630	3462	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1412	1630	3539	1430	1630	3462	0	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			252			254		11				339
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2671			2887			1662			2673	
Travel Time (s)		33.1			35.8			20.6			33.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	259	666	252	88	493	265	128	634	85	317	657	339
Shared Lane Traffic (%)												
Lane Group Flow (vph)	259	666	252	88	493	265	128	719	0	317	657	339
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

PM 2029+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	37.0	37.0	10.0	37.0	37.0	10.0	39.9		10.0	42.7	42.7
Total Split (s)	20.0	40.0	40.0	17.0	37.0	37.0	19.0	32.0		31.0	44.0	44.0
Total Split (%)	16.7%	33.3%	33.3%	14.2%	30.8%	30.8%	15.8%	26.7%		25.8%	36.7%	36.7%
Maximum Green (s)	14.0	34.0	34.0	11.0	31.0	31.0	13.0	26.0		25.0	38.0	38.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Don't Walk (s)		24.0	24.0		24.0	24.0		26.9			29.7	29.7
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effect Green (s)	16.1	32.3	32.3	11.8	25.1	25.1	15.3	29.9		25.7	40.3	40.3
Actuated g/C Ratio	0.14	0.29	0.29	0.10	0.22	0.22	0.14	0.26		0.23	0.36	0.36
v/c Ratio	1.12	0.66	0.43	0.52	0.63	0.51	0.58	0.78		0.86	0.99	0.47
Control Delay (s/veh)	139.0	40.5	6.7	61.5	43.6	9.1	57.8	45.4		65.2	70.0	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	139.0	40.5	6.7	61.5	43.6	9.1	57.8	45.4		65.2	70.0	5.5
LOS	F	D	A	E	D	A	E	D		E	E	A
Approach Delay (s/veh)		54.9			34.6			47.3			52.2	
Approach LOS		D			C			D			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 112.9

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.12

Intersection Signal Delay (s/veh): 48.4

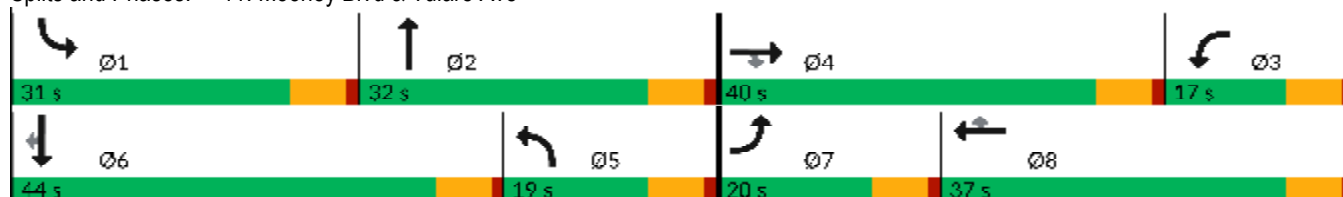
Intersection LOS: D

Intersection Capacity Utilization 81.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 11: Mooney Blvd & Tulare Ave































# HCM 7th Signalized Intersection Summary

## 11: Mooney Blvd & Tulare Ave

















PM 2029+Project

09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (veh/h)	238	613	232	81	454	244	118	583	78	292	604	312
Future Volume (veh/h)	238	613	232	81	454	244	118	583	78	292	604	312
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	259	666	252	88	493	265	128	634	85	317	657	339
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	237	881	350	224	853	343	181	774	104	368	675	518
Arrive On Green	0.14	0.25	0.25	0.14	0.24	0.24	0.11	0.25	0.23	0.22	0.36	0.36
Sat Flow, veh/h	1641	3554	1412	1641	3554	1431	1641	3135	419	1641	1870	1435
Grp Volume(v), veh/h	259	666	252	88	493	265	128	359	360	317	657	339
Grp Sat Flow(s),veh/h/ln	1641	1777	1412	1641	1777	1431	1641	1777	1777	1641	1870	1435
Q Serve(g_s), s	16.0	19.2	18.1	5.4	13.6	19.1	8.3	21.1	21.2	20.6	38.3	13.2
Cycle Q Clear(g_c), s	16.0	19.2	18.1	5.4	13.6	19.1	8.3	21.1	21.2	20.6	38.3	13.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.24	1.00		1.00
Lane Grp Cap(c), veh/h	237	881	350	224	853	343	181	439	439	368	675	518
V/C Ratio(X)	1.09	0.76	0.72	0.39	0.58	0.77	0.71	0.82	0.82	0.86	0.97	0.65
Avail Cap(c_a), veh/h	237	1154	459	224	1058	426	222	449	449	400	675	518
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.4	38.6	38.1	43.7	37.2	39.3	47.6	39.4	39.7	41.3	34.9	10.8
Incr Delay (d2), s/veh	85.7	2.1	3.8	1.1	0.6	6.8	7.6	11.1	11.4	16.2	27.9	3.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.8	8.1	6.2	2.2	5.6	6.9	3.6	10.0	10.1	9.5	21.1	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	133.1	40.7	41.9	44.8	37.8	46.1	55.2	50.5	51.0	57.6	62.8	13.8
LnGrp LOS	F	D	D	D	D	D	E	D	D	E	E	B
Approach Vol, veh/h	1177		846				847		1313			
Approach Delay, s/veh	61.3		41.1				51.4		48.9			
Approach LOS	E		D				D		D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	28.9	31.4	19.1	31.5	16.2	44.0	20.0	30.6				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	25.0	26.0	11.0	34.0	13.0	38.0	14.0	31.0				
Max Q Clear Time (g_c+I1), s	22.6	23.2	7.4	21.2	10.3	40.3	18.0	21.1				
Green Ext Time (p_c), s	0.3	0.8	0.1	3.3	0.1	0.0	0.0	2.4				
Intersection Summary												
HCM 7th Control Delay, s/veh	51.3											
HCM 7th LOS	D											
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
12: Morrison St & Tulare Ave

PM 2029+Project  
09/12/2024























												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	620	139	59	555	13	66	25	33	5	26	82
Future Volume (vph)	102	620	139	59	555	13	66	25	33	5	26	82
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.978			0.997			0.964			0.902	
Flt Protected		0.994			0.995			0.974			0.998	
Satd. Flow (prot)	0	1811	0	0	1848	0	0	1749	0	0	1677	0
Flt Permitted		0.994			0.995			0.974			0.998	
Satd. Flow (perm)	0	1811	0	0	1848	0	0	1749	0	0	1677	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	111	674	151	64	603	14	72	27	36	5	28	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	936	0	0	681	0	0	135	0	0	122	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	
Intersection Summary												
Area Type:	Other											
Control Type:	Roundabout											
Intersection Capacity Utilization	86.4%				ICU Level of Service E							
Analysis Period (min)	15											

Intersection				
Intersection Delay, s/veh	13.2			
Intersection LOS	B			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	936	681	135	122
Demand Flow Rate, veh/h	954	694	138	125
Vehicles Circulating, veh/h	99	214	805	753
Vehicles Exiting, veh/h	779	729	248	155
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	15.6	11.8	8.9	8.1
Approach LOS	C	B	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	954	694	138	125
Cap Entry Lane, veh/h	1247	1109	607	640
Entry HV Adj Factor	0.981	0.981	0.982	0.979
Flow Entry, veh/h	936	681	135	122
Cap Entry, veh/h	1223	1088	596	627
V/C Ratio	0.765	0.626	0.227	0.195
Control Delay, s/veh	15.6	11.8	8.9	8.1
LOS	C	B	A	A
95th %tile Queue, veh	8	5	1	1



Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave













PM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	249	191	203	32	203	7	145	1130	32	14	1375	262
Future Volume (vph)	249	191	203	32	203	7	145	1130	32	14	1375	262
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.995			0.996			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1852	0	1630	3522	0	1630	3437	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1852	0	1630	3522	0	1630	3437	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			221		2			3			20	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	271	208	221	35	221	8	158	1228	35	15	1495	285
Shared Lane Traffic (%)												
Lane Group Flow (vph)	271	208	221	35	229	0	158	1263	0	15	1780	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												



Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

PM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	20.0	48.7	48.7	10.3	39.0		14.0	51.5		9.5	47.0	
Total Split (%)	16.7%	40.6%	40.6%	8.6%	32.5%		11.7%	42.9%		7.9%	39.2%	
Maximum Green (s)	14.5	43.2	43.2	4.8	33.5		8.5	46.0		4.0	41.5	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Don't Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effect Green (s)	16.1	28.8	28.8	12.1	20.5		10.0	53.6		5.5	43.2	
Actuated g/C Ratio	0.15	0.27	0.27	0.11	0.19		0.09	0.51		0.05	0.41	
v/c Ratio	1.10	0.41	0.40	0.19	0.64		1.03	0.71		0.18	1.26	
Control Delay (s/veh)	129.3	36.8	6.8	45.0	46.8		128.2	25.0		55.9	151.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	129.3	36.8	6.8	45.0	46.8		128.2	25.0		55.9	151.8	
LOS	F	D	A	D	D		F	C		E	F	
Approach Delay (s/veh)		63.1			46.6			36.4			151.0	
Approach LOS		E			D			D			F	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 105.8

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.26

Intersection Signal Delay (s/veh): 90.7

Intersection LOS: F

Intersection Capacity Utilization 96.9%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 1: Mooney Blvd & Cartmill Ave

























# HCM 7th Signalized Intersection Summary

PM 2044

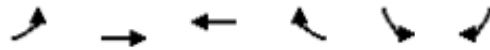
## 1: Mooney Blvd & Cartmill Ave

09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	249	191	203	32	203	7	145	1130	32	14	1375	262
Future Volume (veh/h)	249	191	203	32	203	7	145	1130	32	14	1375	262
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	271	208	221	35	221	8	158	1228	35	15	1495	285
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	254	345	263	243	318	12	159	1395	40	192	1238	230
Arrive On Green	0.15	0.18	0.18	0.15	0.18	0.16	0.10	0.40	0.38	0.12	0.42	0.40
Sat Flow, veh/h	1641	1870	1427	1641	1792	65	1641	3525	100	1641	2976	553
Grp Volume(v), veh/h	271	208	221	35	0	229	158	619	644	15	876	904
Grp Sat Flow(s),veh/h/ln	1641	1870	1427	1641	0	1857	1641	1777	1849	1641	1777	1752
Q Serve(g_s), s	16.0	10.5	11.6	1.9	0.0	12.0	10.0	33.4	33.4	0.8	43.0	43.0
Cycle Q Clear(g_c), s	16.0	10.5	11.6	1.9	0.0	12.0	10.0	33.4	33.4	0.8	43.0	43.0
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.05	1.00		0.32
Lane Grp Cap(c), veh/h	254	345	263	243	0	330	159	703	732	192	739	729
V/C Ratio(X)	1.07	0.60	0.84	0.14	0.00	0.69	1.00	0.88	0.88	0.08	1.19	1.24
Avail Cap(c_a), veh/h	254	809	617	243	0	629	159	816	850	192	739	729
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.7	38.7	22.9	38.3	0.0	39.9	46.7	29.0	29.0	40.7	30.2	30.4
Incr Delay (d2), s/veh	75.4	1.7	7.1	0.3	0.0	2.6	70.0	9.8	9.6	0.2	97.0	119.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.4	4.7	4.1	0.7	0.0	5.4	6.9	14.6	15.1	0.3	36.1	40.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	119.1	40.4	30.0	38.6	0.0	42.5	116.7	38.8	38.6	40.8	127.2	149.8
LnGrp LOS	F	D	C	D		D	F	D	D	D	F	F
Approach Vol, veh/h	700			264			1421			1795		
Approach Delay, s/veh	67.6			42.0			47.4			137.9		
Approach LOS	E			D			D			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.1	44.9	19.3	23.1	14.0	47.0	20.0	22.4				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	4.0	46.0	4.8	43.2	8.5	41.5	14.5	33.5				
Max Q Clear Time (g_c+I1), s	2.8	35.4	3.9	13.6	12.0	45.0	18.0	14.0				
Green Ext Time (p_c), s	0.0	4.0	0.0	1.6	0.0	0.0	0.0	0.7				
Intersection Summary												
HCM 7th Control Delay, s/veh	89.3											
HCM 7th LOS	F											

## 2: Prosperity Ave/Blackstone St &amp; SR 99 SB Offramp

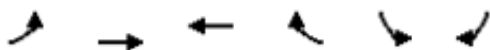
09/12/2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (vph)	0	968	963	0	320	129
Future Volume (vph)	0	968	963	0	320	129
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Fr t						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	1630	1458
Flt Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	1630	1458
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						63
Link Speed (mph)		55	55		55	
Link Distance (ft)		349	727		300	
Travel Time (s)		4.3	9.0		3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1052	1047	0	348	140
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1052	1047	0	348	140
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors		1	1		1	1
Detector Template						
Leading Detector (ft)		50	50		50	50
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		50	50		50	50
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		4.0	4.0		4.0	4.0
Minimum Split (s)		24.0	24.0		24.0	24.0
Total Split (s)		53.0	53.0		47.0	47.0
Total Split (%)		53.0%	53.0%		47.0%	47.0%
Maximum Green (s)		47.0	47.0		41.0	41.0
Yellow Time (s)		5.0	5.0		5.0	5.0

Lanes, Volumes, Timings  
2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

PM 2044  
09/12/2024



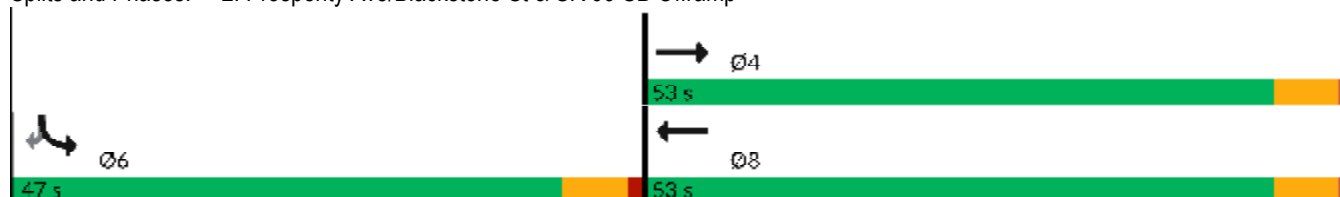
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		None	None		Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effect Green (s)		25.7	25.7		20.7	20.7
Actuated g/C Ratio		0.47	0.47		0.38	0.38
v/c Ratio		0.63	0.63		0.57	0.24
Control Delay (s/veh)		13.6	13.6		18.8	9.2
Queue Delay		0.0	0.0		0.0	0.0
Total Delay (s/veh)		13.6	13.6		18.8	9.2
LOS		B	B		B	A
Approach Delay (s/veh)		13.6	13.6		16.0	
Approach LOS		B	B		B	

Intersection Summary

Area Type: Other  
Cycle Length: 100  
Actuated Cycle Length: 54.9  
Natural Cycle: 50  
Control Type: Actuated-Uncoordinated  
Maximum v/c Ratio: 0.63  
Intersection Signal Delay (s/veh): 14.1  
Intersection Capacity Utilization 52.7%  
Analysis Period (min) 15

Intersection LOS: B  
ICU Level of Service A

Splits and Phases: 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp



# HCM 7th Signalized Intersection Summary

## 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp
























PM 2044  
09/12/2024



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (veh/h)	0	968	963	0	320	129
Future Volume (veh/h)	0	968	963	0	320	129
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1723	1723
Adj Flow Rate, veh/h	0	1052	1047	0	348	140
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	1648	1648	0	543	483
Arrive On Green	0.00	0.46	0.46	0.00	0.33	0.33
Sat Flow, veh/h	0	3741	3741	0	1641	1460
Grp Volume(v), veh/h	0	1052	1047	0	348	140
Grp Sat Flow(s),veh/h/ln	0	1777	1777	0	1641	1460
Q Serve(g_s), s	0.0	8.8	8.7	0.0	7.0	2.8
Cycle Q Clear(g_c), s	0.0	8.8	8.7	0.0	7.0	2.8
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1648	1648	0	543	483
V/C Ratio(X)	0.00	0.64	0.64	0.00	0.64	0.29
Avail Cap(c_a), veh/h	0	4471	4471	0	1812	1612
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	8.0	7.9	0.0	11.1	9.6
Incr Delay (d2), s/veh	0.0	0.4	0.4	0.0	1.3	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.4	1.4	0.0	1.6	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	0.0	8.4	8.4	0.0	12.3	10.0
LnGrp LOS		A	A		B	A
Approach Vol, veh/h		1052	1047		488	
Approach Delay, s/veh		8.4	8.4		11.7	
Approach LOS		A	A		B	
Timer - Assigned Phs				4	6	8
Phs Duration (G+Y+Rc), s				22.1	16.9	22.1
Change Period (Y+Rc), s				6.0	6.0	6.0
Max Green Setting (Gmax), s				47.0	41.0	47.0
Max Q Clear Time (g_c+l1), s				10.8	9.0	10.7
Green Ext Time (p_c), s				5.3	1.9	5.2
Intersection Summary						
HCM 7th Control Delay, s/veh			9.0			
HCM 7th LOS			A			

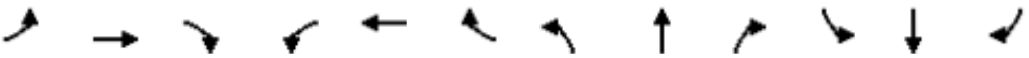
Lanes, Volumes, Timings  
3: Blackstone Ave/Blackstone St & Prosperity Ave

PM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	27	9	990	36	964	0	49	524	675	150	0
Future Volume (vph)	3	27	9	990	36	964	0	49	524	675	150	0
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	30		0	335		310	55		90	240		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor		0.99				0.98						
Frt		0.962				0.850			0.850			
Flt Protected	0.950			0.950	0.956					0.950		
Satd. Flow (prot)	1630	1782	0	1548	1692	1458	1716	1863	1458	3162	1863	0
Flt Permitted	0.950			0.950	0.804					0.950		
Satd. Flow (perm)	1630	1782	0	1548	1423	1427	1716	1863	1458	3162	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				975			570			
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		98			1229			643			727	
Travel Time (s)		1.2			15.2			8.0			9.0	
Confl. Peds. (#/hr)			5			5						
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	29	10	1076	39	1048	0	53	570	734	163	0
Shared Lane Traffic (%)				48%								
Lane Group Flow (vph)	3	39	0	560	555	1048	0	53	570	734	163	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												

Lanes, Volumes, Timings  
3: Blackstone Ave/Blackstone St & Prosperity Ave

PM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	24.1		10.0	24.1	24.1	10.0	24.0	24.0	10.0	24.0	
Total Split (s)	13.0	27.1		26.9	41.0	41.0	10.0	24.0	24.0	22.0	36.0	
Total Split (%)	13.0%	27.1%		26.9%	41.0%	41.0%	10.0%	24.0%	24.0%	22.0%	36.0%	
Maximum Green (s)	7.0	21.1		20.9	35.0	35.0	4.0	18.0	18.0	16.0	30.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Don't Walk (s)		11.1			11.1	11.1		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		5			5	5		0	0		0	
Act Effect Green (s)	7.8	10.4		30.1	30.1	37.4		11.9	11.9	18.2	34.1	
Actuated g/C Ratio	0.10	0.13		0.37	0.37	0.46		0.15	0.15	0.22	0.42	
v/c Ratio	0.02	0.17		0.98	0.89	0.89		0.20	0.82	1.04	0.21	
Control Delay (s/veh)	38.3	27.6		65.9	47.9	13.7		32.7	13.7	79.0	16.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay (s/veh)	38.3	27.6		65.9	47.9	13.7		32.7	13.7	79.0	16.4	
LOS	D	C		E	D	B		C	B	E	B	
Approach Delay (s/veh)		28.4			36.0			15.3			67.7	
Approach LOS		C			D			B			E	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 81.7

Natural Cycle: 130

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.04

Intersection Signal Delay (s/veh): 40.1

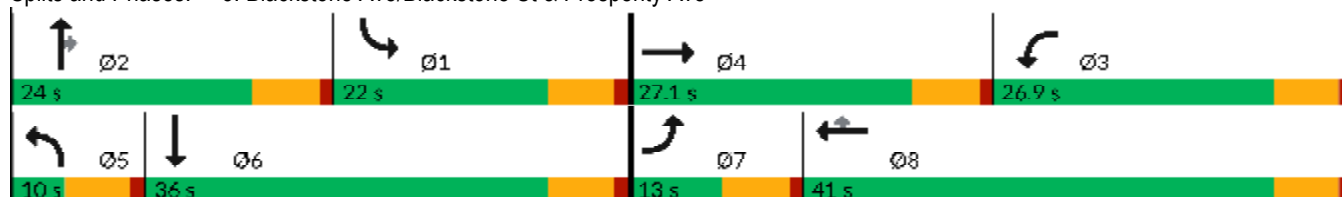
Intersection LOS: D

Intersection Capacity Utilization 83.8%

ICU Level of Service E

Analysis Period (min) 15
























Splits and Phases: 3: Blackstone Ave/Blackstone St & Prosperity Ave



# HCM 7th Signalized Intersection Summary

## 3: Blackstone Ave/Blackstone St & Prosperity Ave

























PM 2044  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	27	9	990	36	964	0	49	524	675	150	0
Future Volume (veh/h)	3	27	9	990	36	964	0	49	524	675	150	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	0
Adj Flow Rate, veh/h	3	29	10	1104	0	1048	0	53	570	734	163	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	0
Cap, veh/h	44	118	41	889	0	479	2	443	346	678	930	0
Arrive On Green	0.03	0.09	0.07	0.27	0.00	0.33	0.00	0.24	0.24	0.21	0.50	0.00
Sat Flow, veh/h	1641	1313	453	3281	0	1434	1641	1870	1460	3183	1870	0
Grp Volume(v), veh/h	3	0	39	1104	0	1048	0	53	570	734	163	0
Grp Sat Flow(s),veh/h/ln	1641	0	1766	1641	0	1434	1641	1870	1460	1591	1870	0
Q Serve(g_s), s	0.2	0.0	1.7	22.9	0.0	13.2	0.0	1.9	20.0	18.0	4.1	0.0
Cycle Q Clear(g_c), s	0.2	0.0	1.7	22.9	0.0	13.2	0.0	1.9	20.0	18.0	4.1	0.0
Prop In Lane	1.00		0.26	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	44	0	159	889	0	479	2	443	346	678	930	0
V/C Ratio(X)	0.07	0.00	0.25	1.24	0.00	2.19	0.00	0.12	1.65	1.08	0.18	0.00
Avail Cap(c_a), veh/h	175	0	483	889	0	628	117	443	346	678	930	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	40.1	0.0	36.0	30.8	0.0	6.1	0.0	25.3	32.2	33.2	11.7	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.8	118.2	0.0	541.5	0.0	0.1	304.9	59.0	0.1	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.7	22.6	0.0	78.4	0.0	0.8	35.6	11.8	1.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.7	0.0	36.8	149.0	0.0	547.6	0.0	25.4	337.2	92.3	11.8	0.0
LnGrp LOS	D		D	F		F		C	F	F	B	
Approach Vol, veh/h	42			2152			623			897		
Approach Delay, s/veh	37.1			343.1			310.6			77.6		
Approach LOS	D			F			F			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.0	24.0	26.9	11.6	0.0	46.0	6.3	32.2				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	16.0	18.0	20.9	21.1	4.0	30.0	7.0	35.0				
Max Q Clear Time (g_c+I1), s	20.0	22.0	24.9	3.7	0.0	6.1	2.2	15.2				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.1	0.0	0.5	0.0	6.4				
Intersection Summary												
HCM 7th Control Delay, s/veh	270.1											
HCM 7th LOS	F											
Notes												
User approved volume balancing among the lanes for turning movement.												















Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

PM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	728	1044	181	111	1126	300	173	353	159	276	126	461
Future Volume (vph)	728	1044	181	111	1126	300	173	353	159	276	126	461
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	270		0	155		85	155		0	200		205
Storage Lanes	2		1	1		1	1		0	2		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	0.88
Ped Bike Factor			0.97			0.98		0.99				0.97
Fr't			0.850			0.850		0.953				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	1630	5085	1458	1630	3354	0	3162	1863	2567
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1410	1630	5085	1433	1630	3354	0	3162	1863	2489
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			162			136			56			501
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1229			2636			362			5336	
Travel Time (s)		15.2			32.7			4.5			66.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	791	1135	197	121	1224	326	188	384	173	300	137	501
Shared Lane Traffic (%)												
Lane Group Flow (vph)	791	1135	197	121	1224	326	188	557	0	300	137	501
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

PM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	32.7	32.7	10.0	45.6	45.6	10.0	47.0		10.0	49.9	49.9
Total Split (s)	31.9	43.1	43.1	35.9	47.1	47.1	11.0	31.0		10.0	30.0	30.0
Total Split (%)	26.6%	35.9%	35.9%	29.9%	39.3%	39.3%	9.2%	25.8%		8.3%	25.0%	25.0%
Maximum Green (s)	25.9	37.1	37.1	29.9	41.1	41.1	5.0	25.0		4.0	24.0	24.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Don't Walk (s)		19.7	19.7		32.6	32.6		34.0			36.9	36.9
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effect Green (s)	28.4	49.0	49.0	16.0	36.7	36.7	7.1	26.4		6.1	25.4	25.4
Actuated g/C Ratio	0.25	0.43	0.43	0.14	0.32	0.32	0.06	0.23		0.05	0.22	0.22
v/c Ratio	1.00	0.74	0.28	0.53	0.75	0.59	1.86	0.68		1.78	0.33	0.53
Control Delay (s/veh)	76.8	33.0	7.8	55.9	38.4	24.0	450.0	39.9		402.5	39.2	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	76.8	33.0	7.8	55.9	38.4	24.0	450.0	39.9		402.5	39.2	5.1
LOS	E	C	A	E	D	C	F	D		F	D	A
Approach Delay (s/veh)		47.0			36.9			143.4			137.2	
Approach LOS		D			D			F			F	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 113.8

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.86

Intersection Signal Delay (s/veh): 72.5

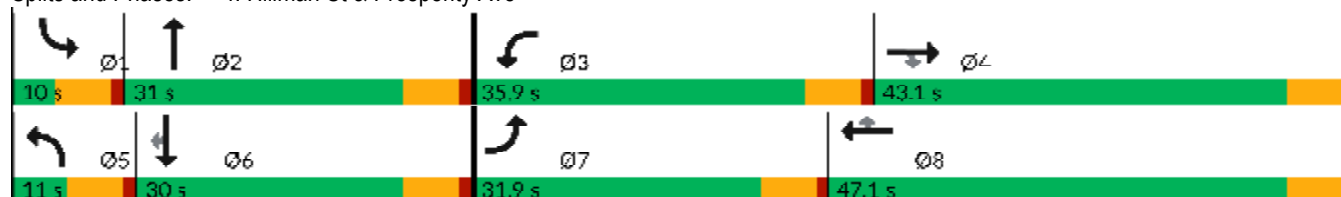
Intersection LOS: E

Intersection Capacity Utilization 85.9%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 4: Hillman St & Prosperity Ave


























# HCM 7th Signalized Intersection Summary

PM 2044





























## 4: Hillman St & Prosperity Ave

09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	728	1044	181	111	1126	300	173	353	159	276	126	461
Future Volume (veh/h)	728	1044	181	111	1126	300	173	353	159	276	126	461
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	791	1135	197	121	1224	326	188	384	173	300	137	501
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	789	1626	650	176	1618	454	102	569	252	170	431	572
Arrive On Green	0.25	0.46	0.46	0.11	0.32	0.32	0.06	0.24	0.22	0.05	0.23	0.23
Sat Flow, veh/h	3183	3554	1421	1641	5106	1434	1641	2377	1054	3183	1870	2483
Grp Volume(v), veh/h	791	1135	197	121	1224	326	188	285	272	300	137	501
Grp Sat Flow(s),veh/h/ln	1591	1777	1421	1641	1702	1434	1641	1777	1654	1591	1870	1241
Q Serve(g_s), s	27.9	28.6	9.8	8.0	24.2	22.6	7.0	16.4	16.9	6.0	6.8	21.9
Cycle Q Clear(g_c), s	27.9	28.6	9.8	8.0	24.2	22.6	7.0	16.4	16.9	6.0	6.8	21.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.64	1.00		1.00
Lane Grp Cap(c), veh/h	789	1626	650	176	1618	454	102	425	396	170	431	572
V/C Ratio(X)	1.00	0.70	0.30	0.69	0.76	0.72	1.84	0.67	0.69	1.77	0.32	0.88
Avail Cap(c_a), veh/h	789	1626	650	465	1956	549	102	426	397	170	432	574
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.3	24.3	19.2	48.4	34.5	34.0	52.7	38.8	39.5	53.2	35.9	41.7
Incr Delay (d2), s/veh	32.5	1.3	0.3	4.7	1.4	3.5	414.0	4.0	4.8	368.1	0.4	14.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.8	11.1	3.0	3.4	9.5	7.8	14.5	7.2	7.1	11.0	3.0	7.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	74.8	25.7	19.5	53.1	35.9	37.5	466.7	42.8	44.4	421.4	36.4	55.8
LnGrp LOS	F	C	B	D	D	D	F	D	D	F	D	E
Approach Vol, veh/h	2123			1671			745			938		
Approach Delay, s/veh	43.4			37.5			150.3			169.9		
Approach LOS	D			D			F			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	30.9	16.1	55.5	11.0	29.9	31.9	39.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	4.0	25.0	29.9	37.1	5.0	24.0	25.9	41.1				
Max Q Clear Time (g_c+I1), s	8.0	18.9	10.0	30.6	9.0	23.9	29.9	26.2				
Green Ext Time (p_c), s	0.0	1.2	0.3	3.3	0.0	0.0	0.0	6.4				
Intersection Summary												
HCM 7th Control Delay, s/veh	77.8											
HCM 7th LOS	E											
Notes												
User approved pedestrian interval to be less than phase max green.												













Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

PM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  						 	
Traffic Volume (vph)	186	1046	455	118	913	80	220	164	108	126	221	76
Future Volume (vph)	186	1046	455	118	913	80	220	164	108	126	221	76
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	235		115	230		100	100		100	160		100
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96			0.97			0.97			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	5085	1458	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1405	1630	5085	1410	1630	1863	1415	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			195			191			191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2636			2650			5387			713	
Travel Time (s)		32.7			32.9			66.8			8.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	202	1137	495	128	992	87	239	178	117	137	240	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	202	1137	495	128	992	87	239	178	117	137	240	83
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

PM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	27.0	27.0	10.0	34.1	34.1	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (s)	16.0	38.4	38.4	13.0	35.4	35.4	23.0	47.6	47.6	21.0	45.6	45.6
Total Split (%)	13.3%	32.0%	32.0%	10.8%	29.5%	29.5%	19.2%	39.7%	39.7%	17.5%	38.0%	38.0%
Maximum Green (s)	10.0	32.4	32.4	7.0	29.4	29.4	17.0	41.6	41.6	15.0	39.6	39.6
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		14.0	14.0		21.1	21.1		32.6	32.6		32.6	32.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effect Green (s)	12.1	34.7	34.7	9.1	31.7	31.7	18.9	19.8	19.8	21.3	22.2	22.2
Actuated g/C Ratio	0.12	0.34	0.34	0.09	0.31	0.31	0.19	0.20	0.20	0.21	0.22	0.22
v/c Ratio	1.04	0.94	0.81	0.88	0.62	0.15	0.78	0.49	0.27	0.40	0.59	0.18
Control Delay (s/veh)	120.2	48.2	31.3	95.8	33.0	0.6	59.6	39.6	1.6	41.1	40.6	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	120.2	48.2	31.3	95.8	33.0	0.6	59.6	39.6	1.6	41.1	40.6	0.8
LOS	F	D	C	F	C	A	E	D	A	D	D	A
Approach Delay (s/veh)		51.6			37.3			40.3			33.6	
Approach LOS		D			D			D			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 101.1

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.04

Intersection Signal Delay (s/veh): 43.7

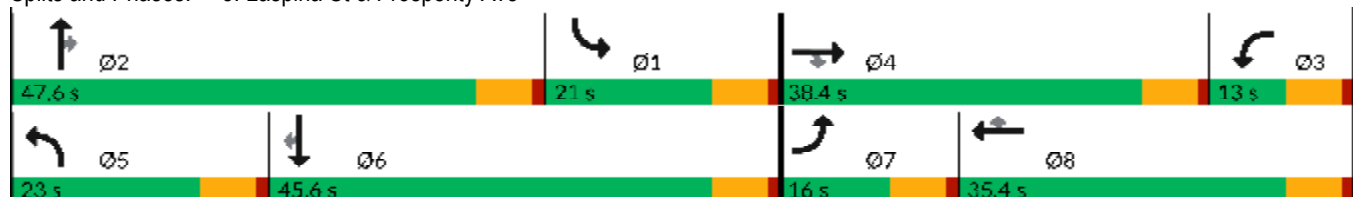
Intersection LOS: D

Intersection Capacity Utilization 77.5%

ICU Level of Service D





























Analysis Period (min) 15

Splits and Phases: 5: Laspina St & Prosperity Ave


























# HCM 7th Signalized Intersection Summary 5: Laspina St & Prosperity Ave

PM 2044  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  						 	
Traffic Volume (veh/h)	186	1046	455	118	913	80	220	164	108	126	221	76
Future Volume (veh/h)	186	1046	455	118	913	80	220	164	108	126	221	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.96	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	202	1137	495	128	992	87	239	178	117	137	240	83
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	205	1259	502	153	1650	458	299	330	248	343	381	291
Arrive On Green	0.12	0.35	0.35	0.09	0.32	0.32	0.18	0.18	0.18	0.21	0.20	0.20
Sat Flow, veh/h	1641	3554	1418	1641	5106	1416	1641	1870	1404	1641	1870	1429
Grp Volume(v), veh/h	202	1137	495	128	992	87	239	178	117	137	240	83
Grp Sat Flow(s),veh/h/ln	1641	1777	1418	1641	1702	1416	1641	1870	1404	1641	1870	1429
Q Serve(g_s), s	11.8	29.2	17.5	7.4	15.7	2.2	13.4	8.3	7.2	6.9	11.3	4.7
Cycle Q Clear(g_c), s	11.8	29.2	17.5	7.4	15.7	2.2	13.4	8.3	7.2	6.9	11.3	4.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	205	1259	502	153	1650	458	299	330	248	343	381	291
V/C Ratio(X)	0.99	0.90	0.99	0.83	0.60	0.19	0.80	0.54	0.47	0.40	0.63	0.29
Avail Cap(c_a), veh/h	205	1270	507	153	1666	462	324	848	636	343	809	618
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.0	29.5	8.5	42.9	27.4	6.0	37.7	36.1	35.6	32.8	35.0	32.4
Incr Delay (d2), s/veh	59.1	9.2	36.0	30.9	0.6	0.2	12.5	1.4	1.4	0.7	1.7	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.8	12.7	8.9	4.1	5.9	1.3	6.0	3.7	2.4	2.6	4.9	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	101.1	38.7	44.5	73.7	28.0	6.2	50.1	37.4	37.0	33.6	36.7	32.9
LnGrp LOS	F	D	D	E	C	A	D	D	D	C	D	C
Approach Vol, veh/h	1834					1207		534		460		
Approach Delay, s/veh	47.1					31.2		43.0		35.1		
Approach LOS	D					C		D		D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	24.1	21.0	13.0	38.1	21.5	23.6	16.0	35.1				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	41.6	7.0	32.4	17.0	39.6	10.0	29.4				
Max Q Clear Time (g_c+I1), s	8.9	10.3	9.4	31.2	15.4	13.3	13.8	17.7				
Green Ext Time (p_c), s	0.2	1.1	0.0	0.9	0.1	1.1	0.0	3.9				
Intersection Summary												
HCM 7th Control Delay, s/veh			40.5									
HCM 7th LOS			D									

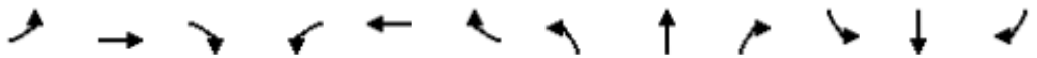
Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

PM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	353	351	513	215	312	68	329	881	66	90	1193	375
Future Volume (vph)	353	351	513	215	312	68	329	881	66	90	1193	375
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98		1.00				0.97			0.98
Frt			0.850		0.973				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1806	0	1630	3539	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1432	1630	1806	0	1630	3539	1409	1630	3539	1426
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			342		9				191			283
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2617			5285	
Travel Time (s)		32.9			36.1			32.4			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	384	382	558	234	339	74	358	958	72	98	1297	408
Shared Lane Traffic (%)												
Lane Group Flow (vph)	384	382	558	234	413	0	358	958	72	98	1297	408
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

PM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	24.0	39.7	39.7	17.0	32.7		23.0	46.3	46.3	17.0	40.3	40.3
Total Split (%)	20.0%	33.1%	33.1%	14.2%	27.3%		19.2%	38.6%	38.6%	14.2%	33.6%	33.6%
Maximum Green (s)	18.0	33.7	33.7	11.0	26.7		17.0	40.3	40.3	11.0	34.3	34.3
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Don't Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effect Green (s)	20.0	31.9	31.9	17.4	29.3		19.0	42.3	42.3	13.0	36.3	36.3
Actuated g/C Ratio	0.17	0.26	0.26	0.14	0.24		0.16	0.35	0.35	0.11	0.30	0.30
v/c Ratio	1.42	0.77	0.89	1.00	0.93		1.39	0.77	0.12	0.56	1.22	0.65
Control Delay (s/veh)	248.1	51.9	32.7	111.3	72.3		238.1	40.1	0.4	64.4	144.0	16.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	248.1	51.9	32.7	111.3	72.3		238.1	40.1	0.4	64.4	144.0	16.5
LOS	F	D	C	F	E		F	D	A	E	F	B
Approach Delay (s/veh)		100.7			86.4			89.1			110.8	
Approach LOS		F			F			F			F	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120.6

Natural Cycle: 135

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.42

Intersection Signal Delay (s/veh): 99.3

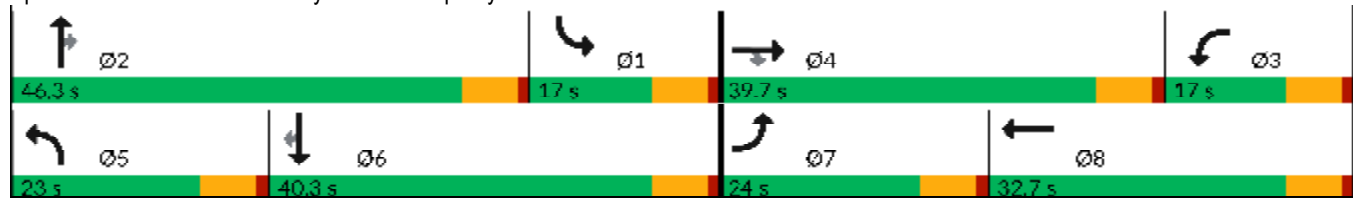
Intersection LOS: F

Intersection Capacity Utilization 108.2%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 6: Mooney Blvd & Prosperity Ave




























# HCM 7th Signalized Intersection Summary










## 6: Mooney Blvd & Prosperity Ave




PM 2044  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	353	351	513	215	312	68	329	881	66	90	1193	375
Future Volume (veh/h)	353	351	513	215	312	68	329	881	66	90	1193	375
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	384	382	558	234	339	74	358	958	72	98	1297	408
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	273	478	366	247	354	77	260	1253	500	178	1075	434
Arrive On Green	0.17	0.26	0.26	0.15	0.24	0.22	0.16	0.35	0.35	0.11	0.30	0.30
Sat Flow, veh/h	1641	1870	1431	1641	1481	323	1641	3554	1418	1641	3554	1433
Grp Volume(v), veh/h	384	382	558	234	0	413	358	958	72	98	1297	408
Grp Sat Flow(s),veh/h/ln	1641	1870	1431	1641	0	1804	1641	1777	1418	1641	1777	1433
Q Serve(g_s), s	20.0	22.9	20.0	17.0	0.0	27.1	19.0	28.7	4.2	6.8	36.3	33.3
Cycle Q Clear(g_c), s	20.0	22.9	20.0	17.0	0.0	27.1	19.0	28.7	4.2	6.8	36.3	33.3
Prop In Lane	1.00		1.00	1.00		0.18	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	273	478	366	247	0	431	260	1253	500	178	1075	434
V/C Ratio(X)	1.40	0.80	1.53	0.95	0.00	0.96	1.38	0.76	0.14	0.55	1.21	0.94
Avail Cap(c_a), veh/h	273	556	426	247	0	431	260	1253	500	178	1075	434
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.0	41.8	19.0	50.5	0.0	45.2	50.5	34.4	26.5	50.7	41.8	40.8
Incr Delay (d2), s/veh	202.5	7.1	249.9	43.3	0.0	32.4	192.5	4.5	0.6	3.6	101.9	30.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	23.2	10.9	31.4	9.6	0.0	15.4	21.3	12.3	1.4	2.9	30.0	14.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	252.5	48.9	268.9	93.9	0.0	77.6	243.0	38.9	27.1	54.4	143.7	71.5
LnGrp LOS	F	D	F	F		E	F	D	C	D	F	E
Approach Vol, veh/h	1324			647			1388			1803		
Approach Delay, s/veh	200.7			83.5			90.9			122.5		
Approach LOS	F			F			F			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	46.3	22.0	34.7	23.0	40.3	24.0	32.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	11.0	40.3	11.0	33.7	17.0	34.3	18.0	26.7				
Max Q Clear Time (g_c+I1), s	8.8	30.7	19.0	24.9	21.0	38.3	22.0	29.1				
Green Ext Time (p_c), s	0.0	3.3	0.0	2.8	0.0	0.0	0.0	0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh	129.2											
HCM 7th LOS	F											
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
7: Morrison St & Prosperity Ave
















PM 2044  
09/12/2024

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	489	34	63	494	29	37
Future Volume (vph)	489	34	63	494	29	37
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.991				0.925	
Flt Protected				0.994	0.978	
Satd. Flow (prot)	1846	0	0	1852	1552	0
Flt Permitted				0.994	0.978	
Satd. Flow (perm)	1846	0	0	1852	1552	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	532	37	68	537	32	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	569	0	0	605	72	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	71.5%			ICU Level of Service C		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	1.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	489	34	63	494	29	37
Future Vol, veh/h	489	34	63	494	29	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	532	37	68	537	32	40
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	568	0	1224	550
Stage 1	-	-	-	-	550	-
Stage 2	-	-	-	-	674	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1004	-	198	535
Stage 1	-	-	-	-	578	-
Stage 2	-	-	-	-	506	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1004	-	179	535
Mov Cap-2 Maneuver	-	-	-	-	179	-
Stage 1	-	-	-	-	578	-
Stage 2	-	-	-	-	457	-
Approach	EB		WB		NB	
HCM Control Delay, s/v	0		1		21.83	
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	285	-	-	204	-	
HCM Lane V/C Ratio	0.252	-	-	0.068	-	
HCM Control Delay (s/veh)	21.8	-	-	8.8	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	1	-	-	0.2	-	

Lanes, Volumes, Timings  
8: Prosperity Ave & Oakmore Rd












PM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	358	0	0	276	39	0	0	0	29	0	215
Future Volume (vph)	123	358	0	0	276	39	0	0	0	29	0	215
Ideal Flow (vphpl)	1750	1900	1900	1900	1900	1750	1900	1900	1900	1750	1900	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.983					0.865						
Flt Protected	0.987					0.950						
Satd. Flow (prot)	0	1839	0	0	1831	0	0	0	0	1630	0	0
Flt Permitted	0.987					0.950						
Satd. Flow (perm)	0	1839	0	0	1831	0	0	0	0	1630	0	0
Link Speed (mph)	55					55						
Link Distance (ft)	2108					329						
Travel Time (s)	26.1					4.1						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	134	389	0	0	300	42	0	0	0	32	0	234
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	523	0	0	342	0	0	0	0	32	234	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)	0					12						
Link Offset(ft)	0					0						
Crosswalk Width(ft)	16					16						
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.00	1.00	1.00	1.11	1.00	1.00	1.00	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control	Free					Stop						
Intersection Summary												
Area Type:	Other											
Control Type: Unsignalized												
Intersection Capacity Utilization Err%												
ICU Level of Service H												
Analysis Period (min) 15												

Intersection													
Int Delay, s/veh	4.8												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		4			2					2			
Traffic Vol, veh/h	123	358	0	0	276	39	0	0	0	29	0	215	
Future Vol, veh/h	123	358	0	0	276	39	0	0	0	29	0	215	
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	
Mvmt Flow	134	389	0	0	300	42	0	0	0	32	0	234	
Major/Minor	Major1		Major2				Minor2						
Conflicting Flow All	342	0	-	-	-	0					978	-	321
Stage 1	-	-	-	-	-	-					321	-	-
Stage 2	-	-	-	-	-	-					657	-	-
Critical Hdwy	4.12	-	-	-	-	-					6.42	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-					5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-					5.42	-	-
Follow-up Hdwy	2.218	-	-	-	-	-					3.518	-	3.318
Pot Cap-1 Maneuver	1217	-	0	0	-	-					278	0	720
Stage 1	-	-	0	0	-	-					735	0	-
Stage 2	-	-	0	0	-	-					516	0	-
Platoon blocked, %		-			-	-							
Mov Cap-1 Maneuver	1217	-	-	-	-	-					239	0	720
Mov Cap-2 Maneuver	-	-	-	-	-	-					239	0	-
Stage 1	-	-	-	-	-	-					632	0	-
Stage 2	-	-	-	-	-	-					516	0	-
Approach	EB		WB				SB						
HCM Control Delay, s/v	2.13		0				16.3						
HCM LOS							C						
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1								
Capacity (veh/h)	460	-	-	-	581								
HCM Lane V/C Ratio	0.11	-	-	-	0.457								
HCM Control Delay (s/veh)	8.3	0	-	-	16.3								
HCM Lane LOS	A	A	-	-	C								
HCM 95th %tile Q(veh)	0.4	-	-	-	2.4								

Lanes, Volumes, Timings  
9: Mooney Blvd & Seminole Ave



























PM 2044  
09/12/2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	217	1568	94	289	1905
Future Volume (vph)	0	217	1568	94	289	1905
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	540	0		0	80	
Storage Lanes	0	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.865		0.850		
Flt Protected					0.950	
Satd. Flow (prot)	0	1484	3539	1458	1630	3539
Flt Permitted					0.950	
Satd. Flow (perm)	0	1484	3539	1458	1630	3539
Link Speed (mph)	55		55			55
Link Distance (ft)	1719		2673			2617
Travel Time (s)	21.3		33.1			32.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	236	1704	102	314	2071
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	236	1704	102	314	2071
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	67.4%			ICU Level of Service C		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	7.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗	↗	↗	↗↗
Traffic Vol, veh/h	0	217	1568	94	289	1905
Future Vol, veh/h	0	217	1568	94	289	1905
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	0	80	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	236	1704	102	314	2071
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	852	0	0	1807	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	303	-	-	337	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	303	-	-	337	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s/v	48.62	0		9.12		
HCM LOS	E					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	303	337	-	
HCM Lane V/C Ratio	-	-	0.779	0.933	-	
HCM Control Delay (s/veh)	-	-	48.6	69.2	-	
HCM Lane LOS	-	-	E	F	-	
HCM 95th %tile Q(veh)	-	-	6.1	9.5	-	

Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave













PM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Traffic Volume (vph)	196	1177	315	129	893	101	109	281	72	117	385	93
Future Volume (vph)	196	1177	315	129	893	101	109	281	72	117	385	93
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		135	110		0	90		90	80		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97		1.00				0.98			0.98
Fr't			0.850		0.985				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3473	0	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1408	1630	3473	0	1630	1863	1431	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191		10				191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		841			2671			726			5387	
Travel Time (s)		10.4			33.1			9.0			66.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	213	1279	342	140	971	110	118	305	78	127	418	101
Shared Lane Traffic (%)												
Lane Group Flow (vph)	213	1279	342	140	1081	0	118	305	78	127	418	101
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												



Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

PM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.9	29.9	10.0	28.4		10.0	39.9	39.9	10.0	44.1	44.1
Total Split (s)	20.0	41.9	41.9	16.0	37.9		18.0	41.1	41.1	21.0	44.1	44.1
Total Split (%)	16.7%	34.9%	34.9%	13.3%	31.6%		15.0%	34.3%	34.3%	17.5%	36.8%	36.8%
Maximum Green (s)	14.0	35.9	35.9	10.0	31.9		12.0	35.1	35.1	15.0	38.1	38.1
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Don't Walk (s)		16.9	16.9		15.4			26.9	26.9		31.1	31.1
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effect Green (s)	16.1	38.1	38.1	12.1	34.1		13.0	29.5	29.5	14.6	31.2	31.2
Actuated g/C Ratio	0.15	0.35	0.35	0.11	0.31		0.12	0.27	0.27	0.13	0.28	0.28
v/c Ratio	0.90	1.05	0.56	0.79	1.00		0.62	0.61	0.15	0.59	0.80	0.19
Control Delay (s/veh)	85.6	75.5	17.5	79.4	66.9		62.6	41.3	0.6	58.1	48.6	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	85.6	75.5	17.5	79.4	66.9		62.6	41.3	0.6	58.1	48.6	0.8
LOS	F	E	B	E	E		E	D	A	E	D	A
Approach Delay (s/veh)		65.9			68.3			40.0			43.0	
Approach LOS		E			E			D			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 110.4

Natural Cycle: 115

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay (s/veh): 60.0

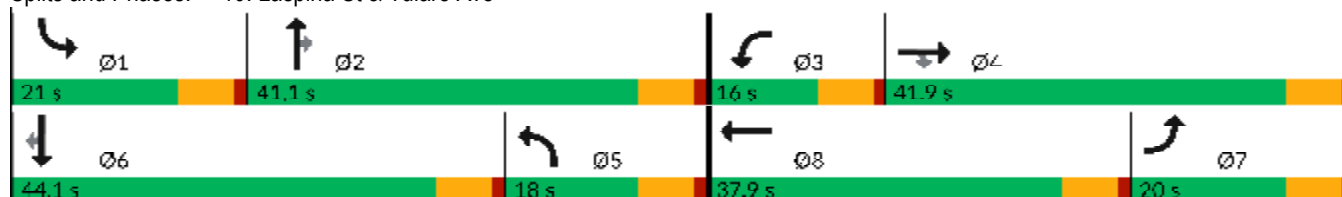
Intersection LOS: E

Intersection Capacity Utilization 82.2%

ICU Level of Service E

Analysis Period (min) 15



























Splits and Phases: 10: Laspina St & Tulare Ave



# HCM 7th Signalized Intersection Summary



























## 10: Laspina St & Tulare Ave

PM 2044  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Traffic Volume (veh/h)	196	1177	315	129	893	101	109	281	72	117	385	93
Future Volume (veh/h)	196	1177	315	129	893	101	109	281	72	117	385	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	213	1279	342	140	971	110	118	305	78	127	418	101
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	246	1263	504	185	1019	115	172	506	388	182	518	397
Arrive On Green	0.15	0.36	0.36	0.11	0.32	0.30	0.10	0.27	0.27	0.11	0.28	0.28
Sat Flow, veh/h	1641	3554	1418	1641	3205	363	1641	1870	1432	1641	1870	1432
Grp Volume(v), veh/h	213	1279	342	140	538	543	118	305	78	127	418	101
Grp Sat Flow(s),veh/h/ln	1641	1777	1418	1641	1777	1791	1641	1870	1432	1641	1870	1432
Q Serve(g_s), s	13.5	37.9	14.5	8.8	31.6	31.6	7.4	15.2	4.5	8.0	22.2	5.8
Cycle Q Clear(g_c), s	13.5	37.9	14.5	8.8	31.6	31.6	7.4	15.2	4.5	8.0	22.2	5.8
Prop In Lane	1.00		1.00	1.00		0.20	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	246	1263	504	185	565	570	172	506	388	182	518	397
V/C Ratio(X)	0.87	1.01	0.68	0.76	0.95	0.95	0.69	0.60	0.20	0.70	0.81	0.25
Avail Cap(c_a), veh/h	246	1263	504	185	565	570	215	651	498	262	703	539
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.3	34.4	12.8	45.9	35.6	35.8	46.0	33.9	30.0	45.7	35.9	30.0
Incr Delay (d2), s/veh	25.9	28.5	3.7	16.5	26.5	26.4	6.4	1.2	0.3	4.7	5.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.0	19.8	4.4	4.3	16.7	16.9	3.2	6.6	1.5	3.3	10.1	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	70.2	62.8	16.5	62.4	62.0	62.2	52.4	35.0	30.2	50.4	40.9	30.3
LnGrp LOS	E	F	B	E	E	E	D	D	C	D	D	C
Approach Vol, veh/h	1834			1221			501			646		
Approach Delay, s/veh	55.0			62.2			38.4			41.1		
Approach LOS	E			E			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.9	32.9	16.0	41.9	15.2	33.6	20.0	37.9				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	35.1	10.0	35.9	12.0	38.1	14.0	31.9				
Max Q Clear Time (g_c+I1), s	10.0	17.2	10.8	39.9	9.4	24.2	15.5	33.6				
Green Ext Time (p_c), s	0.1	1.2	0.0	0.0	0.1	1.6	0.0	0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh	53.0											
HCM 7th LOS	D											













Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

PM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 				
Traffic Volume (vph)	354	802	346	114	612	359	175	869	104	360	901	465
Future Volume (vph)	354	802	346	114	612	359	175	869	104	360	901	465
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	420		185	125		125	80		0	475		475
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98		1.00				0.98
Frt			0.850			0.850		0.984				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3539	1458	1630	3471	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1412	1630	3539	1430	1630	3471	0	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			295			277			10			349
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2671			2887			1662			2673	
Travel Time (s)		33.1			35.8			20.6			33.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	385	872	376	124	665	390	190	945	113	391	979	505
Shared Lane Traffic (%)												
Lane Group Flow (vph)	385	872	376	124	665	390	190	1058	0	391	979	505
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

PM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	37.0	37.0	10.0	37.0	37.0	10.0	39.9		10.0	42.7	42.7
Total Split (s)	20.0	40.0	40.0	17.0	37.0	37.0	19.0	32.0		31.0	44.0	44.0
Total Split (%)	16.7%	33.3%	33.3%	14.2%	30.8%	30.8%	15.8%	26.7%		25.8%	36.7%	36.7%
Maximum Green (s)	14.0	34.0	34.0	11.0	31.0	31.0	13.0	26.0		25.0	38.0	38.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Don't Walk (s)		24.0	24.0		24.0	24.0		26.9			29.7	29.7
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effect Green (s)	16.0	34.3	34.3	12.6	30.9	30.9	16.5	29.5		27.1	40.1	40.1
Actuated g/C Ratio	0.13	0.29	0.29	0.11	0.26	0.26	0.14	0.25		0.23	0.34	0.34
v/c Ratio	1.77	0.86	0.61	0.73	0.73	0.68	0.85	1.22		1.06	1.57	0.71
Control Delay (s/veh)	393.4	50.2	13.4	76.6	46.0	18.3	81.9	149.5		109.0	293.0	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	393.4	50.2	13.4	76.6	46.0	18.3	81.9	149.5		109.0	293.0	17.0
LOS	F	D	B	E	D	B	F	F		F	F	B
Approach Delay (s/veh)		122.6			40.0			139.2			180.3	
Approach LOS		F			D			F			F	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 119.5

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.77

Intersection Signal Delay (s/veh): 127.9

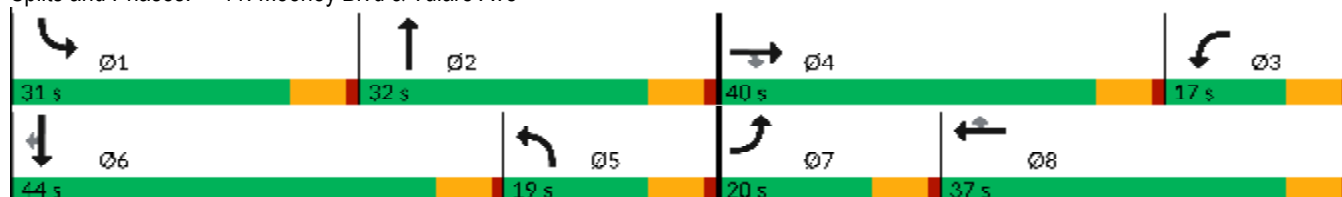
Intersection LOS: F

Intersection Capacity Utilization 110.9%

ICU Level of Service H

Analysis Period (min) 15




























Splits and Phases: 11: Mooney Blvd & Tulare Ave



# HCM 7th Signalized Intersection Summary

















## 11: Mooney Blvd & Tulare Ave

PM 2044  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (veh/h)	354	802	346	114	612	359	175	869	104	360	901	465
Future Volume (veh/h)	354	802	346	114	612	359	175	869	104	360	901	465
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	385	872	376	124	665	390	190	945	113	391	979	505
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	219	1050	418	185	977	394	205	743	89	369	623	478
Arrive On Green	0.13	0.30	0.30	0.11	0.28	0.28	0.13	0.23	0.22	0.22	0.33	0.33
Sat Flow, veh/h	1641	3554	1415	1641	3554	1432	1641	3182	380	1641	1870	1434
Grp Volume(v), veh/h	385	872	376	124	665	390	190	528	530	391	979	505
Grp Sat Flow(s),veh/h/ln	1641	1777	1415	1641	1777	1432	1641	1777	1786	1641	1870	1434
Q Serve(g_s), s	16.0	27.5	30.6	8.7	20.0	32.6	13.8	28.0	28.0	27.0	40.0	26.0
Cycle Q Clear(g_c), s	16.0	27.5	30.6	8.7	20.0	32.6	13.8	28.0	28.0	27.0	40.0	26.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	219	1050	418	185	977	394	205	415	417	369	623	478
V/C Ratio(X)	1.76	0.83	0.90	0.67	0.68	0.99	0.93	1.27	1.27	1.06	1.57	1.06
Avail Cap(c_a), veh/h	219	1066	424	185	977	394	205	415	417	369	623	478
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.0	39.5	40.6	51.1	38.8	43.3	52.0	46.0	46.2	46.5	40.0	16.9
Incr Delay (d2), s/veh	360.1	5.6	21.5	8.9	1.9	42.6	42.7	140.4	140.5	63.3	264.3	56.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	28.2	12.1	12.5	3.9	8.5	15.5	7.8	27.8	28.0	16.9	62.8	15.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	412.1	45.1	62.0	60.0	40.7	86.0	94.7	186.4	186.7	109.8	304.3	73.8
LnGrp LOS	F	D	E	E	D	F	F	F	F	F	F	F
Approach Vol, veh/h	1633		1179				1248		1875			
Approach Delay, s/veh	135.5		57.7				172.5		201.7			
Approach LOS	F		E				F		F			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	31.0	32.0	17.6	39.4	19.0	44.0	20.0	37.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	25.0	26.0	11.0	34.0	13.0	38.0	14.0	31.0				
Max Q Clear Time (g_c+I1), s	29.0	30.0	10.7	32.6	15.8	42.0	18.0	34.6				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh	148.7											
HCM 7th LOS	F											
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
12: Morrison St & Tulare Ave

PM 2044  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	835	161	89	828	7	99	37	49	0	39	46
Future Volume (vph)	22	835	161	89	828	7	99	37	49	0	39	46
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.979			0.999			0.964			0.927	
Flt Protected		0.999			0.995			0.974				
Satd. Flow (prot)	0	1822	0	0	1852	0	0	1749	0	0	1727	0
Flt Permitted		0.999			0.995			0.974				
Satd. Flow (perm)	0	1822	0	0	1852	0	0	1749	0	0	1727	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	908	175	97	900	8	108	40	53	0	42	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1107	0	0	1005	0	0	201	0	0	92	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	
Intersection Summary												
Area Type:	Other											
Control Type:	Roundabout											
Intersection Capacity Utilization	114.5%						ICU Level of Service H					
Analysis Period (min)	15											























Intersection				
Intersection Delay, s/veh	28.0			
Intersection LOS	D			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	1107	1005	201	92
Demand Flow Rate, veh/h	1129	1025	205	94
Vehicles Circulating, veh/h	142	175	950	1127
Vehicles Exiting, veh/h	1079	980	321	73
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	33.8	26.1	13.4	11.8
Approach LOS	D	D	B	B
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	1129	1025	205	94
Cap Entry Lane, veh/h	1194	1154	524	437
Entry HV Adj Factor	0.980	0.980	0.981	0.980
Flow Entry, veh/h	1107	1005	201	92
Cap Entry, veh/h	1170	1132	514	429
V/C Ratio	0.946	0.888	0.391	0.215
Control Delay, s/veh	33.8	26.1	13.4	11.8
LOS	D	D	B	B
95th %tile Queue, veh	17	13	2	1

















Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

PM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	249	191	203	32	203	7	145	1130	32	14	1375	262
Future Volume (vph)	249	191	203	32	203	7	145	1130	32	14	1375	262
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.995			0.996			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1852	0	1630	3522	0	1630	3437	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1852	0	1630	3522	0	1630	3437	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			221		2			3			20	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	271	208	221	35	221	8	158	1228	35	15	1495	285
Shared Lane Traffic (%)												
Lane Group Flow (vph)	271	208	221	35	229	0	158	1263	0	15	1780	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

PM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	20.0	48.7	48.7	10.3	39.0		14.0	51.5		9.5	47.0	
Total Split (%)	16.7%	40.6%	40.6%	8.6%	32.5%		11.7%	42.9%		7.9%	39.2%	
Maximum Green (s)	14.5	43.2	43.2	4.8	33.5		8.5	46.0		4.0	41.5	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Don't Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effect Green (s)	16.1	28.8	28.8	12.1	20.5		10.0	53.6		5.5	43.2	
Actuated g/C Ratio	0.15	0.27	0.27	0.11	0.19		0.09	0.51		0.05	0.41	
v/c Ratio	1.10	0.41	0.40	0.19	0.64		1.03	0.71		0.18	1.26	
Control Delay (s/veh)	129.3	36.8	6.8	45.0	46.8		128.2	25.0		55.9	151.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	129.3	36.8	6.8	45.0	46.8		128.2	25.0		55.9	151.8	
LOS	F	D	A	D	D		F	C		E	F	
Approach Delay (s/veh)		63.1			46.6			36.4			151.0	
Approach LOS		E			D			D			F	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 105.8

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.26

Intersection Signal Delay (s/veh): 90.7

Intersection LOS: F

Intersection Capacity Utilization 96.9%

ICU Level of Service F

Analysis Period (min) 15























Splits and Phases: 1: Mooney Blvd & Cartmill Ave



# HCM 7th Signalized Intersection Summary

## 1: Mooney Blvd & Cartmill Ave

PM 2044+Project  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	249	191	203	32	203	7	145	1130	32	14	1375	262
Future Volume (veh/h)	249	191	203	32	203	7	145	1130	32	14	1375	262
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	271	208	221	35	221	8	158	1228	35	15	1495	285
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	254	345	263	243	318	12	159	1395	40	192	1238	230
Arrive On Green	0.15	0.18	0.18	0.15	0.18	0.16	0.10	0.40	0.38	0.12	0.42	0.40
Sat Flow, veh/h	1641	1870	1427	1641	1792	65	1641	3525	100	1641	2976	553
Grp Volume(v), veh/h	271	208	221	35	0	229	158	619	644	15	876	904
Grp Sat Flow(s),veh/h/ln	1641	1870	1427	1641	0	1857	1641	1777	1849	1641	1777	1752
Q Serve(g_s), s	16.0	10.5	11.6	1.9	0.0	12.0	10.0	33.4	33.4	0.8	43.0	43.0
Cycle Q Clear(g_c), s	16.0	10.5	11.6	1.9	0.0	12.0	10.0	33.4	33.4	0.8	43.0	43.0
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.05	1.00		0.32
Lane Grp Cap(c), veh/h	254	345	263	243	0	330	159	703	732	192	739	729
V/C Ratio(X)	1.07	0.60	0.84	0.14	0.00	0.69	1.00	0.88	0.88	0.08	1.19	1.24
Avail Cap(c_a), veh/h	254	809	617	243	0	629	159	816	850	192	739	729
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.7	38.7	22.9	38.3	0.0	39.9	46.7	29.0	29.0	40.7	30.2	30.4
Incr Delay (d2), s/veh	75.4	1.7	7.1	0.3	0.0	2.6	70.0	9.8	9.6	0.2	97.0	119.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.4	4.7	4.1	0.7	0.0	5.4	6.9	14.6	15.1	0.3	36.1	40.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	119.1	40.4	30.0	38.6	0.0	42.5	116.7	38.8	38.6	40.8	127.2	149.8
LnGrp LOS	F	D	C	D		D	F	D	D	D	F	F
Approach Vol, veh/h	700			264			1421			1795		
Approach Delay, s/veh	67.6			42.0			47.4			137.9		
Approach LOS	E			D			D			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.1	44.9	19.3	23.1	14.0	47.0	20.0	22.4				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	4.0	46.0	4.8	43.2	8.5	41.5	14.5	33.5				
Max Q Clear Time (g_c+I1), s	2.8	35.4	3.9	13.6	12.0	45.0	18.0	14.0				
Green Ext Time (p_c), s	0.0	4.0	0.0	1.6	0.0	0.0	0.0	0.7				
Intersection Summary												
HCM 7th Control Delay, s/veh	89.3											
HCM 7th LOS	F											

# Lanes, Volumes, Timings

## 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

PM 2044+Project  
09/12/2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (vph)	0	983	985	0	331	129
Future Volume (vph)	0	983	985	0	331	129
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Fr t						0.850
Fl t Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	1630	1458
Fl t Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	1630	1458
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						59
Link Speed (mph)		55	55		55	
Link Distance (ft)		349	727		300	
Travel Time (s)		4.3	9.0		3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1068	1071	0	360	140
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1068	1071	0	360	140
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors		1	1		1	1
Detector Template						
Leading Detector (ft)		50	50		50	50
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		50	50		50	50
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		4.0	4.0		4.0	4.0
Minimum Split (s)		24.0	24.0		24.0	24.0
Total Split (s)		53.0	53.0		47.0	47.0
Total Split (%)		53.0%	53.0%		47.0%	47.0%
Maximum Green (s)		47.0	47.0		41.0	41.0
Yellow Time (s)		5.0	5.0		5.0	5.0

# Lanes, Volumes, Timings

## 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

PM 2044+Project  
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Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		None	None		Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effect Green (s)		26.7	26.7		21.4	21.4
Actuated g/C Ratio		0.47	0.47		0.38	0.38
v/c Ratio		0.64	0.64		0.58	0.24
Control Delay (s/veh)		14.0	14.1		19.5	9.7
Queue Delay		0.0	0.0		0.0	0.0
Total Delay (s/veh)		14.0	14.1		19.5	9.7
LOS		B	B		B	A
Approach Delay (s/veh)		14.0	14.1		16.8	
Approach LOS		B	B		B	

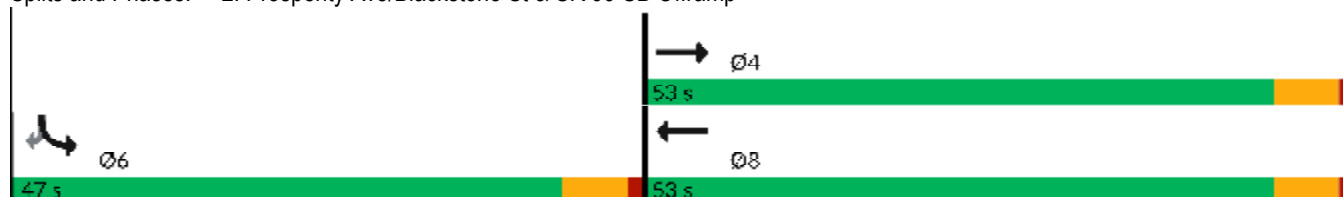
### Intersection Summary

Area Type: Other  
Cycle Length: 100  
Actuated Cycle Length: 56.7  
Natural Cycle: 50  
Control Type: Actuated-Uncoordinated  
Maximum v/c Ratio: 0.64  
Intersection Signal Delay (s/veh): 14.6  
Intersection Capacity Utilization 53.8%  
Analysis Period (min) 15

Intersection LOS: B

ICU Level of Service A

Splits and Phases: 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp



# HCM 7th Signalized Intersection Summary 2: Prosperity Ave/Blackstone St & SR 99 SB Offramp

PM 2044+Project  
09/12/2024


























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Volume (veh/h)	0	983	985	0	331	129
Future Volume (veh/h)	0	983	985	0	331	129
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1723	1723
Adj Flow Rate, veh/h	0	1068	1071	0	360	140
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	1654	1654	0	549	489
Arrive On Green	0.00	0.47	0.47	0.00	0.33	0.33
Sat Flow, veh/h	0	3741	3741	0	1641	1460
Grp Volume(v), veh/h	0	1068	1071	0	360	140
Grp Sat Flow(s),veh/h/ln	0	1777	1777	0	1641	1460
Q Serve(g_s), s	0.0	9.2	9.2	0.0	7.5	2.8
Cycle Q Clear(g_c), s	0.0	9.2	9.2	0.0	7.5	2.8
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	1654	1654	0	549	489
V/C Ratio(X)	0.00	0.65	0.65	0.00	0.66	0.29
Avail Cap(c_a), veh/h	0	4348	4348	0	1762	1568
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	8.2	8.2	0.0	11.3	9.8
Incr Delay (d2), s/veh	0.0	0.4	0.4	0.0	1.3	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.6	1.6	0.0	1.8	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	0.0	8.6	8.6	0.0	12.7	10.1
LnGrp LOS		A	A		B	B
Approach Vol, veh/h		1068	1071		500	
Approach Delay, s/veh		8.6	8.6		12.0	
Approach LOS		A	A		B	
Timer - Assigned Phs				4	6	8
Phs Duration (G+Y+Rc), s				22.6	17.4	22.6
Change Period (Y+Rc), s				6.0	6.0	6.0
Max Green Setting (Gmax), s				47.0	41.0	47.0
Max Q Clear Time (g_c+I1), s				11.2	9.5	11.2
Green Ext Time (p_c), s				5.4	1.9	5.4
<b>Intersection Summary</b>						
HCM 7th Control Delay, s/veh			9.3			
HCM 7th LOS			A			

# Lanes, Volumes, Timings

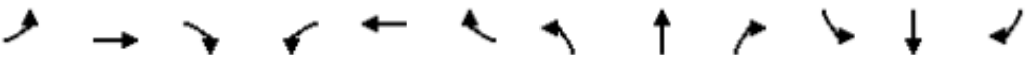
## 3: Blackstone Ave/Blackstone St & Prosperity Ave

PM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	27	9	1012	36	986	0	49	549	701	150	0
Future Volume (vph)	3	27	9	1012	36	986	0	49	549	701	150	0
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	30		0	335		310	55		90	240		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor		0.99				0.98						
Frt		0.962				0.850			0.850			
Flt Protected	0.950			0.950	0.956					0.950		
Satd. Flow (prot)	1630	1782	0	1548	1692	1458	1716	1863	1458	3162	1863	0
Flt Permitted	0.950			0.950	0.805					0.950		
Satd. Flow (perm)	1630	1782	0	1548	1425	1427	1716	1863	1458	3162	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				975			597			
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		98			1229			643			727	
Travel Time (s)		1.2			15.2			8.0			9.0	
Confl. Peds. (#/hr)			5			5						
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	29	10	1100	39	1072	0	53	597	762	163	0
Shared Lane Traffic (%)				48%								
Lane Group Flow (vph)	3	39	0	572	567	1072	0	53	597	762	163	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												

Lanes, Volumes, Timings  
3: Blackstone Ave/Blackstone St & Prosperity Ave

PM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	24.1		10.0	24.1	24.1	10.0	24.0	24.0	10.0	24.0	
Total Split (s)	13.0	27.1		26.9	41.0	41.0	10.0	24.0	24.0	22.0	36.0	
Total Split (%)	13.0%	27.1%		26.9%	41.0%	41.0%	10.0%	24.0%	24.0%	22.0%	36.0%	
Maximum Green (s)	7.0	21.1		20.9	35.0	35.0	4.0	18.0	18.0	16.0	30.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Don't Walk (s)		11.1			11.1	11.1		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		5			5	5		0	0		0	
Act Effect Green (s)	7.8	10.4		30.1	30.1	37.4		12.1	12.1	18.2	34.3	
Actuated g/C Ratio	0.10	0.13		0.37	0.37	0.46		0.15	0.15	0.22	0.42	
v/c Ratio	0.02	0.17		1.01	0.91	0.91		0.19	0.83	1.08	0.21	
Control Delay (s/veh)	38.7	27.7		71.6	51.0	15.9		32.6	13.9	92.0	16.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay (s/veh)	38.7	27.7		71.6	51.0	15.9		32.6	13.9	92.0	16.4	
LOS	D	C		E	D	B		C	B	F	B	
Approach Delay (s/veh)		28.5			39.3			15.4			78.7	
Approach LOS		C			D			B			E	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 81.9

Natural Cycle: 140

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.08

Intersection Signal Delay (s/veh): 44.7

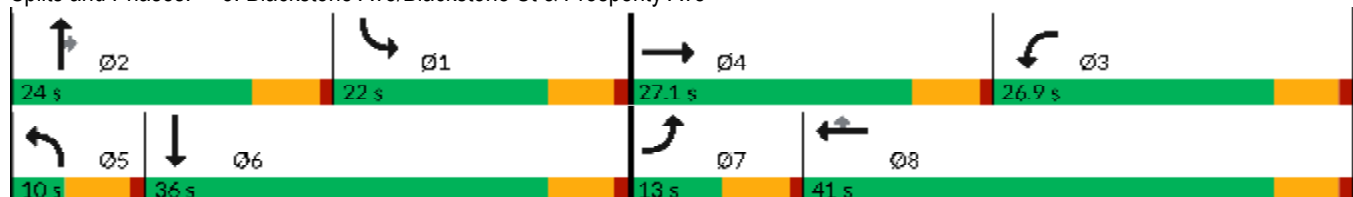
Intersection LOS: D

Intersection Capacity Utilization 85.3%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 3: Blackstone Ave/Blackstone St & Prosperity Ave




























# HCM 7th Signalized Intersection Summary

## 3: Blackstone Ave/Blackstone St & Prosperity Ave

























PM 2044+Project

09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	27	9	1012	36	986	0	49	549	701	150	0
Future Volume (veh/h)	3	27	9	1012	36	986	0	49	549	701	150	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	0
Adj Flow Rate, veh/h	3	29	10	1128	0	1072	0	53	597	762	163	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	0
Cap, veh/h	44	118	41	889	0	479	2	443	346	678	930	0
Arrive On Green	0.03	0.09	0.07	0.27	0.00	0.33	0.00	0.24	0.24	0.21	0.50	0.00
Sat Flow, veh/h	1641	1313	453	3281	0	1434	1641	1870	1460	3183	1870	0
Grp Volume(v), veh/h	3	0	39	1128	0	1072	0	53	597	762	163	0
Grp Sat Flow(s),veh/h/ln	1641	0	1766	1641	0	1434	1641	1870	1460	1591	1870	0
Q Serve(g_s), s	0.2	0.0	1.7	22.9	0.0	13.2	0.0	1.9	20.0	18.0	4.1	0.0
Cycle Q Clear(g_c), s	0.2	0.0	1.7	22.9	0.0	13.2	0.0	1.9	20.0	18.0	4.1	0.0
Prop In Lane	1.00		0.26	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	44	0	159	889	0	479	2	443	346	678	930	0
V/C Ratio(X)	0.07	0.00	0.25	1.27	0.00	2.24	0.00	0.12	1.73	1.12	0.18	0.00
Avail Cap(c_a), veh/h	175	0	483	889	0	628	117	443	346	678	930	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	40.1	0.0	36.0	30.8	0.0	6.1	0.0	25.3	32.2	33.2	11.7	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.8	129.7	0.0	563.9	0.0	0.1	339.3	73.9	0.1	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.7	24.0	0.0	81.4	0.0	0.8	38.9	13.2	1.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.7	0.0	36.8	160.5	0.0	570.0	0.0	25.4	371.6	107.1	11.8	0.0
LnGrp LOS	D		D	F		F		C	F	F	B	
Approach Vol, veh/h	42			2200			650			925		
Approach Delay, s/veh	37.1			360.0			343.3			90.3		
Approach LOS	D			F			F			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.0	24.0	26.9	11.6	0.0	46.0	6.3	32.2				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	16.0	18.0	20.9	21.1	4.0	30.0	7.0	35.0				
Max Q Clear Time (g_c+I1), s	20.0	22.0	24.9	3.7	0.0	6.1	2.2	15.2				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.1	0.0	0.5	0.0	6.7				
Intersection Summary												
HCM 7th Control Delay, s/veh	288.3											
HCM 7th LOS	F											
Notes												
User approved volume balancing among the lanes for turning movement.												













Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

PM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	728	1095	181	156	1170	310	173	353	210	287	126	461
Future Volume (vph)	728	1095	181	156	1170	310	173	353	210	287	126	461
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	270		0	155		85	155		0	200		205
Storage Lanes	2		1	1		1	1		0	2		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	0.95	0.97	1.00	0.88
Ped Bike Factor			0.97			0.98		0.99				0.97
Fr't			0.850			0.850		0.944				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	1630	5085	1458	1630	3318	0	3162	1863	2567
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1410	1630	5085	1433	1630	3318	0	3162	1863	2489
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			154			136			94			501
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1229			2636			362			5336	
Travel Time (s)		15.2			32.7			4.5			66.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	791	1190	197	170	1272	337	188	384	228	312	137	501
Shared Lane Traffic (%)												
Lane Group Flow (vph)	791	1190	197	170	1272	337	188	612	0	312	137	501
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
4: Hillman St & Prosperity Ave

PM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	32.7	32.7	10.0	45.6	45.6	10.0	47.0		10.0	49.9	49.9
Total Split (s)	31.9	43.1	43.1	35.9	47.1	47.1	11.0	31.0		10.0	30.0	30.0
Total Split (%)	26.6%	35.9%	35.9%	29.9%	39.3%	39.3%	9.2%	25.8%		8.3%	25.0%	25.0%
Maximum Green (s)	25.9	37.1	37.1	29.9	41.1	41.1	5.0	25.0		4.0	24.0	24.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Don't Walk (s)		19.7	19.7		32.6	32.6		34.0			36.9	36.9
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effect Green (s)	28.3	46.5	46.5	19.6	37.8	37.8	7.1	27.1		6.1	26.0	26.0
Actuated g/C Ratio	0.25	0.40	0.40	0.17	0.33	0.33	0.06	0.23		0.05	0.23	0.23
v/c Ratio	1.02	0.84	0.30	0.62	0.77	0.60	1.88	0.72		1.88	0.33	0.53
Control Delay (s/veh)	81.5	39.1	9.5	55.5	39.2	24.8	461.6	39.3		446.0	39.5	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	81.5	39.1	9.5	55.5	39.2	24.8	461.6	39.3		446.0	39.5	5.1
LOS	F	D	A	E	D	C	F	D		F	D	A
Approach Delay (s/veh)		51.9			38.0			138.5			154.9	
Approach LOS		D			D			F			F	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 115.5

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.88

Intersection Signal Delay (s/veh): 76.8

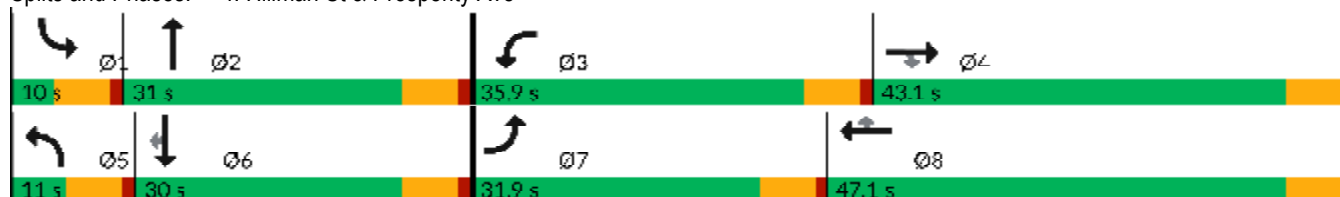
Intersection LOS: E

Intersection Capacity Utilization 88.3%

ICU Level of Service E

Analysis Period (min) 15

























Splits and Phases: 4: Hillman St & Prosperity Ave



# HCM 7th Signalized Intersection Summary





























## 4: Hillman St & Prosperity Ave

PM 2044+Project  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	728	1095	181	156	1170	310	173	353	210	287	126	461
Future Volume (veh/h)	728	1095	181	156	1170	310	173	353	210	287	126	461
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	791	1190	197	170	1272	337	188	384	228	312	137	501
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	782	1530	611	227	1650	463	101	509	297	168	428	568
Arrive On Green	0.25	0.43	0.43	0.14	0.32	0.32	0.06	0.24	0.22	0.05	0.23	0.23
Sat Flow, veh/h	3183	3554	1420	1641	5106	1434	1641	2140	1251	3183	1870	2482
Grp Volume(v), veh/h	791	1190	197	170	1272	337	188	318	294	312	137	501
Grp Sat Flow(s),veh/h/ln	1591	1777	1420	1641	1702	1434	1641	1777	1614	1591	1870	1241
Q Serve(g_s), s	27.9	32.6	10.4	11.3	25.5	23.6	7.0	18.9	19.4	6.0	6.9	22.2
Cycle Q Clear(g_c), s	27.9	32.6	10.4	11.3	25.5	23.6	7.0	18.9	19.4	6.0	6.9	22.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.77	1.00		1.00
Lane Grp Cap(c), veh/h	782	1530	611	227	1650	463	101	422	384	168	428	568
V/C Ratio(X)	1.01	0.78	0.32	0.75	0.77	0.73	1.86	0.75	0.77	1.86	0.32	0.88
Avail Cap(c_a), veh/h	782	1530	611	461	1937	544	101	422	384	168	428	568
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.9	27.7	21.4	47.1	34.7	34.0	53.3	40.2	41.1	53.8	36.5	42.3
Incr Delay (d2), s/veh	35.2	2.6	0.3	4.9	1.7	4.0	422.3	7.4	9.0	407.3	0.4	15.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.1	13.1	3.2	4.7	10.0	8.2	14.6	8.6	8.3	11.8	3.1	7.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	78.1	30.3	21.7	52.0	36.3	38.1	475.6	47.7	50.2	461.1	36.9	57.4
LnGrp LOS	F	C	C	D	D	D	F	D	D	F	D	E
Approach Vol, veh/h	2178				1779				800		950	
Approach Delay, s/veh	46.9				38.1				149.1		187.0	
Approach LOS	D				D				F		F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	31.0	19.7	52.9	11.0	30.0	31.9	40.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	4.0	25.0	29.9	37.1	5.0	24.0	25.9	41.1				
Max Q Clear Time (g_c+l1), s	8.0	21.4	13.3	34.6	9.0	24.2	29.9	27.5				
Green Ext Time (p_c), s	0.0	0.9	0.5	1.6	0.0	0.0	0.0	6.4				
Intersection Summary												
HCM 7th Control Delay, s/veh	81.8											
HCM 7th LOS	F											
Notes												
User approved pedestrian interval to be less than phase max green.												













Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

PM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  						 	
Traffic Volume (vph)	186	1159	455	118	1012	80	220	164	108	126	221	76
Future Volume (vph)	186	1159	455	118	1012	80	220	164	108	126	221	76
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	235		115	230		100	100		100	160		100
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96			0.97			0.97			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	5085	1458	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1405	1630	5085	1410	1630	1863	1415	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			191			191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2636			2650			5387			713	
Travel Time (s)		32.7			32.9			66.8			8.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	202	1260	495	128	1100	87	239	178	117	137	240	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	202	1260	495	128	1100	87	239	178	117	137	240	83
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
5: Laspina St & Prosperity Ave

PM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	27.0	27.0	10.0	34.1	34.1	10.0	45.6	45.6	10.0	45.6	45.6
Total Split (s)	16.0	38.4	38.4	13.0	35.4	35.4	23.0	47.6	47.6	21.0	45.6	45.6
Total Split (%)	13.3%	32.0%	32.0%	10.8%	29.5%	29.5%	19.2%	39.7%	39.7%	17.5%	38.0%	38.0%
Maximum Green (s)	10.0	32.4	32.4	7.0	29.4	29.4	17.0	41.6	41.6	15.0	39.6	39.6
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		14.0	14.0		21.1	21.1		32.6	32.6		32.6	32.6
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effect Green (s)	12.1	34.7	34.7	9.1	31.7	31.7	18.9	19.8	19.8	21.3	22.2	22.2
Actuated g/C Ratio	0.12	0.34	0.34	0.09	0.31	0.31	0.19	0.20	0.20	0.21	0.22	0.22
v/c Ratio	1.04	1.04	0.82	0.88	0.69	0.15	0.78	0.49	0.27	0.40	0.59	0.18
Control Delay (s/veh)	120.2	70.1	31.8	95.8	34.4	0.6	59.6	39.6	1.6	41.1	40.6	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	120.2	70.1	31.8	95.8	34.4	0.6	59.6	39.6	1.6	41.1	40.6	0.8
LOS	F	E	C	F	C	A	E	D	A	D	D	A
Approach Delay (s/veh)		65.6			38.2			40.3			33.6	
Approach LOS		E			D			D			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 101.1

Natural Cycle: 130

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.04

Intersection Signal Delay (s/veh): 50.5

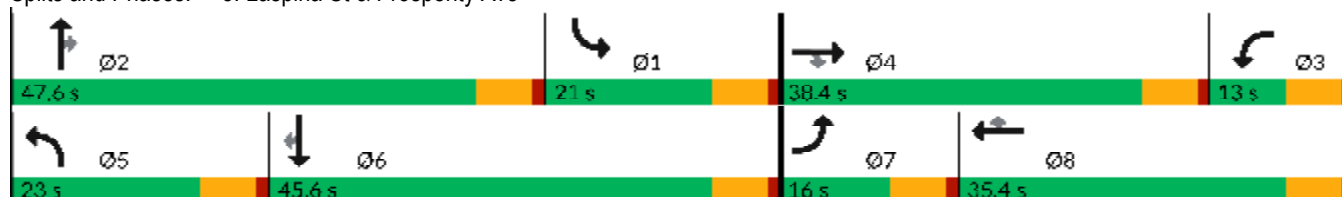
Intersection LOS: D

Intersection Capacity Utilization 80.6%

ICU Level of Service D



























Analysis Period (min) 15

Splits and Phases: 5: Laspina St & Prosperity Ave



# HCM 7th Signalized Intersection Summary 5: Laspina St & Prosperity Ave
























PM 2044+Project  
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  							
Traffic Volume (veh/h)	186	1159	455	118	1012	80	220	164	108	126	221	76
Future Volume (veh/h)	186	1159	455	118	1012	80	220	164	108	126	221	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.96	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	202	1260	495	128	1100	87	239	178	117	137	240	83
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	204	1265	505	153	1659	460	298	330	248	343	381	291
Arrive On Green	0.12	0.36	0.36	0.09	0.32	0.32	0.18	0.18	0.18	0.21	0.20	0.20
Sat Flow, veh/h	1641	3554	1418	1641	5106	1416	1641	1870	1404	1641	1870	1429
Grp Volume(v), veh/h	202	1260	495	128	1100	87	239	178	117	137	240	83
Grp Sat Flow(s),veh/h/ln	1641	1777	1418	1641	1702	1416	1641	1870	1404	1641	1870	1429
Q Serve(g_s), s	11.9	34.2	17.5	7.4	17.9	2.2	13.5	8.4	7.2	7.0	11.3	4.7
Cycle Q Clear(g_c), s	11.9	34.2	17.5	7.4	17.9	2.2	13.5	8.4	7.2	7.0	11.3	4.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	204	1265	505	153	1659	460	298	330	248	343	381	291
V/C Ratio(X)	0.99	1.00	0.98	0.84	0.66	0.19	0.80	0.54	0.47	0.40	0.63	0.29
Avail Cap(c_a), veh/h	204	1265	505	153	1659	460	323	844	634	343	805	615
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.3	31.1	8.5	43.1	28.1	6.0	37.9	36.2	35.8	33.0	35.2	32.6
Incr Delay (d2), s/veh	60.5	24.3	35.0	31.6	1.0	0.2	12.6	1.4	1.4	0.8	1.7	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.9	17.2	8.7	4.2	6.7	1.3	6.1	3.7	2.4	2.6	5.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	102.8	55.4	43.5	74.7	29.1	6.2	50.5	37.6	37.2	33.7	36.9	33.1
LnGrp LOS	F	E	D	E	C	A	D	D	D	C	D	C
Approach Vol, veh/h	1957			1315			534			460		
Approach Delay, s/veh	57.3			32.0			43.3			35.3		
Approach LOS	E			C			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	24.2	21.0	13.0	38.4	21.6	23.7	16.0	35.4				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	41.6	7.0	32.4	17.0	39.6	10.0	29.4				
Max Q Clear Time (g_c+I1), s	9.0	10.4	9.4	36.2	15.5	13.3	13.9	19.9				
Green Ext Time (p_c), s	0.2	1.1	0.0	0.0	0.1	1.1	0.0	3.8				
Intersection Summary												
HCM 7th Control Delay, s/veh	45.4											
HCM 7th LOS	D											



Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave


PM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	353	464	513	234	411	68	329	881	87	90	1193	375
Future Volume (vph)	353	464	513	234	411	68	329	881	87	90	1193	375
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98		1.00				0.97			0.98
Frt			0.850		0.979				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1818	0	1630	3539	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1432	1630	1818	0	1630	3539	1409	1630	3539	1426
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			340		7				191			283
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2617			5285	
Travel Time (s)		32.9			36.1			32.4			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	384	504	558	254	447	74	358	958	95	98	1297	408
Shared Lane Traffic (%)												
Lane Group Flow (vph)	384	504	558	254	521	0	358	958	95	98	1297	408
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												



Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

PM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	24.0	39.7	39.7	17.0	32.7		23.0	46.3	46.3	17.0	40.3	40.3
Total Split (%)	20.0%	33.1%	33.1%	14.2%	27.3%		19.2%	38.6%	38.6%	14.2%	33.6%	33.6%
Maximum Green (s)	18.0	33.7	33.7	11.0	26.7		17.0	40.3	40.3	11.0	34.3	34.3
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Don't Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effect Green (s)	20.0	35.7	35.7	13.6	29.3		19.0	42.3	42.3	13.0	36.3	36.3
Actuated g/C Ratio	0.17	0.30	0.30	0.11	0.24		0.16	0.35	0.35	0.11	0.30	0.30
v/c Ratio	1.42	0.91	0.84	1.39	1.17		1.39	0.77	0.15	0.56	1.22	0.65
Control Delay (s/veh)	248.1	63.5	27.8	244.5	137.2		238.1	40.1	0.5	64.4	144.0	16.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	248.1	63.5	27.8	244.5	137.2		238.1	40.1	0.5	64.4	144.0	16.5
LOS	F	E	C	F	F		F	D	A	E	F	B
Approach Delay (s/veh)		98.8			172.4			87.7			110.8	
Approach LOS		F			F			F			F	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120.6

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.42

Intersection Signal Delay (s/veh): 110.4

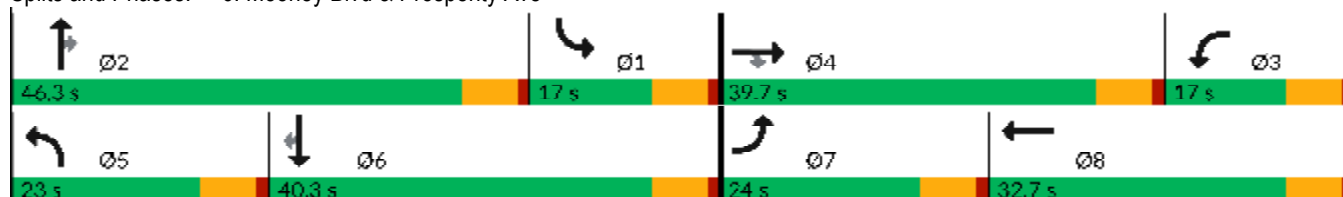
Intersection LOS: F

Intersection Capacity Utilization 113.2%

ICU Level of Service H

Analysis Period (min) 15
























Splits and Phases: 6: Mooney Blvd & Prosperity Ave



# HCM 7th Signalized Intersection Summary










## 6: Mooney Blvd & Prosperity Ave




PM 2044+Project  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	353	464	513	234	411	68	329	881	87	90	1193	375
Future Volume (veh/h)	353	464	513	234	411	68	329	881	87	90	1193	375
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	384	504	558	254	447	74	358	958	95	98	1297	408
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	273	553	424	180	373	62	260	1253	500	178	1075	434
Arrive On Green	0.17	0.30	0.30	0.11	0.24	0.22	0.16	0.35	0.35	0.11	0.30	0.30
Sat Flow, veh/h	1641	1870	1433	1641	1559	258	1641	3554	1418	1641	3554	1433
Grp Volume(v), veh/h	384	504	558	254	0	521	358	958	95	98	1297	408
Grp Sat Flow(s),veh/h/ln	1641	1870	1433	1641	0	1817	1641	1777	1418	1641	1777	1433
Q Serve(g_s), s	20.0	31.2	22.5	13.2	0.0	28.7	19.0	28.7	5.6	6.8	36.3	33.3
Cycle Q Clear(g_c), s	20.0	31.2	22.5	13.2	0.0	28.7	19.0	28.7	5.6	6.8	36.3	33.3
Prop In Lane	1.00		1.00	1.00		0.14	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	273	553	424	180	0	435	260	1253	500	178	1075	434
V/C Ratio(X)	1.40	0.91	1.32	1.41	0.00	1.20	1.38	0.76	0.19	0.55	1.21	0.94
Avail Cap(c_a), veh/h	273	556	426	180	0	435	260	1253	500	178	1075	434
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.0	40.7	16.9	53.4	0.0	45.8	50.5	34.4	27.0	50.7	41.8	40.8
Incr Delay (d2), s/veh	202.5	19.2	158.3	212.9	0.0	109.7	192.5	4.5	0.8	3.6	101.9	30.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	23.2	16.4	25.2	15.9	0.0	25.5	21.3	12.3	1.9	2.9	30.0	14.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	252.5	59.9	175.2	266.3	0.0	155.5	243.0	38.9	27.8	54.4	143.7	71.5
LnGrp LOS	F	E	F	F		F	F	D	C	D	F	E
Approach Vol, veh/h	1446			775			1411			1803		
Approach Delay, s/veh	155.5			191.8			89.9			122.5		
Approach LOS	F			F			F			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	46.3	17.2	39.5	23.0	40.3	24.0	32.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	11.0	40.3	11.0	33.7	17.0	34.3	18.0	26.7				
Max Q Clear Time (g_c+I1), s	8.8	30.7	15.2	33.2	21.0	38.3	22.0	30.7				
Green Ext Time (p_c), s	0.0	3.4	0.0	0.3	0.0	0.0	0.0	0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			132.7									
HCM 7th LOS			F									
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
7: Morrison St & Prosperity Ave

PM 2044+Project  
09/12/2024

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	557	100	63	535	106	37
Future Volume (vph)	557	100	63	535	106	37
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.979				0.965	
Flt Protected				0.995	0.964	
Satd. Flow (prot)	1824	0	0	1853	1596	0
Flt Permitted				0.995	0.964	
Satd. Flow (perm)	1824	0	0	1853	1596	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	605	109	68	582	115	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	714	0	0	650	155	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	85.9%			ICU Level of Service E		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	10.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	557	100	63	535	106	37
Future Vol, veh/h	557	100	63	535	106	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	605	109	68	582	115	40
















Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	714
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	886
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	886
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.99	98.66
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	172	-	-	190	-
HCM Lane V/C Ratio	0.902	-	-	0.077	-
HCM Control Delay (s/veh)	98.7	-	-	9.4	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	6.7	-	-	0.3	-

Lanes, Volumes, Timings  
8: Prosperity Ave & Oakmore Rd












PM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	358	68	18	276	39	41	0	10	29	0	215
Future Volume (vph)	123	358	68	18	276	39	41	0	10	29	0	215
Ideal Flow (vphpl)	1750	1900	1900	1900	1900	1750	1900	1900	1900	1750	1900	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983			0.984			0.971			0.865	
Flt Protected		0.989			0.997			0.961		0.950		
Satd. Flow (prot)	0	1811	0	0	1827	0	0	0	0	1630	0	0
Flt Permitted		0.989			0.997			0.961		0.950		
Satd. Flow (perm)	0	1811	0	0	1827	0	0	0	0	1630	0	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2108			5202			329			1848	
Travel Time (s)		26.1			64.5			4.1			22.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	134	389	74	20	300	42	45	0	11	32	0	234
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	597	0	0	362	0	0	56	0	32	234	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.00	1.00	1.00	1.11	1.00	1.00	1.00	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization Err%	ICU Level of Service H											
Analysis Period (min)	15											

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			2					2		
Traffic Vol, veh/h	123	358	68	18	276	39	41	0	10	29	0	215
Future Vol, veh/h	123	358	68	18	276	39	41	0	10	29	0	215
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	134	389	74	20	300	42	45	0	11	32	0	234
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	342	0	0	463	0	0				1017	-	321
Stage 1	-	-	-	-	-	-				360	-	-
Stage 2	-	-	-	-	-	-				657	-	-
Critical Hdwy	4.12	-	-	4.12	-	-				6.42	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-				5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.42	-	-
Follow-up Hdwy	2.218	-	-	2.218	-	-				3.518	-	3.318
Pot Cap-1 Maneuver	1217	-	-	1098	-	-				263	0	720
Stage 1	-	-	-	-	-	-				706	0	-
Stage 2	-	-	-	-	-	-				516	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1217	-	-	1098	-	-				219	0	720
Mov Cap-2 Maneuver	-	-	-	-	-	-				219	0	-
Stage 1	-	-	-	-	-	-				600	0	-
Stage 2	-	-	-	-	-	-				505	0	-
Approach	EB			WB			SB					
HCM Control Delay, s/v	1.86			0.45			16.85					
HCM LOS							C					
Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1					
Capacity (veh/h)	391	-	-	1098	-	-	566					
HCM Lane V/C Ratio	0.11	-	-	0.018	-	-	0.469					
HCM Control Delay (s/veh)	8.3	0	-	8.3	-	-	16.8					
HCM Lane LOS	A	A	-	A	-	-	C					
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-	-	2.5					






Lanes, Volumes, Timings  
9: Mooney Blvd & Seminole Ave

PM 2044+Project  
09/12/2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	238	1571	94	308	1907
Future Volume (vph)	0	238	1571	94	308	1907
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	540	0		0	80	
Storage Lanes	0	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.865		0.850		
Flt Protected					0.950	
Satd. Flow (prot)	0	1484	3539	1458	1630	3539
Flt Permitted					0.950	
Satd. Flow (perm)	0	1484	3539	1458	1630	3539
Link Speed (mph)	55		55			55
Link Distance (ft)	1719		2673			2617
Travel Time (s)	21.3		33.1			32.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	259	1708	102	335	2073
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	259	1708	102	335	2073
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	68.6%			ICU Level of Service C		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 9.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	238	1571	94	308	1907
Future Vol, veh/h	0	238	1571	94	308	1907
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	0	80	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	259	1708	102	335	2073

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	854	0 0 1810 0
Stage 1	-	-	- - - -
Stage 2	-	-	- - - -
Critical Hdwy	-	6.94	- - 4.14 -
Critical Hdwy Stg 1	-	-	- - - -
Critical Hdwy Stg 2	-	-	- - - -
Follow-up Hdwy	-	3.32	- - 2.22 -
Pot Cap-1 Maneuver	0	302	- - 336 -
Stage 1	0	-	- - - -
Stage 2	0	-	- - - -
Platoon blocked, %		-	- - -
Mov Cap-1 Maneuver	-	302	- - 336 -
Mov Cap-2 Maneuver	-	-	- - - -
Stage 1	-	-	- - - -
Stage 2	-	-	- - - -



























Approach	WB	NB	SB
HCM Control Delay, s/v59.67		0	11.73
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 302	336	-
HCM Lane V/C Ratio	-	- 0.856	0.997	-
HCM Control Delay (s/veh)	-	- 59.7	84.4	-
HCM Lane LOS	-	- F	F	-
HCM 95th %tile Q(veh)	-	- 7.5	11.1	-




Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

PM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Traffic Volume (vph)	196	1215	315	129	937	101	109	281	72	117	385	93
Future Volume (vph)	196	1215	315	129	937	101	109	281	72	117	385	93
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		135	110		0	90		90	80		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97		1.00				0.98			0.98
Frt			0.850		0.985				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3474	0	1630	1863	1458	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1408	1630	3474	0	1630	1863	1431	1630	1863	1431
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191		10				191			191
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		841			2671			726			5387	
Travel Time (s)		10.4			33.1			9.0			66.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	213	1321	342	140	1018	110	118	305	78	127	418	101
Shared Lane Traffic (%)												
Lane Group Flow (vph)	213	1321	342	140	1128	0	118	305	78	127	418	101
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
10: Laspina St & Tulare Ave

PM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.9	29.9	10.0	28.4		10.0	39.9	39.9	10.0	44.1	44.1
Total Split (s)	20.0	41.9	41.9	16.0	37.9		29.1	41.1	41.1	21.0	33.0	33.0
Total Split (%)	16.7%	34.9%	34.9%	13.3%	31.6%		24.3%	34.3%	34.3%	17.5%	27.5%	27.5%
Maximum Green (s)	14.0	35.9	35.9	10.0	31.9		23.1	35.1	35.1	15.0	27.0	27.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Don't Walk (s)		16.9	16.9		15.4			26.9	26.9		31.1	31.1
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effect Green (s)	16.1	38.1	38.1	12.1	34.1		15.4	31.1	31.1	14.7	30.3	30.3
Actuated g/C Ratio	0.14	0.34	0.34	0.11	0.30		0.14	0.28	0.28	0.13	0.27	0.27
v/c Ratio	0.91	1.10	0.57	0.80	1.06		0.53	0.59	0.15	0.60	0.83	0.19
Control Delay (s/veh)	88.8	92.7	18.1	81.6	83.1		54.3	40.1	0.6	59.5	54.0	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	88.8	92.7	18.1	81.6	83.1		54.3	40.1	0.6	59.5	54.0	0.8
LOS	F	F	B	F	F		D	D	A	E	D	A
Approach Delay (s/veh)		78.7			83.0			37.3			46.8	
Approach LOS		E			F			D			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 112.1

Natural Cycle: 115

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.10

Intersection Signal Delay (s/veh): 70.3

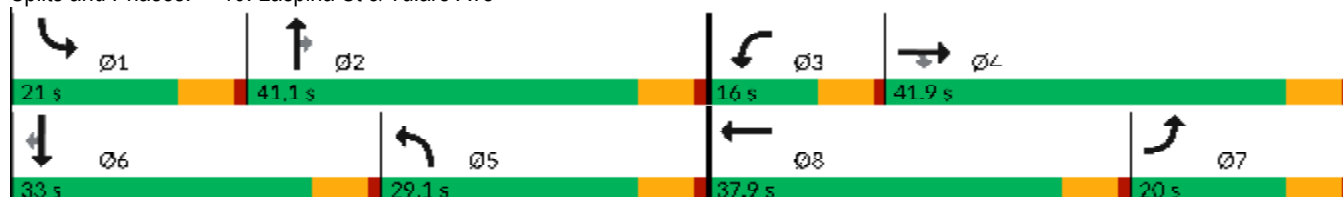
Intersection LOS: E

Intersection Capacity Utilization 83.3%

ICU Level of Service E

Analysis Period (min) 15



























Splits and Phases: 10: Laspina St & Tulare Ave



# HCM 7th Signalized Intersection Summary



























## 10: Laspina St & Tulare Ave

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Traffic Volume (veh/h)	196	1215	315	129	937	101	109	281	72	117	385	93
Future Volume (veh/h)	196	1215	315	129	937	101	109	281	72	117	385	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	213	1321	342	140	1018	110	118	305	78	127	418	101
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	252	1293	516	189	1049	113	176	477	365	184	486	372
Arrive On Green	0.15	0.36	0.36	0.12	0.33	0.31	0.11	0.26	0.26	0.11	0.26	0.26
Sat Flow, veh/h	1641	3554	1418	1641	3224	348	1641	1870	1431	1641	1870	1432
Grp Volume(v), veh/h	213	1321	342	140	561	567	118	305	78	127	418	101
Grp Sat Flow(s),veh/h/ln	1641	1777	1418	1641	1777	1795	1641	1870	1431	1641	1870	1432
Q Serve(g_s), s	13.1	37.9	13.7	8.6	32.4	32.5	7.2	15.1	4.5	7.8	22.2	5.8
Cycle Q Clear(g_c), s	13.1	37.9	13.7	8.6	32.4	32.5	7.2	15.1	4.5	7.8	22.2	5.8
Prop In Lane	1.00		1.00	1.00		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	252	1293	516	189	578	584	176	477	365	184	486	372
V/C Ratio(X)	0.84	1.02	0.66	0.74	0.97	0.97	0.67	0.64	0.21	0.69	0.86	0.27
Avail Cap(c_a), veh/h	252	1293	516	189	578	584	395	666	510	268	521	399
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.9	33.1	11.7	44.6	34.6	34.8	44.7	34.5	30.5	44.5	36.7	30.7
Incr Delay (d2), s/veh	22.3	30.6	3.2	14.4	29.8	29.8	4.4	1.4	0.3	4.6	13.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	20.1	4.0	4.1	17.5	17.8	3.0	6.6	1.5	3.2	11.1	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	65.2	63.7	14.9	58.9	64.4	64.7	49.1	35.9	30.8	49.1	49.7	31.1
LnGrp LOS	E	F	B	E	E	E	D	D	C	D	D	C
Approach Vol, veh/h	1876				1268		501				646	
Approach Delay, s/veh	55.0				63.9		38.2				46.7	
Approach LOS	D				E		D				D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.7	30.6	16.0	41.9	15.2	31.1	20.0	37.9				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	35.1	10.0	35.9	23.1	27.0	14.0	31.9				
Max Q Clear Time (g_c+I1), s	9.8	17.1	10.6	39.9	9.2	24.2	15.1	34.5				
Green Ext Time (p_c), s	0.1	1.2	0.0	0.0	0.3	0.6	0.0	0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh	54.4											
HCM 7th LOS	D											
Notes												
User approved pedestrian interval to be less than phase max green.												













Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

PM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 				
Traffic Volume (vph)	354	840	346	118	656	362	175	869	108	362	901	465
Future Volume (vph)	354	840	346	118	656	362	175	869	108	362	901	465
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	420		185	125		125	80		0	475		475
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98		1.00				0.98
Frt			0.850			0.850		0.983				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	1630	3539	1458	1630	3467	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3539	1412	1630	3539	1430	1630	3467	0	1630	1863	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			281			260			10			345
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2671			2887			1662			2673	
Travel Time (s)		33.1			35.8			20.6			33.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	385	913	376	128	713	393	190	945	117	393	979	505
Shared Lane Traffic (%)												
Lane Group Flow (vph)	385	913	376	128	713	393	190	1062	0	393	979	505
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												

Lanes, Volumes, Timings  
11: Mooney Blvd & Tulare Ave

PM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	10.0	37.0	37.0	10.0	37.0	37.0	10.0	39.9		10.0	42.7	42.7
Total Split (s)	20.0	40.0	40.0	17.0	37.0	37.0	19.0	32.0		31.0	44.0	44.0
Total Split (%)	16.7%	33.3%	33.3%	14.2%	30.8%	30.8%	15.8%	26.7%		25.8%	36.7%	36.7%
Maximum Green (s)	14.0	34.0	34.0	11.0	31.0	31.0	13.0	26.0		25.0	38.0	38.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Don't Walk (s)		24.0	24.0		24.0	24.0		26.9			29.7	29.7
Pedestrian Calls (#/hr)		5	5		5	5		5			5	5
Act Effect Green (s)	16.0	34.9	34.9	12.7	31.6	31.6	16.5	29.5		27.1	40.1	40.1
Actuated g/C Ratio	0.13	0.29	0.29	0.11	0.26	0.26	0.14	0.25		0.23	0.33	0.33
v/c Ratio	1.77	0.89	0.62	0.75	0.77	0.69	0.85	1.24		1.07	1.58	0.71
Control Delay (s/veh)	397.7	52.6	14.6	79.0	47.5	20.5	82.9	154.9		112.6	297.1	17.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	397.7	52.6	14.6	79.0	47.5	20.5	82.9	154.9		112.6	297.1	17.5
LOS	F	D	B	E	D	C	F	F		F	F	B
Approach Delay (s/veh)		123.5			42.2			144.0			183.2	
Approach LOS		F			D			F			F	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120.2

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.77

Intersection Signal Delay (s/veh): 129.7

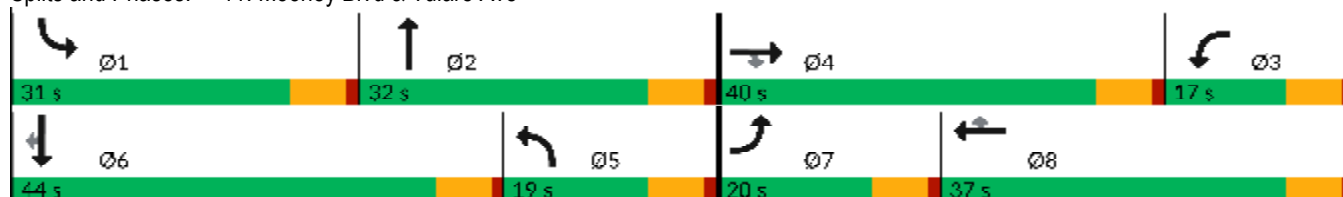
Intersection LOS: F

Intersection Capacity Utilization 111.9%

ICU Level of Service H

























Analysis Period (min) 15

Splits and Phases: 11: Mooney Blvd & Tulare Ave



















# HCM 7th Signalized Intersection Summary 11: Mooney Blvd & Tulare Ave

PM 2044+Project  
09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	354	840	346	118	656	362	175	869	108	362	901	465
Future Volume (veh/h)	354	840	346	118	656	362	175	869	108	362	901	465
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	385	913	376	128	713	393	190	945	117	393	979	505
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	219	1050	418	185	977	394	205	739	91	369	623	478
Arrive On Green	0.13	0.30	0.30	0.11	0.28	0.28	0.13	0.23	0.22	0.22	0.33	0.33
Sat Flow, veh/h	1641	3554	1415	1641	3554	1432	1641	3168	392	1641	1870	1434
Grp Volume(v), veh/h	385	913	376	128	713	393	190	530	532	393	979	505
Grp Sat Flow(s),veh/h/ln	1641	1777	1415	1641	1777	1432	1641	1777	1783	1641	1870	1434
Q Serve(g_s), s	16.0	29.2	30.6	9.0	21.8	32.9	13.8	28.0	28.0	27.0	40.0	26.0
Cycle Q Clear(g_c), s	16.0	29.2	30.6	9.0	21.8	32.9	13.8	28.0	28.0	27.0	40.0	26.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.22	1.00		1.00
Lane Grp Cap(c), veh/h	219	1050	418	185	977	394	205	415	416	369	623	478
V/C Ratio(X)	1.76	0.87	0.90	0.69	0.73	1.00	0.93	1.28	1.28	1.06	1.57	1.06
Avail Cap(c_a), veh/h	219	1066	424	185	977	394	205	415	416	369	623	478
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.0	40.1	40.6	51.2	39.5	43.5	52.0	46.0	46.2	46.5	40.0	16.9
Incr Delay (d2), s/veh	360.1	7.8	21.4	10.5	2.8	44.7	42.7	142.7	142.9	65.0	264.3	56.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	28.2	13.1	12.5	4.1	9.4	15.8	7.8	28.1	28.2	17.1	62.8	15.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	412.1	47.9	62.0	61.7	42.3	88.2	94.7	188.7	189.1	111.5	304.3	73.8
LnGrp LOS	F	D	E	E	D	F	F	F	F	F	F	F
Approach Vol, veh/h	1674			1234			1252			1877		
Approach Delay, s/veh	134.8			58.9			174.6			201.9		
Approach LOS	F			E			F			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	31.0	32.0	17.5	39.5	19.0	44.0	20.0	37.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	25.0	26.0	11.0	34.0	13.0	38.0	14.0	31.0				
Max Q Clear Time (g_c+I1), s	29.0	30.0	11.0	32.6	15.8	42.0	18.0	34.9				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh	148.4											
HCM 7th LOS	F											
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
12: Morrison St & Tulare Ave

PM 2044+Project  
09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	835	161	89	828	11	99	37	49	5	39	97
Future Volume (vph)	66	835	161	89	828	11	99	37	49	5	39	97
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.980			0.998			0.964			0.907	
Flt Protected		0.997			0.995			0.974			0.998	
Satd. Flow (prot)	0	1820	0	0	1850	0	0	1749	0	0	1686	0
Flt Permitted		0.997			0.995			0.974			0.998	
Satd. Flow (perm)	0	1820	0	0	1850	0	0	1749	0	0	1686	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	908	175	97	900	12	108	40	53	5	42	105
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1155	0	0	1009	0	0	201	0	0	152	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	
Intersection Summary												
Area Type:	Other											
Control Type:	Roundabout											
Intersection Capacity Utilization	100.6%						ICU Level of Service G					
Analysis Period (min)	15											

Intersection				
Intersection Delay, s/veh	35.6			
Intersection LOS	E			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	1155	1009	201	152
Demand Flow Rate, veh/h	1178	1029	205	155
Vehicles Circulating, veh/h	147	224	1004	1127
Vehicles Exiting, veh/h	1135	985	321	126
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	43.4	34.0	14.6	14.7
Approach LOS	E	D	B	B
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	1178	1029	205	155
Cap Entry Lane, veh/h	1188	1098	496	437
Entry HV Adj Factor	0.980	0.981	0.981	0.982
Flow Entry, veh/h	1155	1009	201	152
Cap Entry, veh/h	1164	1077	486	429
V/C Ratio	0.992	0.937	0.414	0.355
Control Delay, s/veh	43.4	34.0	14.6	14.7
LOS	E	D	B	B
95th %tile Queue, veh	20	16	2	2



























Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

PM 2044+Project with Mitigation













09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	249	191	203	32	203	7	145	1130	32	14	1375	262
Future Volume (vph)	249	191	203	32	203	7	145	1130	32	14	1375	262
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		150	150		0	480		0	480		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor			0.98		1.00			1.00			1.00	
Frt			0.850		0.995			0.996			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1852	0	1630	5061	0	1630	4939	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1852	0	1630	5061	0	1630	4939	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			221		2			4			36	
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2666			2010			5285			550	
Travel Time (s)		33.0			24.9			65.5			6.8	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	271	208	221	35	221	8	158	1228	35	15	1495	285
Shared Lane Traffic (%)												
Lane Group Flow (vph)	271	208	221	35	229	0	158	1263	0	15	1780	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												

Lanes, Volumes, Timings  
1: Mooney Blvd & Cartmill Ave

PM 2044+Project with Mitigation

09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	37.9	37.9	9.5	36.5		9.5	39.4		9.5	39.4	
Total Split (s)	20.0	48.7	48.7	10.3	39.0		14.0	51.5		9.5	47.0	
Total Split (%)	16.7%	40.6%	40.6%	8.6%	32.5%		11.7%	42.9%		7.9%	39.2%	
Maximum Green (s)	14.5	43.2	43.2	4.8	33.5		8.5	46.0		4.0	41.5	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	-1.5		-1.5	-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Don't Walk (s)		25.4	25.4		24.0			26.9			26.9	
Pedestrian Calls (#/hr)		5	5		5			5			5	
Act Effect Green (s)	16.1	28.8	28.8	12.1	20.5		10.0	54.9		6.1	43.2	
Actuated g/C Ratio	0.15	0.27	0.27	0.11	0.19		0.09	0.52		0.06	0.41	
v/c Ratio	1.10	0.41	0.40	0.19	0.64		1.03	0.48		0.16	0.87	
Control Delay (s/veh)	129.3	36.8	6.8	45.0	46.8		128.2	18.8		53.4	35.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	129.3	36.8	6.8	45.0	46.8		128.2	18.8		53.4	35.0	
LOS	F	D	A	D	D		F	B		D	C	
Approach Delay (s/veh)		63.1			46.6			31.0			35.1	
Approach LOS		E			D			C			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 105.8

Natural Cycle: 130

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.10

Intersection Signal Delay (s/veh): 39.1

Intersection LOS: D

Intersection Capacity Utilization 82.9%

ICU Level of Service E

Analysis Period (min) 15
























Splits and Phases: 1: Mooney Blvd & Cartmill Ave



HCM 7th Signalized Intersection Summary  
1: Mooney Blvd & Cartmill Ave

PM 2044+Project with Mitigation
























09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	249	191	203	32	203	7	145	1130	32	14	1375	262
Future Volume (veh/h)	249	191	203	32	203	7	145	1130	32	14	1375	262
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	271	208	221	35	221	8	158	1228	35	15	1495	285
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	262	346	264	252	321	12	163	1599	46	309	1724	328
Arrive On Green	0.16	0.19	0.19	0.15	0.18	0.16	0.10	0.31	0.30	0.19	0.40	0.39
Sat Flow, veh/h	1641	1870	1427	1641	1792	65	1641	5098	145	1641	4286	814
Grp Volume(v), veh/h	271	208	221	35	0	229	158	820	443	15	1186	594
Grp Sat Flow(s),veh/h/ln	1641	1870	1427	1641	0	1857	1641	1702	1839	1641	1702	1696
Q Serve(g_s), s	16.0	10.2	11.1	1.9	0.0	11.6	9.6	21.9	21.9	0.8	32.1	32.4
Cycle Q Clear(g_c), s	16.0	10.2	11.1	1.9	0.0	11.6	9.6	21.9	21.9	0.8	32.1	32.4
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.08	1.00		0.48
Lane Grp Cap(c), veh/h	262	346	264	252	0	333	163	1068	577	309	1369	682
V/C Ratio(X)	1.04	0.60	0.84	0.14	0.00	0.69	0.97	0.77	0.77	0.05	0.87	0.87
Avail Cap(c_a), veh/h	262	833	636	252	0	647	163	1611	870	309	1458	727
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.2	37.5	21.8	36.8	0.0	38.6	45.0	31.1	31.2	33.4	27.5	27.9
Incr Delay (d2), s/veh	65.4	1.7	6.9	0.2	0.0	2.5	60.3	1.3	2.3	0.1	5.5	10.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.8	4.5	3.9	0.7	0.0	5.2	6.4	8.3	9.2	0.3	12.6	13.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	107.6	39.2	28.6	37.0	0.0	41.1	105.3	32.4	33.5	33.4	33.0	38.6
LnGrp LOS	F	D	C	D		D	F	C	C	C	C	D
Approach Vol, veh/h	700				264			1421			1795	
Approach Delay, s/veh	62.3				40.6			40.9			34.9	
Approach LOS	E				D			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.9	35.5	19.4	22.6	14.0	44.4	20.0	22.0				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	4.0	46.0	4.8	43.2	8.5	41.5	14.5	33.5				
Max Q Clear Time (g_c+I1), s	2.8	23.9	3.9	13.1	11.6	34.4	18.0	13.6				
Green Ext Time (p_c), s	0.0	5.5	0.0	1.6	0.0	4.5	0.0	0.7				
Intersection Summary												
HCM 7th Control Delay, s/veh	41.9											
HCM 7th LOS	D											

Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

PM 2044+Project with Mitigation













09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	353	464	513	234	411	68	329	881	87	90	1193	375
Future Volume (vph)	353	464	513	234	411	68	329	881	87	90	1193	375
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	480		280	140		0	350		45	480		0
Storage Lanes	2		1	2		0	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.95	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor			0.98		1.00				0.97			0.98
Frt			0.850		0.979				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3162	3539	1458	3162	3455	0	3162	5085	1458	3162	5085	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3162	3539	1433	3162	3455	0	3162	5085	1411	3162	5085	1427
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			149		17				208			408
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2650			2913			2617			5285	
Travel Time (s)		32.9			36.1			32.4			65.5	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	384	504	558	254	447	74	358	958	95	98	1297	408
Shared Lane Traffic (%)												
Lane Group Flow (vph)	384	504	558	254	521	0	358	958	95	98	1297	408
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												

Lanes, Volumes, Timings  
6: Mooney Blvd & Prosperity Ave

PM 2044+Project with Mitigation

09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	42.7	42.7	10.0	32.7		10.0	31.3	31.3	10.0	25.6	25.6
Total Split (s)	21.0	43.0	43.0	13.0	35.0		17.0	43.0	43.0	11.0	37.0	37.0
Total Split (%)	19.1%	39.1%	39.1%	11.8%	31.8%		15.5%	39.1%	39.1%	10.0%	33.6%	33.6%
Maximum Green (s)	15.0	37.0	37.0	7.0	29.0		11.0	37.0	37.0	5.0	31.0	31.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Don't Walk (s)		29.7	29.7		19.7			18.3	18.3		12.6	12.6
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effect Green (s)	16.7	37.3	37.3	9.0	29.7		13.0	41.4	41.4	7.0	33.0	33.0
Actuated g/C Ratio	0.15	0.34	0.34	0.08	0.27		0.12	0.38	0.38	0.06	0.30	0.30
v/c Ratio	0.79	0.41	0.94	0.97	0.54		0.94	0.49	0.14	0.48	0.84	0.57
Control Delay (s/veh)	57.4	28.3	51.6	98.9	34.8		82.6	27.6	0.4	57.8	41.3	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	57.4	28.3	51.6	98.9	34.8		82.6	27.6	0.4	57.8	41.3	6.4
LOS	E	C	D	F	C		F	C	A	E	D	A
Approach Delay (s/veh)		45.0			55.8			39.7			34.3	
Approach LOS		D			E			D			C	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 108.4

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay (s/veh): 41.6

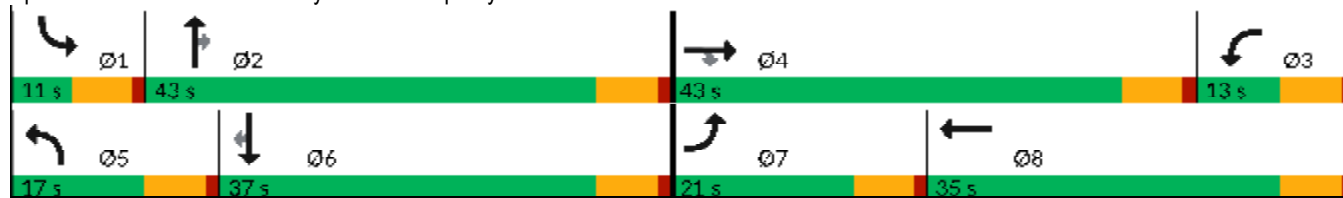
Intersection LOS: D

Intersection Capacity Utilization 75.3%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 6: Mooney Blvd & Prosperity Ave


























# HCM 7th Signalized Intersection Summary

## 6: Mooney Blvd & Prosperity Ave

PM 2044+Project with Mitigation










09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	353	464	513	234	411	68	329	881	87	90	1193	375
Future Volume (veh/h)	353	464	513	234	411	68	329	881	87	90	1193	375
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1870	1723	1723	1870	1723	1723	1870	1723	1723	1870	1723
Adj Flow Rate, veh/h	384	504	558	254	447	74	358	958	95	98	1297	408
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	504	1016	410	288	664	109	416	2022	562	212	1694	476
Arrive On Green	0.16	0.29	0.29	0.09	0.22	0.20	0.13	0.40	0.40	0.07	0.33	0.33
Sat Flow, veh/h	3183	3554	1433	3183	3044	500	3183	5106	1419	3183	5106	1434
Grp Volume(v), veh/h	384	504	558	254	260	261	358	958	95	98	1297	408
Grp Sat Flow(s),veh/h/ln	1591	1777	1433	1591	1777	1767	1591	1702	1419	1591	1702	1434
Q Serve(g_s), s	11.5	11.7	18.4	7.8	13.3	13.5	11.0	13.9	2.8	2.9	22.6	26.4
Cycle Q Clear(g_c), s	11.5	11.7	18.4	7.8	13.3	13.5	11.0	13.9	2.8	2.9	22.6	26.4
Prop In Lane	1.00		1.00	1.00		0.28	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	504	1016	410	288	388	385	416	2022	562	212	1694	476
V/C Ratio(X)	0.76	0.50	1.36	0.88	0.67	0.68	0.86	0.47	0.17	0.46	0.77	0.86
Avail Cap(c_a), veh/h	544	1394	562	288	554	551	416	2022	562	224	1694	476
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.1	29.5	14.9	44.7	35.6	35.9	42.3	22.3	8.2	44.7	29.8	31.0
Incr Delay (d2), s/veh	5.8	0.4	177.8	25.6	2.0	2.1	16.5	0.8	0.7	1.6	3.4	17.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	4.7	25.3	3.9	5.6	5.7	5.0	5.1	1.3	1.1	8.9	10.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	45.9	29.9	192.7	70.3	37.6	38.0	58.8	23.1	8.9	46.3	33.1	48.8
LnGrp LOS	D	C	F	E	D	D	E	C	A	D	C	D
Approach Vol, veh/h	1446			775			1411			1803		
Approach Delay, s/veh	97.0			48.5			31.2			37.4		
Approach LOS	F			D			C			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.6	43.4	13.0	32.4	17.0	37.0	19.7	25.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	37.0	7.0	37.0	11.0	31.0	15.0	29.0				
Max Q Clear Time (g_c+I1), s	4.9	15.9	9.8	20.4	13.0	28.4	13.5	15.5				
Green Ext Time (p_c), s	0.0	4.7	0.0	4.5	0.0	1.9	0.3	1.6				
Intersection Summary												
HCM 7th Control Delay, s/veh	53.2											
HCM 7th LOS	D											
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
7: Morrison St & Prosperity Ave

PM 2044+Project with Mitigation

09/12/2024

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	557	100	63	535	106	37
Future Volume (vph)	557	100	63	535	106	37
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.979				0.965	
Flt Protected				0.995	0.964	
Satd. Flow (prot)	1824	0	0	1853	1596	0
Flt Permitted				0.786	0.964	
Satd. Flow (perm)	1824	0	0	1464	1596	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	20				18	
Link Speed (mph)	55			55	55	
Link Distance (ft)	2913			2108	5358	
Travel Time (s)	36.1			26.1	66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	605	109	68	582	115	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	714	0	0	650	155	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			24	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Number of Detectors	1		1	1	1	
Detector Template						
Leading Detector (ft)	50		50	50	50	
Trailing Detector (ft)	0		0	0	0	
Detector 1 Position(ft)	0		0	0	0	
Detector 1 Size(ft)	50		50	50	50	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Turn Type	NA		Perm	NA	Prot	
Protected Phases	4			8	2	
Permitted Phases			8			
Detector Phase	4		8	8	2	
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	
Minimum Split (s)	24.0		24.0	24.0	24.0	
Total Split (s)	64.0		64.0	64.0	26.0	
Total Split (%)	71.1%		71.1%	71.1%	28.9%	
Maximum Green (s)	58.0		58.0	58.0	20.0	
Yellow Time (s)	5.0		5.0	5.0	5.0	



Lanes, Volumes, Timings  
7: Morrison St & Prosperity Ave

PM 2044+Project with Mitigation  
09/12/2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
All-Red Time (s)	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	6.0			6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	None	Min	
Walk Time (s)	7.0		7.0	7.0	7.0	
Flash Don't Walk (s)	11.0		11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0		0	0	0	
Act Effect Green (s)	27.4			27.4	10.5	
Actuated g/C Ratio	0.54			0.54	0.21	
v/c Ratio	0.72			0.83	0.45	
Control Delay (s/veh)	13.2			19.9	23.5	
Queue Delay	0.0			0.0	0.0	
Total Delay (s/veh)	13.2			19.9	23.5	
LOS	B			B	C	
Approach Delay (s/veh)	13.2			19.9	23.5	
Approach LOS	B			B	C	

Intersection Summary

Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 51	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay (s/veh): 17.2	Intersection LOS: B
Intersection Capacity Utilization 90.9%	ICU Level of Service E
Analysis Period (min) 15	










Splits and Phases: 7: Morrison St & Prosperity Ave

 Ø2 26 s	 Ø4 64 s
	 Ø8 64 s

# HCM 7th Signalized Intersection Summary

## 7: Morrison St & Prosperity Ave













PM 2044+Project with Mitigation  
09/12/2024

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	557	100	63	535	106	37
Future Volume (veh/h)	557	100	63	535	106	37
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1723	1723	1870	1723	1723
Adj Flow Rate, veh/h	605	109	68	582	115	40
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	826	149	143	738	181	63
Arrive On Green	0.54	0.54	0.54	0.54	0.15	0.15
Sat Flow, veh/h	1542	278	74	1378	1173	408
Grp Volume(v), veh/h	0	714	650	0	156	0
Grp Sat Flow(s),veh/h/ln	0	1820	1452	0	1591	0
Q Serve(g_s), s	0.0	11.6	4.0	0.0	3.6	0.0
Cycle Q Clear(g_c), s	0.0	11.6	15.6	0.0	3.6	0.0
Prop In Lane		0.15	0.10		0.74	0.26
Lane Grp Cap(c), veh/h	0	975	880	0	245	0
V/C Ratio(X)	0.00	0.73	0.74	0.00	0.64	0.00
Avail Cap(c_a), veh/h	0	2731	2435	0	823	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	6.9	7.0	0.0	15.3	0.0
Incr Delay (d2), s/veh	0.0	1.1	1.2	0.0	2.7	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.4	1.3	0.0	1.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	0.0	7.9	8.3	0.0	18.1	0.0
LnGrp LOS		A	A		B	
Approach Vol, veh/h	714			650	156	
Approach Delay, s/veh	7.9			8.3	18.1	
Approach LOS	A			A	B	
Timer - Assigned Phs	2		4		8	
Phs Duration (G+Y+Rc), s	12.0		26.7		26.7	
Change Period (Y+Rc), s	6.0		6.0		6.0	
Max Green Setting (Gmax), s	20.0		58.0		58.0	
Max Q Clear Time (g_c+l1), s	5.6		13.6		17.6	
Green Ext Time (p_c), s	0.4		3.2		3.1	
Intersection Summary						
HCM 7th Control Delay, s/veh			9.1			
HCM 7th LOS			A			

Lanes, Volumes, Timings  
9: Mooney Blvd & Seminole Ave

PM 2044+Project with Mitigation

09/12/2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	238	1571	94	308	1907
Future Volume (vph)	0	238	1571	94	308	1907
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	540	0		0	80	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.850		0.850		
Flt Protected					0.950	
Satd. Flow (prot)	1716	1458	3539	1458	1630	3539
Flt Permitted					0.950	
Satd. Flow (perm)	1716	1458	3539	1458	1630	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		331		74		
Link Speed (mph)	55		55			55
Link Distance (ft)	1719		2673			2617
Travel Time (s)	21.3		33.1			32.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	259	1708	102	335	2073
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	259	1708	102	335	2073
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		24			24
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	1	1	1	1
Detector Template						
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	24.0	24.0	24.0	24.0	10.0	24.0
Total Split (s)	24.0	24.0	65.0	65.0	31.0	96.0

Lanes, Volumes, Timings  
9: Mooney Blvd & Seminole Ave

PM 2044+Project with Mitigation

09/12/2024

	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Split (%)	20.0%	20.0%	54.2%	54.2%	25.8%	80.0%
Maximum Green (s)	18.0	18.0	59.0	59.0	25.0	90.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	None	Min
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effect Green (s)		6.3	57.7	57.7	25.0	88.7
Actuated g/C Ratio		0.06	0.54	0.54	0.23	0.83
v/c Ratio		0.65	0.90	0.12	0.88	0.71
Control Delay (s/veh)		9.8	29.6	4.9	65.1	5.5
Queue Delay		0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		9.8	29.6	4.9	65.1	5.5
LOS		A	C	A	E	A
Approach Delay (s/veh)	9.8		28.2			13.8
Approach LOS	A		C			B

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 107

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay (s/veh): 19.4

Intersection LOS: B

Intersection Capacity Utilization 72.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 9: Mooney Blvd & Seminole Ave



# HCM 7th Signalized Intersection Summary 9: Mooney Blvd & Seminole Ave


















PM 2044+Project with Mitigation  
09/12/2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	238	1571	94	308	1907
Future Volume (veh/h)	0	238	1571	94	308	1907
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1723	1723	1870	1723	1723	1870
Adj Flow Rate, veh/h	0	259	1708	102	335	2073
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	246	219	1746	717	342	2665
Arrive On Green	0.00	0.15	0.49	0.49	0.21	0.75
Sat Flow, veh/h	1641	1460	3647	1460	1641	3647
Grp Volume(v), veh/h	0	259	1708	102	335	2073
Grp Sat Flow(s),veh/h/ln	1641	1460	1777	1460	1641	1777
Q Serve(g_s), s	0.0	18.0	56.4	4.6	24.3	42.0
Cycle Q Clear(g_c), s	0.0	18.0	56.4	4.6	24.3	42.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	246	219	1746	717	342	2665
V/C Ratio(X)	0.00	1.18	0.98	0.14	0.98	0.78
Avail Cap(c_a), veh/h	246	219	1749	718	342	2668
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	50.9	29.9	16.7	47.2	9.0
Incr Delay (d2), s/veh	0.0	118.6	16.6	0.1	42.9	1.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	13.5	25.3	1.4	13.5	11.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	0.0	169.5	46.5	16.8	90.1	10.5
LnGrp LOS		F	D	B	F	B
Approach Vol, veh/h	259		1810			2408
Approach Delay, s/veh	169.5		44.8			21.6
Approach LOS	F		D			C
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	31.0	64.9			95.9	24.0
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax), s	25.0	59.0			90.0	18.0
Max Q Clear Time (g_c+I1), s	26.3	58.4			44.0	20.0
Green Ext Time (p_c), s	0.0	0.4			17.3	0.0
<b>Intersection Summary</b>						
HCM 7th Control Delay, s/veh			39.5			
HCM 7th LOS			D			

Lanes, Volumes, Timings  
12: Morrison St & Tulare Ave

PM 2044+Project with Mitigation

09/12/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	835	161	89	828	11	99	37	49	5	39	97
Future Volume (vph)	66	835	161	89	828	11	99	37	49	5	39	97
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		425	300		0	125		0	0		0
Storage Lanes	0		1	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997	0.850		0.998			0.964			0.907	
Flt Protected		0.996			0.995			0.974			0.998	
Satd. Flow (prot)	0	1757	1385	0	1850	0	0	1749	0	0	1686	0
Flt Permitted		0.996			0.995			0.974			0.998	
Satd. Flow (perm)	0	1757	1385	0	1850	0	0	1749	0	0	1686	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2887			565			2116			5358	
Travel Time (s)		35.8			7.0			26.2			66.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	908	175	97	900	12	108	40	53	5	42	105
Shared Lane Traffic (%)			10%									
Lane Group Flow (vph)	0	998	157	0	1009	0	0	201	0	0	152	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	
Intersection Summary												
Area Type:	Other											
Control Type:	Roundabout											
Intersection Capacity Utilization	132.1%						ICU Level of Service H					
Analysis Period (min)	15											

Intersection					
Intersection Delay, s/veh	22.9				
Intersection LOS	C				
Approach	EB		WB		NB SB
Entry Lanes	2		1		1 1
Conflicting Circle Lanes	1		1		1 1
Adj Approach Flow, veh/h	1155		1009		201 152
Demand Flow Rate, veh/h	1178		1029		205 155
Vehicles Circulating, veh/h	147		224		1004 1127
Vehicles Exiting, veh/h	1135		985		321 126
Ped Vol Crossing Leg, #/h	0		0		0 0
Ped Cap Adj	1.000		1.000		1.000 1.000
Approach Delay, s/veh	15.7		34.0		14.6 14.7
Approach LOS	C		D		B B
Lane	Left	Right	Left	Left	Left
Designated Moves	LT	R	LTR	LTR	LTR
Assumed Moves	LT	R	LTR	LTR	LTR
RT Channelized					
Lane Util	0.848	0.152	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.609
Critical Headway, s	4.544	4.544	4.976	4.976	4.976
A (Intercept)	1420	1420	1380	1380	1380
B (Slope)	9.101e-4	9.101e-4	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	999	179	1029	205	155
Cap Entry Lane, veh/h	1242	1242	1098	496	437
Entry HV Adj Factor	0.981	0.978	0.981	0.981	0.982
Flow Entry, veh/h	980	175	1009	201	152
Cap Entry, veh/h	1218	1215	1077	486	429
V/C Ratio	0.804	0.144	0.937	0.414	0.355
Control Delay, s/veh	17.8	4.2	34.0	14.6	14.7
LOS	C	A	D	B	B
95th %tile Queue, veh	9	1	16	2	2

## Turning Movement Count Report AM

Location ID: 1  
 North/South: Mooney Blvd  
 East/West: Cartmill Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
6:00	11	39	0	0	9	1	6	37	11	3	8	18	143
6:15	10	41	0	1	6	1	2	50	13	5	9	11	149
6:30	8	59	0	1	10	1	4	101	11	10	22	19	246
6:45	18	60	2	1	17	3	4	117	9	9	20	15	275
7:00	15	79	0	0	8	2	4	119	19	24	18	13	301
7:15	16	71	0	0	23	3	1	159	29	28	29	25	384
7:30	20	127	6	1	35	9	13	192	40	33	43	29	548
7:45	17	118	2	1	38	6	4	189	44	32	64	53	568

Total Volume:	115	594	10	5	146	26	38	964	176	144	213	183	2614
Approach %	16%	83%	1%	3%	82%	15%	3%	82%	15%	27%	39%	34%	

Peak Hr Begin:	7:00												
PHV	68	395	8	2	104	20	22	659	132	117	154	120	1801
PHF	0.770			0.700			0.830			0.656			



## Turning Movement Count Report PM

Location ID: 1  
 North/South: Mooney Blvd  
 East/West: Cartmill Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
16:00	45	159	2	4	31	11	3	154	27	25	36	34	531
16:15	41	190	2	4	30	6	4	169	19	36	30	31	562
16:30	37	180	3	1	33	7	4	150	19	26	26	23	509
16:45	34	199	0	1	23	8	6	163	24	42	26	42	568
17:00	44	207	5	1	31	0	6	176	20	18	25	35	568
17:15	39	221	0	1	32	4	3	174	22	33	35	46	610
17:30	51	230	4	1	22	4	2	145	18	17	21	41	556
17:45	36	158	0	1	27	6	2	120	19	22	15	35	441

Total Volume:	327	1544	16	14	229	46	30	1251	168	219	214	287	4345
Approach %	17%	82%	1%	5%	79%	16%	2%	86%	12%	30%	30%	40%	

Peak Hr Begin:	16:45												
PHV	168	857	9	4	108	16	17	658	84	110	107	164	2302
PHF	0.907			0.865			0.939			0.836			

## Pedestrian/Bicycle Count Report

Location ID: 1  
 North/South: Mooney Blvd  
 East/West: Cartmill Ave

Date: 01/16/24  
 City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	0	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	1	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	1	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

## Turning Movement Count Report AM

Location ID: 2  
 North/South: Prosperity Ave  
 East/West: SR 99 SB Offramp

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
6:00	0	43	0	3	0	12	0	36	0	0	0	0	94
6:15	0	39	0	9	0	15	0	23	0	0	0	0	86
6:30	0	39	0	15	0	14	0	33	0	0	0	0	101
6:45	0	53	0	20	0	11	0	45	0	0	0	0	129
7:00	0	51	0	25	0	11	0	50	0	0	0	0	137
7:15	0	52	0	19	0	26	0	43	0	0	0	0	140
7:30	0	90	0	22	0	22	0	83	0	0	0	0	217
7:45	0	113	0	37	0	26	0	114	0	0	0	0	290

Total Volume:	0	480	0	150	0	137	0	427	0	0	0	0	1194
Approach %	0%	100%	0%	52%	0%	48%	0%	100%	0%	0%	0%	0%	

Peak Hr Begin:	7:00												
PHV	0	306	0	103	0	85	0	290	0	0	0	0	784
PHF	0.677			0.746			0.636			0.000			

## Turning Movement Count Report PM

Location ID: 2  
 North/South: Prosperity Ave  
 East/West: SR 99 SB Offramp

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
16:00	0	144	0	24	0	44	0	151	0	0	0	0	363
16:15	0	120	0	24	0	40	0	131	0	0	0	0	315
16:30	0	145	0	18	0	48	0	128	0	0	0	0	339
16:45	0	135	0	19	0	41	0	145	0	0	0	0	340
17:00	0	141	0	14	0	39	0	152	0	0	0	0	346
17:15	0	147	0	25	0	60	0	140	0	0	0	0	372
17:30	0	154	0	17	0	32	0	155	0	0	0	0	358
17:45	0	156	1	24	0	33	0	143	0	0	0	0	357

Total Volume:	0	1142	1	165	0	337	0	1145	0	0	0	0	2790
Approach %	0%	100%	0%	33%	0%	67%	0%	100%	0%	0%	0%	0%	

Peak Hr Begin:	17:00												
PHV	0	598	1	80	0	164	0	590	0	0	0	0	1433
PHF	0.954			0.718			0.952			0.000			

## Pedestrian/Bicycle Count Report

Location ID: 2  
 North/South: Prosperity Ave  
 East/West: SR 99 SB Offramp

Date: 01/16/24  
 City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	0	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	0	2	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

## Turning Movement Count Report AM

Location ID: 3  
 North/South: Blackstone St  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
6:00	0	16	39	29	0	44	16	5	0	0	1	0	150
6:15	1	22	36	18	0	54	34	2	0	0	1	0	168
6:30	1	17	35	30	0	47	37	5	0	0	1	0	173
6:45	0	21	50	43	0	98	34	4	0	0	2	0	252
7:00	2	24	41	40	3	63	44	10	0	0	2	0	229
7:15	0	20	61	46	2	96	55	4	0	0	1	0	285
7:30	0	31	83	73	2	102	59	8	0	1	1	0	360
7:45	0	31	104	110	2	136	97	11	0	1	3	0	495

Total Volume:	4	182	449	389	9	640	376	49	0	2	12	0	2112
Approach %	1%	29%	71%	37%	1%	62%	88%	12%	0%	14%	86%	0%	

Peak Hr Begin:	7:00												
PHV	2	106	289	269	9	397	255	33	0	2	7	0	1369
PHF	0.735			0.680			0.667			0.563			

## Turning Movement Count Report PM

Location ID: 3  
 North/South: Blackstone St  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
16:00	1	43	152	138	3	122	128	16	0	1	1	0	605
16:15	0	34	150	134	5	149	116	12	0	1	5	0	606
16:30	0	38	177	147	6	146	136	10	0	1	4	0	665
16:45	0	44	151	152	2	131	119	10	0	1	2	1	613
17:00	0	31	161	135	6	137	141	19	0	2	5	0	637
17:15	0	31	160	132	7	167	107	8	0	1	5	1	619
17:30	0	36	171	129	8	152	71	11	0	1	5	0	584
17:45	0	38	144	131	6	125	76	16	0	2	2	1	541

Total Volume:	1	295	1266	1098	43	1129	894	102	0	10	29	3	4870
Approach %	0%	19%	81%	48%	2%	50%	90%	10%	0%	24%	69%	7%	

Peak Hr Begin:	16:30												
PHV	0	144	649	566	21	581	503	47	0	5	16	2	2534
PHF	0.922			0.954			0.859			0.821			

## Pedestrian/Bicycle Count Report

Location ID: 3  
 North/South: Blackstone St  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	1	0
6:15	0	0	0	0	0	0	0	1
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	0	1
7:00	1	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	1
7:45	1	0	0	0	0	0	0	1

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	0	0	2	0
16:15	0	1	0	0	0	0	1	1
16:30	0	1	0	0	0	0	0	0
16:45	2	1	0	0	0	0	2	0
17:00	3	1	0	0	1	0	1	1
17:15	0	0	0	0	0	0	1	0
17:30	0	0	0	0	1	0	1	0
17:45	1	0	0	0	0	0	3	0



## Turning Movement Count Report AM

Location ID: 4  
 North/South: Hillman St  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
6:00	27	9	8	6	42	2	15	14	22	8	30	11	194
6:15	34	3	4	10	40	2	7	17	19	13	29	16	194
6:30	31	5	8	10	46	7	11	34	13	10	33	26	234
6:45	42	8	9	11	80	5	15	45	33	14	32	26	320
7:00	38	4	8	20	75	5	10	37	18	7	37	39	298
7:15	60	9	14	18	82	6	12	52	19	21	55	38	386
7:30	79	11	28	30	104	12	14	86	36	17	56	56	529
7:45	107	7	27	26	113	11	24	86	50	13	100	87	651

Total Volume:	418	56	106	131	582	50	108	371	210	103	372	299	2806
Approach %	72%	10%	18%	17%	76%	7%	16%	54%	30%	13%	48%	39%	

Peak Hr Begin:	7:00												
PHV	284	31	77	94	374	34	60	261	123	58	248	220	1864
PHF	0.695			0.837			0.694			0.658			

## Turning Movement Count Report PM

Location ID: 4  
 North/South: Hillman St  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
16:00	95	26	68	60	160	18	32	93	42	15	160	95	864
16:15	80	19	58	59	183	23	38	73	38	19	146	102	838
16:30	123	27	47	51	172	15	43	107	45	30	179	106	945
16:45	101	24	67	41	146	14	40	86	35	21	126	104	805
17:00	114	33	69	36	160	14	32	78	43	27	159	116	881
17:15	105	37	82	48	183	22	38	68	43	28	149	101	904
17:30	94	20	58	63	180	26	30	73	44	19	152	92	851
17:45	89	29	47	49	147	23	20	54	36	18	120	72	704

Total Volume:	801	215	496	407	1331	155	273	632	326	177	1191	788	6792
Approach %	53%	14%	33%	22%	70%	8%	22%	51%	26%	8%	55%	37%	

Peak Hr Begin:	16:30												
PHV	443	121	265	176	661	65	153	339	166	106	613	427	3535
PHF	0.925			0.891			0.844			0.910			

## Pedestrian/Bicycle Count Report

Location ID: 4  
 North/South: Hillman St  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	0	1	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	1	0	0	1	0	0
7:00	0	1	0	0	0	0	0	0
7:15	0	1	0	0	0	0	0	0
7:30	1	0	0	0	0	0	0	0
7:45	0	1	3	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	2	0	0	0	1	0	0	0
16:15	0	1	0	0	0	0	0	0
16:30	0	0	0	0	0	0	1	0
16:45	0	0	0	0	0	1	4	0
17:00	0	0	2	0	1	0	1	0
17:15	1	0	1	0	0	0	1	0
17:30	1	0	0	0	0	0	0	0
17:45	3	0	0	0	0	0	2	0

## Turning Movement Count Report AM

Location ID: 5  
 North/South: Laspina St  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
6:00	6	1	0	1	24	3	4	5	14	10	32	1	101
6:15	5	8	5	0	29	3	8	2	10	11	25	4	110
6:30	12	9	3	3	38	1	9	9	12	14	35	1	146
6:45	18	18	3	4	48	6	10	12	20	10	44	4	197
7:00	20	17	10	3	36	5	15	16	22	10	32	6	192
7:15	18	29	9	9	49	10	17	26	27	11	41	8	254
7:30	27	42	19	12	84	10	16	57	34	22	72	8	403
7:45	30	74	15	19	100	12	18	74	35	17	72	9	475

Total Volume:	136	198	64	51	408	50	97	201	174	105	353	41	1878
Approach %	34%	50%	16%	10%	80%	10%	21%	43%	37%	21%	71%	8%	

Peak Hr Begin:	7:00												
PHV	95	162	53	43	269	37	66	173	118	60	217	31	1324
PHF	0.651			0.666			0.703			0.755			

## Turning Movement Count Report PM

Location ID: 5  
 North/South: Laspina St  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	15	60	40	9	165	17	25	37	62	64	152	25	671
16:15	18	55	27	11	132	23	31	39	57	79	151	26	649
16:30	15	54	33	15	134	16	28	35	47	75	168	27	647
16:45	15	51	31	8	156	15	27	45	56	67	130	23	624
17:00	20	45	33	12	142	14	27	44	51	54	167	24	633
17:15	23	62	24	12	104	24	22	34	57	71	149	35	617
17:30	13	45	18	5	133	10	22	45	51	76	144	31	593
17:45	17	27	24	11	146	10	19	35	53	53	109	17	521

Total Volume:	136	399	230	83	1112	129	201	314	434	539	1170	208	4955
Approach %	18%	52%	30%	6%	84%	10%	21%	33%	46%	28%	61%	11%	

Peak Hr Begin:	16:00												
PHV	63	220	131	43	587	71	111	156	222	285	601	101	2591
PHF	0.900			0.918			0.955			0.914			

## Pedestrian/Bicycle Count Report

Location ID: 5  
 North/South: Laspina St  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	0	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	1	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	2	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	2	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	3	0	1	0
16:15	0	0	0	0	2	0	1	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	1
17:00	0	0	0	0	1	1	2	1
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

## Turning Movement Count Report AM

Location ID: 6  
 North/South: Mooney Blvd  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
6:00	5	26	4	4	9	9	10	47	9	19	11	6	159
6:15	6	38	6	3	8	4	5	48	23	11	16	10	178
6:30	10	52	5	7	19	16	7	99	12	14	16	18	275
6:45	17	57	2	4	16	13	12	104	23	16	25	20	309
7:00	14	71	5	7	10	15	7	117	25	23	25	24	343
7:15	21	86	4	14	13	15	13	141	39	26	39	33	444
7:30	30	118	9	17	42	25	13	187	53	51	39	34	618
7:45	26	114	8	16	47	36	21	183	78	50	59	46	684

Total Volume:	129	562	43	72	164	133	88	926	262	210	230	191	3010
Approach %	18%	77%	6%	20%	44%	36%	7%	73%	21%	33%	36%	30%	

Peak Hr Begin:	7:00												
PHV	91	389	26	54	112	91	54	628	195	150	162	137	2089
PHF	0.806			0.649			0.777			0.724			

## Turning Movement Count Report PM

Location ID: 6  
 North/South: Mooney Blvd  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
16:00	67	154	7	11	42	25	13	118	75	67	48	55	682
16:15	37	155	17	9	40	36	9	128	47	91	58	61	688
16:30	52	142	12	5	45	35	10	123	48	72	63	46	653
16:45	62	190	13	8	46	24	7	123	52	66	57	51	699
17:00	47	171	13	13	52	29	15	154	44	78	58	58	732
17:15	59	197	15	14	40	38	7	117	49	85	28	52	701
17:30	35	168	23	15	39	27	11	108	43	81	43	43	636
17:45	47	162	9	5	23	21	7	101	55	55	29	49	563

Total Volume:	406	1339	109	80	327	235	79	972	413	595	384	415	5354
Approach %	22%	72%	6%	12%	51%	37%	5%	66%	28%	43%	28%	30%	

Peak Hr Begin:	16:30												
PHV	220	700	53	40	183	126	39	517	193	301	206	207	2785
PHF	0.898			0.928			0.879			0.920			



## Pedestrian/Bicycle Count Report

Location ID: 6  
 North/South: Mooney Blvd  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	1	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	1	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	1	0	0	0	1	1	1	1
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

## Turning Movement Count Report AM

Location ID: 7  
 North/South: Morrison St  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
6:00	0	0	0	0	19	2	2	0	2	3	19	0	47
6:15	0	0	0	0	16	1	2	0	2	3	27	0	51
6:30	0	0	0	0	31	1	7	0	9	0	34	0	82
6:45	0	0	0	0	34	4	5	0	0	0	40	0	83
7:00	0	0	0	0	22	2	6	0	1	2	38	0	71
7:15	0	0	0	0	39	9	5	0	4	0	48	0	105
7:30	0	0	0	0	66	2	15	0	9	0	57	0	149
7:45	0	0	0	0	103	11	15	0	8	2	86	0	225

Total Volume:	0	0	0	0	330	32	57	0	35	10	349	0	813
Approach %	0%	0%	0%	0%	91%	9%	62%	0%	38%	3%	97%	0%	

Peak Hr Begin:	7:00												
PHV	0	0	0	0	230	24	41	0	22	4	229	0	550
PHF	0.000			0.557			0.656			0.662			

## Turning Movement Count Report PM

Location ID: 7  
 North/South: Morrison St  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
16:00	0	0	0	0	60	4	11	0	7	1	71	0	154
16:15	0	0	0	0	84	8	7	0	4	7	61	0	171
16:30	0	0	0	0	68	4	10	0	5	3	85	0	175
16:45	0	0	0	0	73	6	3	0	5	11	72	0	170
17:00	0	0	0	0	72	10	6	0	4	3	83	0	178
17:15	0	0	0	0	77	17	3	0	3	3	47	0	150
17:30	0	0	0	0	74	14	3	0	4	5	59	0	159
17:45	0	0	0	0	33	10	1	0	3	4	44	0	95

Total Volume:	0	0	0	0	541	73	44	0	35	37	522	0	1252
Approach %	0%	0%	0%	0%	88%	12%	56%	0%	44%	7%	93%	0%	

Peak Hr Begin:	16:15												
PHV	0	0	0	0	297	28	26	0	18	24	301	0	694
PHF	0.000			0.883			0.733			0.923			

## Pedestrian/Bicycle Count Report

Location ID: 7  
 North/South: Morrison St  
 East/West: Prosperity Ave

Date: 01/16/24  
 City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	0	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	1	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

## Turning Movement Count Report AM

Location ID: 10  
 North/South: Laspina St  
 East/West: Tulare Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
6:00	6	9	2	0	72	2	3	13	9	5	77	7	205
6:15	15	9	8	1	62	2	13	13	6	4	79	3	215
6:30	12	20	6	2	87	3	16	21	10	5	114	3	299
6:45	20	17	4	4	108	6	14	25	14	5	70	8	295
7:00	11	26	9	4	106	6	11	22	21	8	76	8	308
7:15	15	35	14	13	106	10	11	39	27	8	73	4	355
7:30	18	49	16	10	148	9	23	61	28	24	96	14	496
7:45	23	72	17	11	187	14	15	94	46	23	116	21	639

Total Volume:	120	237	76	45	876	52	106	288	161	82	701	68	2812
Approach %	28%	55%	18%	5%	90%	5%	19%	52%	29%	10%	82%	8%	

Peak Hr Begin:	7:00												
PHV	67	182	56	38	547	39	60	216	122	63	361	47	1798
PHF	0.681			0.736			0.642			0.736			

## Turning Movement Count Report PM

Location ID: 10  
 North/South: Laspina St  
 East/West: Tulare Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
16:00	17	96	27	18	135	25	20	78	24	46	148	39	673
16:15	26	108	32	14	115	24	16	61	21	36	128	30	611
16:30	23	83	33	16	119	20	17	58	26	41	166	23	625
16:45	27	94	27	10	149	17	13	75	29	37	176	24	678
17:00	12	92	30	12	134	17	18	72	28	39	184	38	676
17:15	27	101	22	21	122	22	21	65	22	68	165	30	686
17:30	27	98	32	16	121	33	21	62	21	42	140	27	640
17:45	16	77	27	16	122	24	10	53	25	31	108	21	530

Total Volume:	175	749	230	123	1017	182	136	524	196	340	1215	232	5119
Approach %	15%	65%	20%	9%	77%	14%	16%	61%	23%	19%	68%	13%	

Peak Hr Begin:	16:45												
PHV	93	385	111	59	526	89	73	274	100	186	665	119	2680
PHF	0.938			0.957			0.947			0.922			

## Pedestrian/Bicycle Count Report

Location ID: 10  
 North/South: Laspina St  
 East/West: Tulare Ave

Date: 01/16/24  
 City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	0	0
6:15	1	0	0	0	0	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	1	0	0	0	0	0
7:00	0	0	1	0	0	0	0	0
7:15	0	0	0	2	0	0	0	0
7:30	0	0	0	2	0	0	0	0
7:45	3	0	4	0	2	0	0	1

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	1	0	1	0	0	0	2	0
16:15	0	0	0	0	0	0	1	0
16:30	0	0	1	0	0	0	0	0
16:45	0	0	0	0	0	0	1	0
17:00	0	0	0	0	1	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

## Turning Movement Count Report AM

Location ID: 11  
 North/South: Mooney Blvd  
 East/West: Tulare Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
6:00	8	36	11	19	50	9	8	30	10	10	60	13	264
6:15	8	39	20	21	52	9	8	28	12	9	84	22	312
6:30	22	41	16	23	55	15	14	66	13	9	108	33	415
6:45	23	41	19	21	83	21	6	80	12	1	54	35	396
7:00	16	48	21	19	82	13	6	90	17	9	66	43	430
7:15	27	66	32	51	74	11	13	133	30	9	66	30	542
7:30	45	70	33	69	117	14	20	150	30	29	70	58	705
7:45	50	106	50	50	115	29	20	154	52	30	106	53	815

Total Volume:	199	447	202	273	628	121	95	731	176	106	614	287	3879
Approach %	23%	53%	24%	27%	61%	12%	9%	73%	18%	11%	61%	29%	

Peak Hr Begin:	7:00												
PHV	138	290	136	189	388	67	59	527	129	77	308	184	2492
PHF	0.684			0.805			0.791			0.753			



## Turning Movement Count Report PM

Location ID: 11  
 North/South: Mooney Blvd  
 East/West: Tulare Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
16:00	62	117	59	66	104	23	14	137	38	50	96	60	826
16:15	57	146	54	50	82	9	15	115	28	42	95	49	742
16:30	64	132	63	52	95	20	16	122	20	54	115	43	796
16:45	74	135	68	44	100	11	19	128	35	53	112	46	825
17:00	54	128	80	51	79	17	13	127	21	48	136	63	817
17:15	81	134	56	64	85	19	13	133	27	48	108	56	824
17:30	84	156	74	44	86	21	15	95	24	54	84	39	776
17:45	73	127	68	53	75	9	5	111	28	38	75	29	691

Total Volume:	549	1075	522	424	706	129	110	968	221	387	821	385	6297
Approach %	26%	50%	24%	34%	56%	10%	8%	75%	17%	24%	52%	24%	

Peak Hr Begin:	16:30												
PHV	273	529	267	211	359	67	61	510	103	203	471	208	3262
PHF	0.965			0.948			0.926			0.893			

## Pedestrian/Bicycle Count Report

Location ID: 11  
 North/South: Mooney Blvd  
 East/West: Tulare Ave

Date: 01/16/24  
 City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	0	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	1	0	1	0	0	1	0	0
7:00	0	0	0	0	0	0	0	0
7:15	1	0	1	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	0	0	0	0
16:15	1	0	0	0	0	0	1	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	1	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

## Turning Movement Count Report AM

Location ID: 12  
 North/South: Morrison St  
 East/West: Tulare Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
6:00	2	1	0	1	69	0	4	1	7	4	72	3	164
6:15	0	1	0	0	65	0	8	4	6	4	101	1	190
6:30	0	1	0	4	78	0	6	6	6	8	126	3	238
6:45	4	1	0	0	100	1	4	2	7	2	83	2	206
7:00	2	0	0	0	98	2	11	5	12	5	80	4	219
7:15	1	7	0	0	101	4	19	4	16	8	102	2	264
7:30	2	1	0	0	131	7	21	20	29	13	111	7	342
7:45	4	7	0	0	135	12	29	13	19	35	138	5	397

Total Volume:	15	19	0	5	777	26	102	55	102	79	813	27	2020
Approach %	44%	56%	0%	1%	96%	3%	39%	21%	39%	9%	88%	3%	

Peak Hr Begin:	7:00												
PHV	9	15	0	0	465	25	80	42	76	61	431	18	1222
PHF	0.545			0.833			0.707			0.716			

## Turning Movement Count Report PM

Location ID: 12  
 North/South: Morrison St  
 East/West: Tulare Ave

Date: 01/16/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
16:00	2	3	0	0	144	10	6	5	8	28	118	6	330
16:15	3	5	2	2	122	12	5	5	11	31	103	6	307
16:30	4	4	0	0	149	10	6	8	11	31	137	6	366
16:45	5	7	0	1	120	12	9	3	12	34	147	2	352
17:00	6	3	0	1	104	11	4	6	14	37	151	4	341
17:15	12	9	0	2	113	19	10	5	21	30	127	1	349
17:30	8	7	0	2	126	9	10	2	14	40	122	2	342
17:45	5	10	0	1	91	9	5	3	20	22	111	2	279

Total Volume:	45	48	2	9	969	92	55	37	111	253	1016	29	2666
Approach %	47%	51%	2%	1%	91%	9%	27%	18%	55%	19%	78%	2%	

Peak Hr Begin:	16:30												
PHV	27	23	0	4	486	52	29	22	58	132	562	13	1408
PHF	0.595			0.852			0.757			0.921			

## Pedestrian/Bicycle Count Report

Location ID: 12  
 North/South: Morrison St  
 East/West: Tulare Ave

Date: 01/16/24  
 City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	1	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	1	1	0	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

## Turning Movement Count Report AM

Location ID: 1  
 North/South: Oakmore Street  
 East/West: Prosperity Avenue

Date: 02/01/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
6:00	5	0	0	1	7	0	0	0	0	0	16	2	31
6:15	8	0	0	0	13	0	0	0	0	0	19	4	44
6:30	7	0	2	1	10	0	0	0	0	0	18	4	42
6:45	14	0	0	1	22	0	0	0	0	0	21	8	66
7:00	13	0	0	1	10	1	0	0	0	0	22	14	61
7:15	21	0	4	7	25	0	0	0	0	0	36	25	118
7:30	24	0	7	7	47	0	0	0	0	0	51	39	175
7:45	32	0	6	14	76	0	0	0	0	0	57	21	206

Total Volume:	124	0	19	32	210	1	0	0	0	0	240	117	743
Approach %	87%	0%	13%	13%	86%	0%	0%	0%	0%	0%	67%	33%	

Peak Hr Begin:	7:00												
PHV	90	0	17	29	158	1	0	0	0	0	166	99	560
PHF	0.704			0.522			0.000			0.736			

## Turning Movement Count Report PM

Location ID: 1  
 North/South: Oakmore Street  
 East/West: Prosperity Avenue

Date: 02/01/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	Totals:
16:00	17	0	2	2	43	0	0	0	0	0	40	19	123
16:15	29	0	6	5	38	0	0	0	0	0	48	13	139
16:30	20	0	4	1	50	0	0	0	0	0	46	18	139
16:45	24	0	6	6	34	0	0	0	0	0	44	22	136
17:00	28	0	2	10	42	0	0	0	0	0	65	13	160
17:15	54	0	5	6	36	0	0	0	0	0	55	19	175
17:30	25	0	2	1	31	0	0	0	0	0	28	10	97
17:45	10	0	1	4	21	0	0	0	0	0	46	6	88

Total Volume:	207	0	28	35	295	0	0	0	0	0	372	120	1057
Approach %	88%	0%	12%	11%	89%	0%	0%	0%	0%	0%	76%	24%	

Peak Hr Begin:	16:30												
PHV	126	0	17	23	162	0	0	0	0	0	210	72	610
PHF	0.606			0.889			0.000			0.904			

## Pedestrian/Bicycle Count Report

Location ID: 1  
 North/South: Oakmore Street  
 East/West: Prosperity Avenue

Date: 02/01/24  
 City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	0	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0



## Turning Movement Count Report AM

Location ID: 2  
 North/South: Mooney Boulevard (SR 63)  
 East/West: Seminole Avenue

Date: 02/01/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			Totals:
	1	2	3	4	5	6	7	8	9	10	11	12	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
6:00	0	63	2	12	0	0	0	53	0	0	0	0	130
6:15	0	64	5	26	0	0	1	59	0	0	0	0	155
6:30	0	71	9	23	0	0	6	87	0	0	0	0	196
6:45	0	83	8	17	0	1	6	112	0	0	0	0	227
7:00	0	90	9	23	0	0	4	132	0	0	0	0	258
7:15	0	110	8	37	0	0	3	166	1	0	0	0	325
7:30	0	163	12	65	0	1	2	244	1	0	0	0	488
7:45	0	199	14	78	0	0	7	233	0	0	0	0	531

Total Volume:	0	843	67	281	0	2	29	1086	2	0	0	0	2310
Approach %	0%	93%	7%	99%	0%	1%	3%	97%	0%	0%	0%	0%	

Peak Hr Begin:	7:00												
PHV	0	562	43	203	0	1	16	775	2	0	0	0	1602
PHF	0.710			0.654			0.803			0.000			

## Turning Movement Count Report PM

Location ID: 2  
 North/South: Mooney Boulevard (SR 63)  
 East/West: Seminole Avenue

Date: 02/01/24  
 City: Tulare, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	0	220	28	20	0	1	12	219	0	0	0	0	500
16:15	0	247	34	24	0	0	17	185	0	0	0	0	507
16:30	0	220	40	30	0	0	13	211	0	0	0	0	514
16:45	0	270	37	30	0	0	19	213	0	0	0	0	569
17:00	0	260	34	27	0	0	5	213	0	0	0	0	539
17:15	0	305	49	33	0	0	15	231	0	0	0	0	633
17:30	0	265	49	33	0	0	10	213	0	0	0	0	570
17:45	0	267	36	25	0	0	10	154	1	0	0	0	493

Total Volume:	0	2054	307	222	0	1	101	1639	1	0	0	0	4325
Approach %	0%	87%	13%	100%	0%	0%	6%	94%	0%	0%	0%	0%	

Peak Hr Begin:	16:45												
PHV	0	1100	169	123	0	0	49	870	0	0	0	0	2311
PHF	0.896			0.932			0.934			0.000			

## Pedestrian/Bicycle Count Report

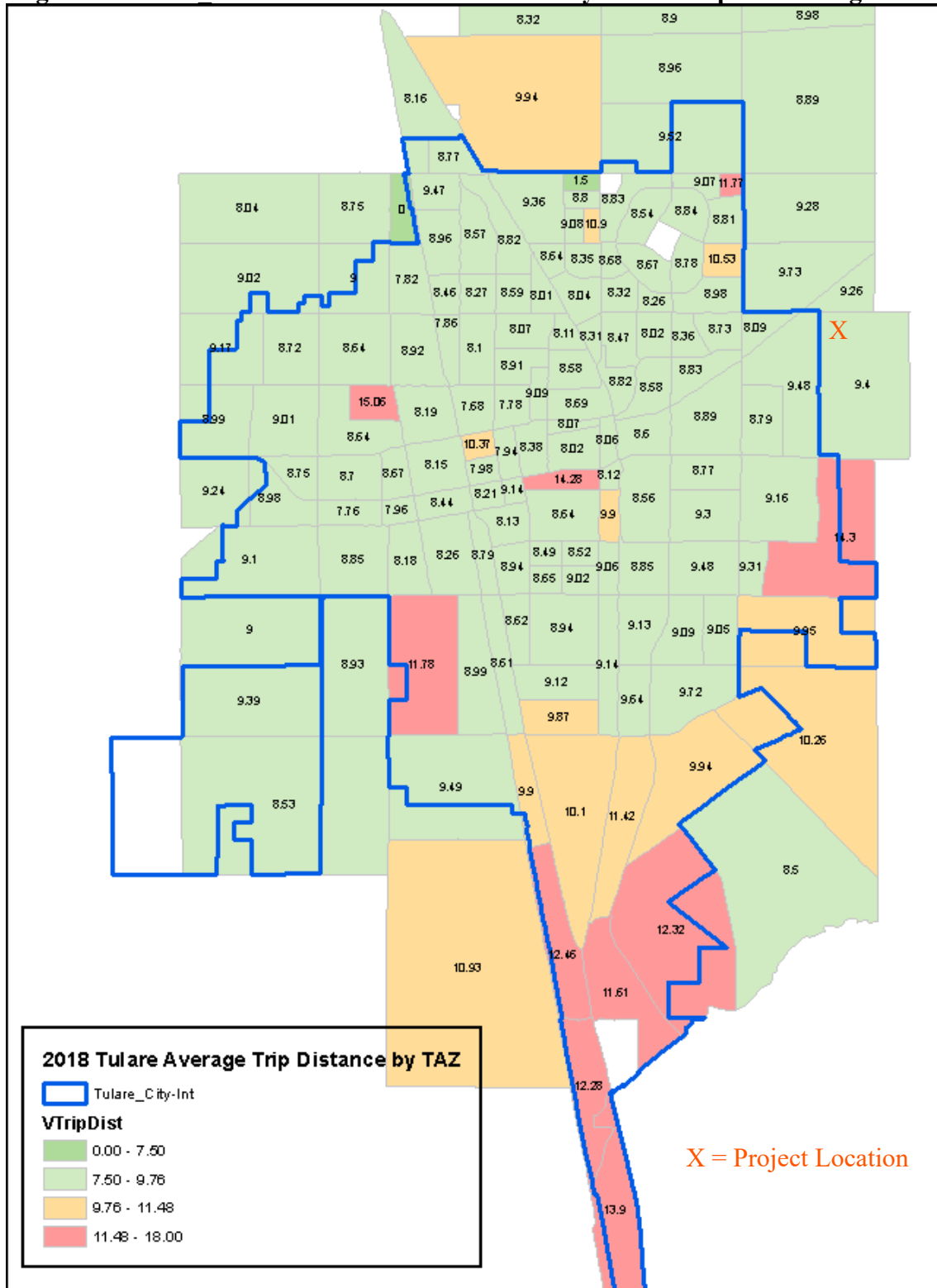
Location ID: 2  
 North/South: Mooney Boulevard (SR 63)  
 East/West: Seminole Avenue

Date: 02/01/24  
 City: Tulare, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:00	0	0	0	0	0	0	0	0
6:15	0	0	0	0	0	0	0	0
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	1	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	1	0	0	0	0	0
17:00	0	0	0	0	0	1	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

**Figure 1: Tulare 15% Reduced VMT Threshold by TAZ Compared to Regional Average**



Source: Tulare County Association of Governments, 2020.

# 2020

Quality/  
Level of Service Handbook



June 2020

**State of Florida**  
**Department of Transportation**

*Systems Implementation Office*  
605 Suwannee St. MS 19  
Tallahassee, FL 32399

[www.fdot.gov/planning](http://www.fdot.gov/planning)

# Table of Contents

<b>1</b>	<b>Executive Summary .....</b>	<b>1</b>
<b>2</b>	<b>Q/LOS Handbook Purpose and Scope .....</b>	<b>2</b>
	2.1. Levels of Analysis.....	2
	2.1.1. Generalized Planning .....	3
	2.2 Travel Modes.....	3
	2.2.1 Automobile .....	3
	2.2.2 Pedestrian .....	4
	2.2.3 Bicycle .....	4
	2.2.4 Transit .....	4
	2.3 What's New in This Version of the Q/LOS Handbook? .....	5
<b>3</b>	<b>Q/LOS Principles .....</b>	<b>6</b>
	3.1 Common Q/LOS Misconceptions .....	6
	3.2. Highway Capacity Manual .....	8
	3.2.1 Traffic Flow and Capacity Concepts .....	8
	3.2.2. Bicycle LOS (BLOS).....	9
	3.2.3. Pedestrian LOS (PLOS).....	9
	3.3. Transit Capacity and QOS.....	9
	3.4. Simplifying Assumptions.....	10
	3.4.1. Averages.....	10
	3.4.2. Turning Movements.....	10
	3.4.3. Queue Spillback.....	11
	3.4.4. Capacity.....	11
	3.4.5. Bus Frequency.....	11
	3.5. Arterial Analyses.....	11
	3.5.1 Pedestrian and Bus Analyses .....	12
<b>4</b>	<b>Roadway Variables .....</b>	<b>14</b>
	4.1. Roadway Type .....	14
	4.1.1. Freeways .....	14
	4.1.2. Highways .....	14
	4.1.3. Arterials.....	14
	4.2. Area Type.....	15
	4.2.1. Core Urbanized and Urbanized Areas .....	16
	4.2.2. Transitioning Areas .....	16
	4.2.3. Urban Areas .....	17
	4.2.4. Rural Areas.....	17
	4.3. Number of Through Lanes .....	17
	4.3.1. Arterials.....	18
	4.3.2. Highways .....	19
	4.4. Speed .....	20
	4.4.1. Posted Speed .....	20
	4.4.2. Free-Flow Speed .....	20

4.5. Median Type.....	20
4.5.1. Arterials.....	20
4.6. Exclusive Turn Lanes.....	21
4.6.1. Arterials.....	21
4.7. Roadway Lengths.....	21
4.7.1. Arterials.....	22
<b>5 Traffic Variables.....</b>	<b>23</b>
5.1. Volume and Demand.....	23
5.2. Annual Average Daily Traffic (AADT).....	24
5.3. Planning Analysis Hour Factor (K).....	24
5.3.1 Multimodal Transportation Districts (MMTD).....	26
5.4. Directional Distribution Factor (D).....	26
5.5. Peak Hour Factor (PHF).....	26
5.6. Base Saturation Flow Rate.....	27
5.7. Heavy Vehicle Percent.....	27
5.8. Speed and Capacity Adjustment Factors.....	27
5.9. Percent Turns from Exclusive Turn Lanes.....	28
<b>6 Control Variables.....</b>	<b>30</b>
6.1. Number of Signals.....	31
6.2. Arrival Type.....	32
6.3. Signal Type.....	33
6.3.1. Actuated.....	33
6.3.2. Actuated-Coordinated.....	33
6.3.3. Pretimed.....	33
6.4. Cycle Length (C).....	34
6.5. Effective Green Ratio (g/C).....	34
<b>7 Multimodal Variables.....</b>	<b>36</b>
7.1. Paved Shoulder/Bicycle Lane.....	37
7.2. Outside Lane Width.....	37
7.3. Pavement Condition.....	38
7.4. Sidewalk.....	38
7.5. Sidewalk Protective Barrier.....	39
7.6. Bus Frequency.....	39
7.7. Bus Stop Amenities.....	40
7.8. Bus Stop Type.....	40
7.9. Passenger Loads.....	40



<b>8</b>	<b>Future Year Analyses .....</b>	<b>41</b>
	8.1. <i>Change in Traffic Variables</i> .....	41
	8.1.1. AADT .....	41
	8.1.2. Planning Analysis Hour Factor (K) .....	41
	8.1.3. Directional Distribution Factor (D) .....	41
	8.2. <i>Change in Control Variables</i> .....	42
	8.2.1 g/C.....	42
	8.2.2 Signal Density .....	42
<b>9</b>	<b>Maximum Capacity Volumes.....</b>	<b>44</b>
	9.1. <i>Arterials</i> .....	44
	9.2. <i>Freeways</i> .....	44
	9.3. <i>Highways</i> .....	45
<b>10</b>	<b>Florida’s LOS Policy .....</b>	<b>46</b>
<b>11</b>	<b>Generalized Planning Analysis.....</b>	<b>47</b>
	11.1. <i>Introduction</i> .....	47
	11.2. <i>Special Cases</i> .....	49
	11.2.1. Mid-Block Considerations .....	49
	11.2.2. Non-State Signalized Roadways Adjustment .....	50
	11.2.3. Variations in Levels of Service.....	50
	11.2.4. Median and Turn Lane Adjustment (Divided/Undivided Roadways).....	50
	11.2.5. One-Way Facility Adjustments.....	51
	11.2.6. Auxiliary Lane Adjustment .....	51
	11.2.7. Ramp Metering Adjustment .....	51
	11.2.8. Bicycle LOS (BLOS).....	51
	11.2.9. Pedestrian LOS (PLOS).....	52
	11.2.10. Bus LOS .....	52
	11.3. <i>Service Volume Calculation Process</i> .....	53
	11.3.1. Arterial LOS .....	53
	11.3.2. Freeway Facilities LOS.....	54
	11.3.3. Highways LOS .....	54
	<b>Glossary .....</b>	<b>55</b>
	<b>2020 FDOT QUALITY/LEVEL OF SERVICE HANDBOOK TABLES.....</b>	<b>67</b>



## List of Figures

Figure 2-1: Traffic Analysis Tools .....	3
Figure 3-1: Examples of LOS by Mode for Arterials .....	7
Figure 4-1: Area Types .....	15
Figure 4-2: Usable Length .....	19
Figure 4-3: Example of Six-Lane Roadway .....	19
Figure 5-1: Predominant Turning Movement .....	29
Figure 5-2: Through Movement at a T Intersection with Exclusive Lanes .....	29
Figure 5-3: Through Movement at a T Intersection with Shared Lanes .....	29
Figure 6-1: Total Number of Signals .....	32
Figure 7-1: Outside Lane Width .....	38
Figure 7-2: Sidewalk/Roadway Separation .....	39

## List of Tables

Table 3-1: Service Frequency LOS Thresholds .....	10
Table 3-2: PLOS Adjustment Factors on Bus LOS .....	12
Table 5-1: Calculation of Percent Turns from Exclusive Turn Lanes .....	28
Table 6-1: Control Variable Input Requirements .....	30
Table 6-2: Sensitivity of Control Variables on Service Volumes .....	31
Table 7-1: Multimodal Variable Input Requirements .....	36
Table 7-2: Sensitivity of Multimodal Variables on Service Volumes .....	37
Table 7-3: Bus Stop Amenity Factors .....	40
Table 7-4: Passenger Load Factor .....	40

# 1 Executive Summary

This Quality Level of Service (Q/LOS) Handbook is intended to be used by engineers, planners, and decision-makers in the development and review of roadway capacity and roadway users' Q/LOS at generalized planning levels. This Q/LOS Handbook provides tools to quantify multimodal transportation service inside the roadway environment (essentially inside the right of way).

This edition of the Q/LOS Handbook is updated and reorganized, still providing a foundation for high-quality, consistent capacity, and level of service (LOS) analyses and review in the State of Florida. It includes new analytical techniques from the Transportation Research Board's Highway Capacity Manual (HCM), Sixth Edition, and updated Generalized Service Volume Tables. With these professionally accepted techniques, analysts can easily evaluate roadways from a multimodal perspective, which results in better multimodal decisions for projects in generalized planning phases.

The focus of generalized planning is the extensive use of default values and is intended for broad applications such as regional analyses, initial problem identification, and future year analyses. Florida's Generalized Service Volume Tables at the end of this Q/LOS Handbook are the primary tools for conducting this type of planning analysis. At this time, only Freeways and Uninterrupted Flow Highways Generalized Service Volume Tables have been updated to be consistent with the HCM methodology. The State Signalized Arterials Generalized Service Volume Tables remained the same as the 2013 Q/LOS Handbook. There are future plans to update the State Signalized Arterials Generalized Service Volume Tables to be consistent with the HCM methodology.

Florida Department of Transportation (FDOT) welcomes questions and comments on the content and concepts of this Q/LOS Handbook. FDOT will provide technical assistance and training as needed for usage of the Q/LOS process. For additional resources, see the FDOT's Systems Implementation Office (SIO) website at <https://www.fdot.gov/planning/systems/>. **Initial contacts should be made with FDOT District and Florida's Turnpike Enterprise personnel.**

## 2 Q/LOS Handbook Purpose and Scope

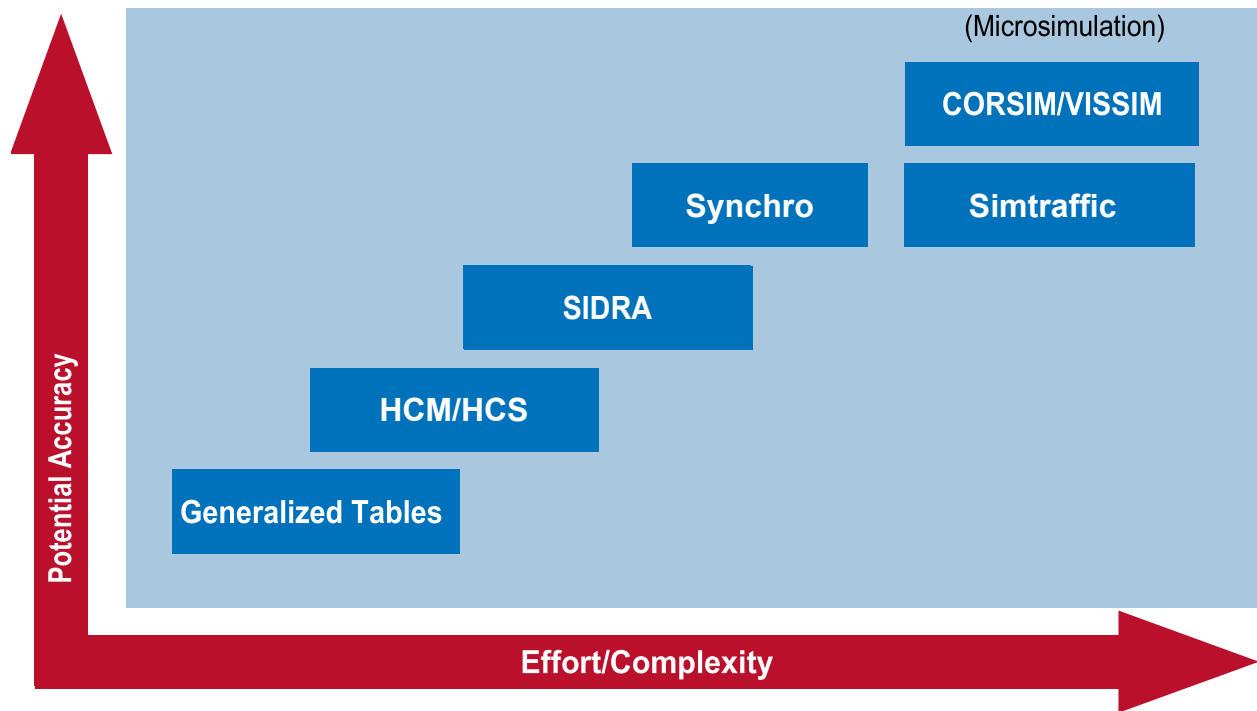
This Q/LOS Handbook is a tool that can be utilized to analyze and review a roadway's capacity at a generalized planning level.

**The quality of service (QOS) is a traveler-based perception of how well a transportation service or facility operates. The LOS is a quantitative stratification of the QOS into six letter grades.** The LOS provides a measure that assesses multimodal service inside the roadway environment (essentially inside the right of way). **Capacity conceptually relates to the maximum number of vehicles that can pass a point on a roadway in a given amount of time under normal conditions.** The Q/LOS Handbook provides Generalized Service Volume Tables and background regarding statewide default values used in their development. The Generalized Service Volume Tables, found at the end of the Q/LOS Handbook, present maximum service volumes, or the highest numbers of vehicles for a given LOS.

Directions found within the Q/LOS Handbook provide assistance in selecting the most appropriate tools for Q/LOS analysis. This handbook offers specific instructions on how to use the Generalized Service Volume Tables.

### 2.1. Levels of Analysis

There are many methods for computing capacity and the LOS, which form a hierarchy ranging from Generalized Service Volume Tables (the simplest to use but potentially least accurate) to complex operational analysis tools (very precise, but time-intensive and costly). **Figure 2-1** provides a list of some traffic analysis tools measured by accuracy and complexity. In selecting the appropriate tools, tradeoffs among study purposes (e.g., generalized planning application, signal timing application), accuracy and precision of results (e.g., variability in data for current year analyses, variability in future year analyses), and data preparation effort (e.g., use of existing statewide traffic data, use of direct field measurements) should be considered. Please refer to the [FDOT Traffic Analysis Handbook](#) for additional tools and guidance in selecting the appropriate analysis tool.

**Figure 2-1: Traffic Analysis Tools**

### **2.1.1. Generalized Planning**

Generalized planning covered in this handbook makes extensive use of default values and is intended for broad applications, such as initial problem identification (e.g., deficiency and needs analyses, geographic influence areas), statewide analyses (e.g., statewide calculation of delay), and future year analyses (e.g., 10-year planning horizon).

Florida's Generalized Service Volume Tables provided at the end of this handbook are the primary tools for conducting Generalized planning analysis. The updated tables have been developed using guidance provided in the HCM.

## **2.2 Travel Modes**

The HCM defines four major travel modes: automobile, pedestrian, bicycle, and transit. Each mode includes a unique set of characteristics that define a traveler's experience during a trip, and it is important to consider each perspective when analyzing a multimodal facility.

### **2.2.1 Automobile**

The three major elements that affect the operation of a vehicle are: roadway characteristics, traffic characteristics, and control characteristics.

Vehicles include passenger cars, trucks, vans, buses, recreational vehicles, and motorcycles. Each vehicle type has a unique set of operational characteristics, and the percentage makeup of each vehicle type within a traffic stream affects the capacity of a facility because of these differences. For example, trucks, buses, and recreational

vehicles have lower acceleration and deceleration rates than standard passenger cars. Factors, such as pavement type and condition, time of day, and weather, affect the operational characteristics of vehicles as well as driver behavior. Other factors, such as fatigue, health, and driving under the influence of drugs and alcohol, also affect driver behavior. **This handbook assumes base conditions that include typical drivers on dry pavement during daylight hours.**

### **2.2.2 Pedestrian**

Many trips include at least one part where the traveler is a pedestrian. This is particularly important for transit trips, where the pedestrian section of the trip may have an impact on future mode choice.

Analyzing the pedestrian experience can be summarized by two primary types of analysis: individual delay and facility attributes. Delay at intersections can be easily quantified and analyzed. The factors that describe a facility and, therefore, contribute to the overall walking experience are less easily quantified, including safety, security, lighting, grades, surface conditions, and even street activity levels. Automobile and heavy vehicle traffic volume, and the extent to which pedestrians are separated from vehicular traffic, also influence pedestrians' perception of QOS while using a sidewalk. **This handbook accounts for the user's perception and facility attributes when determining Pedestrian LOS (PLOS).**

### **2.2.3 Bicycle**

Bicycles are used to make a variety of trips, including trips for recreation, commuting, and errands. Bicycles can help extend the market area of transit service as bicycle travel is typically five times faster than travel on foot.

Similar to the pedestrian experience, Bicycle LOS (BLOS) can be summarized by delays encountered at intersections as well as the attributes of the facility itself. As with the pedestrian analysis, the Q/LOS Handbook focuses on facility attributes when determining BLOS. These attributes include the volume and speed of adjacent vehicles, heavy vehicle presence, the presence of on-street parking and pavement conditions. Because of the severe deterioration of perceived QOS at flow levels well below the theoretical capacity of a bike path, the concept of capacity has little utility in the design and analysis of bicycle paths.

### **2.2.4 Transit**

Transit riders can be grouped into two primary categories: choice and captive riders. Choice transit riders typically have other means of transportation readily available, but choose transit to avoid congestion, save money on fuel and parking, use their travel time productively for other activities, and/or reduce their impact on the environment. Captive riders, however, are unable to drive because of age, physical, mental, or financial reasons, and depend on transit or other modes for their daily transportation needs.

**Unlike other modes, transit is primarily focused on service levels rather than facility characteristics.** Infrastructure for driving, biking, or walking is available at all times, once constructed; transit service is only available during certain times along designated routes. Additionally, transit passengers are not in direct control of their travel time, service frequency and reliability, therefore, these are important factors that affect the quality and utility of transit service.

When bus service frequencies reach a high enough level of demand (headway of approximately 10 minutes or less),

bus passengers do not feel the need to consult bus schedules. This allows transit users the freedom to treat the system as they would treat other modes. Service frequencies that require passengers to plan their trips around a limited transit schedule offer much less utility, and deter choice riders.

**Because transit passengers typically must walk to and from transit stops on either end of their trip, the quality of the walking experience at the beginning or end of a trip may be just as important to the transit passenger as the actual transit experience.**

## 2.3 What's New in This Version of the Q/LOS Handbook?

This edition of the Q/LOS Handbook primarily reflects an update to the 2013 edition and incorporates updates included in the sixth edition of the HCM. The Q/LOS Handbook has been revised to focus on generalized planning for freeways and highways. No changes have been made in this version of the handbook to the arterial methodology and arterial Generalized Service Volume Tables from the 2013 Q/LOS Handbook.

The Generalized Service Volume Tables are the primary tools supported by FDOT for generalized planning. The freeway and highway automobile mode portions of the tables have been updated using the Highway Capacity Software 7 (HCS7), which incorporates the latest procedures provided in the HCM, Sixth Edition. The updated tables also include revised inputs and parameters that coincide with the current methodology in the HCM and default values. The updated tables can be found at the end of this handbook. A summary of the methodology changes is provided below:

- The Generalized Service Volume Tables
  - The 2020 freeway and highway Generalized Service Volume Tables were developed using HCS7, which is based on the HCM, Sixth Edition.
  - There are **no changes** for arterial service volumes between the 2012 and 2020 Generalized Service Volume Tables.
- The freeway service volumes are now based on freeway facilities procedures, incorporating basic segments and interchanges rather than just basic segments.
- The inputs are generally consistent between the 2012 and 2020 versions of the tables, but there have been some updates to maintain internal consistency in the 2020 set of tables.
- New inputs such as Speed Adjustment Factor (SAF) and Capacity Adjustment Factor (CAF) have been introduced into the development of the tables because the input requirements for HCS7 are more extensive than those for Level of Service Planning (LOSPLAN).
- FDOT **no longer** supports the LOSPLAN program and it has not been included in this version of the handbook.

## 3 Q/LOS Principles

Providing safety and mobility for people and goods remains transportation's most essential function and part of FDOT's mission. There are four dimensions of mobility:

- Quality of travel: traveler satisfaction with a facility or service.
- Quantity of travel: magnitude of use of a facility or service.
- Accessibility: ease in which travelers can engage in desired activities.
- Capacity utilization: quantity of operations relative to capacity.

This Q/LOS Handbook focuses primarily on quality, followed by capacity utilization. The quantity of travel and accessibility dimensions are not addressed in this Q/LOS Handbook.

The QOS is based on a user's perception of how well a transportation service or facility operates. In other words, it's how travelers perceive the overall QOS.

The LOS is a quantitative stratification of the QOS. The HCM divides highways QOS into six letter grades, A through F, with A being the best and F being the worst. With this scheme, traffic engineers more easily explained operating and proposed design concepts to the general public and elected officials.

**Despite its widespread use as an independent measurement, it is important to note that the LOS is simply a quantitative breakdown from transportation users' perspectives of transportation QOS. The LOS reflects the QOS, as measured by a scale of user satisfaction, and is applicable to each of the following modes that use roadways: automobiles, trucks, bicycles, pedestrians, and buses.**

Because this handbook deals with the overall quality of user satisfaction and its quantitative breakdown, it is labeled as the Q/LOS Handbook. The measurement techniques, however, are simply referred to as LOS analysis. This Q/LOS Handbook deals with the QOS and the LOS that roadways provide to users (i.e., motorists, bicyclists, pedestrians, and transit passengers) and provides planning tools to assist transportation planners and engineers. The overall quality of the entire trip experience, which depends on a variety of factors, including aesthetics, safety, and other social measures are not covered in this handbook.

### 3.1 Common Q/LOS Misconceptions

Common misconceptions about Q/LOS that often arise:

- The QOS is directly related to all other dimensions of mobility.

This misconception is related to the relationship between quality and other dimensions of mobility. *The QOS is frequently related to the other dimensions of mobility, but not in all cases.* Q/LOS for automobile drivers is usually closely linked to how many other vehicles are on the road. However, the relationship is not always perfect.

For example, arterial speeds are more closely tied to signalization conditions than the number of other vehicles on the roadway. A higher Q/LOS grade may exist on a four-lane arterial with twice the volume of another arterial due to efficient signal progression. For transit users, pedestrians, and bicyclists, there is often an even weaker relationship between total demand and Q/LOS. **In most situations in Florida, the total number of bicyclists and pedestrians on a facility has very little, if any, impact on Q/LOS. Similarly, in most of Florida, bus**



frequency is typically much more important to transit users than how many people are actually on a bus.

In some cases, particularly for the non-automobile modes, an analysis of total potential demand is a more important component of the decision-making process than the QOS. This handbook only addresses Q/LOS, not the methods of determining overall demand or mode splits. Other tools, such as logit models, are more appropriate for these types of analyses.

- The LOS is applicable only to automobile analysis, while the QOS is related to the non-automobile modes.

This misconception is that LOS applies only to automobiles, and QOS applies to the non-automobile modes. It is often assumed that while automobile analyses are highly quantitative, the bicycle, pedestrian, and transit analyses are more qualitative. *However, the bicycle, pedestrian, and transit techniques are as quantitative and rigorously developed and tested as those for automobiles.* An example of LOS by mode for arterials is illustrated in **Figure 3-1**.

**Figure 3-1: Examples of LOS by Mode for Arterials**



- The LOS A–F grades are comparable to American school letter grades.

The most common misconception about LOS A–F grades is that they are comparable to school letter grades. Although they share some basic similarities, there are some important distinctions to make at a planning level. *Unlike school grades, LOS A is not necessarily a desirable goal, and the meaning of A–F is not entirely consistent across modes. Although it is true that LOS A is best and LOS F is worst, this is strictly from a traveler experience and perspective. LOS A is not necessarily a desirable goal to achieve from an overall transportation or societal perspective.* LOS A in a peak travel hour could be an indicator of an inefficient use of limited funding. It is simply not cost-effective to design the state's roadways to operate at LOS A during the peak hour. FDOT's LOS targets in **Chapter 10** should be considered a desirable condition during the peak hour, with significant variance from those targets in either direction an undesirable condition. The LOS targets are an FDOT Policy ([000-525-006](https://www.fdot.state.fl.us/Policy/000-525-006)) and discussed in **Chapter 10**.

Although LOS F represents a failing condition, there are more factors to consider when the LOS reaches F. Essentially, LOS F either means travel demand exceeds capacity and the roadway is operating in oversaturated conditions, or another undesirable condition exists.

Although each of the methodologies for automobiles, bicycles, pedestrians, and buses make use of the LOS A–F



scales, **the meaning of A–F is not entirely consistent across the modes.**

Transportation professionals widely consider LOS D for the automobile mode an acceptable condition, and this threshold is often used as a design condition in urbanized areas. The bus and automobile LOS scales were developed by transportation professionals, with the objective of classifying various levels of congestion in undersaturated conditions. Members of the general public, however, determined the derivation of the bicycle and PLOS thresholds, thus incorporating a general perception of LOS D as a largely undesirable condition. Because of this, LOS D likely represents a worse condition from the user perspective for the bicycle and pedestrian modes than the automobile and bus modes. FDOT and its research team evaluated and considered various methods to make the LOS thresholds more consistent across modes, but found no scientific basis to adjust the scales. Users should therefore simply be cautious about comparing the same LOS letter grade across modes.

## 3.2. Highway Capacity Manual

For capacity and automobile, pedestrian, and bicycle Q/LOS analysis, the HCM is the foremost recognized and accepted analysis tool. HCM defines capacity as the maximum sustainable flow rate, which persons or vehicles can reasonably be expected to traverse a point or a uniform segment of a lane or a roadway during a given time period under prevailing roadway, environmental, traffic, and control conditions.

### 3.2.1 Traffic Flow and Capacity Concepts

The HCM defines two primary facility types: uninterrupted and interrupted flow facilities. The terms refer to the type of facility and, therefore, the analysis type, not the quality of traffic flow at any given time.

**Uninterrupted flow facilities have no fixed causes of delay or interruption external to the traffic stream, such as signals or stop signs.** Non-tolled freeways represent the purest form of uninterrupted flow, because there are no fixed interruptions to traffic flow, and access to the facilities are limited to ramp locations. Multilane and two-lane highways operate under uninterrupted flow in long segments between points of fixed interruption (e.g., traffic signals), but it is often necessary to examine the points of fixed interruption using interrupted flow methodologies.

**Interrupted flow facilities have fixed causes of periodic delay or interruption to the traffic stream, such as traffic signals or stop signs, with average spacing less than or equal to 2 miles.** Traffic flow patterns on interrupted flow facilities are the result not only of vehicle interactions and the facility's geometric characteristics, but also of the traffic control used at intersections and the frequency of access points to the facility. Traffic signals, for example, allow designated movements to occur only during portions of the signal cycle, and therefore affect flow and capacity, because the facility is not available for continuous use. Traffic signals also create platoons of vehicles that travel along the facility as a group. By contrast, intersections controlled by all-way stops and roundabouts discharge vehicles more randomly, creating periodic but sometimes small gaps in traffic at downstream locations.

Capacity on uninterrupted and interrupted flow facilities can be defined in terms of, passenger cars per hour (pcph), or vehicles per hour (vph), depending on the type of analysis or system element.

Reasonable expectancy is the basis for defining capacity. Capacity is, therefore, not the absolute maximum flow rate observed at a facility, but rather a flow rate that can be achieved repeatedly for peak periods of sufficient

demand.

**Prevailing roadway, traffic, and control conditions define capacity.** These conditions should be relatively uniform for any segment of a facility that is analyzed. Base conditions, by comparison, assume optimum conditions, including good weather, dry pavement conditions, users who are familiar with the system, and no impediments to traffic flow. In most cases, prevailing conditions differ from base conditions (e.g., there are trucks in the traffic stream, rolling terrain). As a result, the computations of capacity, service flow rate, and LOS include an adjustment to capacity under base conditions.

### 3.2.2. Bicycle LOS (BLOS)

**BLOS is based on bicyclists' perceptions of the roadway environment.** BLOS is based on five variables, with relative importance ordered in the following list:

- Average effective width of the outside through lane
- Vehicle volumes
- Vehicle speeds
- Heavy vehicle (truck) volumes
- Pavement condition

Average effective width is largely determined by the width of the outside travel lane and striping for bicyclists but includes other factors, such as the effects of street parking and drainage grates. Each of the variables is weighted by coefficients derived by stepwise regression modeling importance. A numerical LOS score, generally ranging from 0.5 to 6.5, is determined and stratified to an LOS letter grade. Thus, unlike the determination of automobile LOS, in which there is typically only one service measure (e.g., average travel speed), BLOS is determined by multiple factors.

### 3.2.3. Pedestrian LOS (PLOS)

Like BLOS, **PLOS is based on the pedestrians' perceptions of the roadway or nearby roadside environment.** PLOS is based on four variables with relative importance ordered in the following list:

- Existence of a sidewalk
- Lateral separation of pedestrians from vehicles
- Vehicle volumes
- Vehicle speeds

The PLOS model applies to the roadway facilities within the right of way. Therefore, estimating PLOS for facilities outside the right of way at significantly greater distance, may exceed the validated range of the model and is not recommended.

## 3.3. Transit Capacity and QOS

The Transportation Research Board (TRB) [Transit Capacity and Quality of Service Manual \(TCQSM\)](#) is the nation's leading document for transit and Q/LOS analysis. As used in this Q/LOS Handbook, transit or bus is limited to scheduled, fixed-route bus transit.

One significant exhibit in the TCQSM is a table for urban scheduled transit service based on service frequency. **Table 3-1** replicates this TCQSM table, but includes Florida-specific modifications to the adjusted service frequency.

**Table 3-1: Service Frequency LOS Thresholds**

Level of Service	Adjusted Service Frequency (Vehicles/hour)	Headway (minutes)	Comments
A	>6	<10	Passengers don't need schedules
B	>4	<15	Frequent service, passengers consult schedules
C	≥3	≤20	Maximum desirable time to wait if transit vehicle missed
D	≥2	≤30	Service unattractive to choice riders
E	≥1	≤60	Service available during hour
F	<1	>60	Service unattractive to all riders

## 3.4. Simplifying Assumptions

Planning-level analyses make extensive use of default values and simplifying assumptions to the operational models on which they are based. As such, there are multiple simplifying assumptions used in this Q/LOS Handbook.

### 3.4.1. Averages

This Q/LOS Handbook makes extensive use of averages. **For generalized planning (Generalized Service Volume Tables), most of the default input variables represent statewide averages. Similarly, for generalized planning, simple averages are recommended.** For example, if an arterial facility has daily volumes of 20,000, 25,000, and 24,000, it would be reasonable to use the average (23,000) of the three. However, users should be cautious of outlying values and use some judgment when applying simple averages. In the above example, if the first value were 10,000, the user may want to disregard that value or use the median value (i.e., 24,000).

### 3.4.2. Turning Movements

One of the most significant planning assumptions is that the mainline turning movements are adequately accommodated. Within this Q/LOS Handbook, the through movement is defined as the traffic stream with the greatest number of vehicles passing directly through a point. While this movement is typically the Straight Ahead movement, occasionally the right or left turn could qualify as the through movement. When the turning movement has the greatest number of vehicles (more than the Straight Ahead), it is recommended to consider the turning movement as the controlling movement. See **Section 5.9** for additional details.

Most analyses of through movements in the HCM are relatively straightforward. Complications arise with the treatment of turning or merging movements, especially for signalized intersections and arterials. By handling turning arterial movements (i.e., turns from the arterial, side-street movements) in a general way, Q/LOS and capacity analyses are greatly simplified. This is also true for some two-lane uninterrupted flow highways in which

mid-block turning movements may affect capacity. Off- and on-ramp movements along freeways are also handled in a general way and are assumed to be adequately accommodated. Most importantly, it is assumed that movements at off-ramps do not back up into the through lanes of the freeway.

When turning movements are not adequately accommodated in the available storage, the techniques to determine the LOS for an arterial found in this handbook are not appropriate. Although, the arterial analysis in this handbook includes all vehicles on the arterial, the focus is on the vehicles making through movements rather than turning movements. For example, only the green time for the through movement is included, and penalties are assigned if there are no left-turn lanes at signalized intersections and no medians exist mid-block.

### **3.4.3. Queue Spillback**

Another major assumption is that turning movements do not back up into adjacent through lanes. Essentially, adequate storage is assumed to be available for turning vehicles on arterials and for vehicles exiting freeways. Therefore, where mainline turning movements are not adequately accommodated, the planning techniques found in the Q/LOS Handbook are not appropriate. If this is the case, higher level analysis is recommended.

### **3.4.4. Capacity**

For the HCM analyses of uninterrupted flow facilities, capacity is set in terms of passenger cars per hour per lane (pcphpl). **Free-flow speed is estimated based on other variables, such as percent heavy vehicles, CAFs and SAFs, median type, and lateral clearance.**

For the HCM analyses of interrupted flow facilities, capacity represents the maximum number of vehicles that can pass a point during a specified time period under prevailing roadway, traffic, and control conditions.

The Q/LOS Handbook primarily relies on and reports capacity values based on the interrupted flow concept of capacity, with free-flow speed considered a roadway variable input. **For planning purposes, the assumed free-flow speed is 5 mph over the posted speed limit.**

### **3.4.5. Bus Frequency**

For transit analysis purposes, the most significant assumption is that bus frequency is the single most important factor in determining the Q/LOS to transit users along a transit route segment or roadway facility. FDOT, in cooperation with the TCQSM authors and others, has incorporated that concept. Certainly, the LOS varies for individual transit users along a facility, but **in the determination of bus LOS along a transit route segment or roadway facility, the availability of buses is usually the more relevant performance measure.**

## **3.5. Arterial Analyses**

### **ADJUSTED SATURATION FLOW RATE**

Variables such as area type, speed limit, number of lanes, percent right turn lanes, percent heavy vehicles, median type, left turn lanes and population size have effects on adjusted saturation flow rates. Furthermore, as traffic queues get longer, traffic pressure affects capacity. These effects are included in FDOT's Generalized Service Volume Tables.

## ADD-ON/DROP-OFF LANES

The add-on/drop-off lane (or expanded intersection) will contribute to intersection capacity, but not likely to the extent of a full through lane. The add-on/drop-off lane contains up to half the capacity of a full through lane. For any capacity benefit to be considered, two conditions should be met:

- the add lane and drop lane each must be at least 800 feet in length
- the add-on/drop-off pair combined must be at least 1,760 feet in length

For additional discussion, see [Section 4.3.1](#).

## ONE-WAY STREETS

The Generalized Service Volume Tables include a factor that has been approved for the evaluation of one-way streets. Essentially, one-way pairs are assumed to have a 20 percent higher service volumes than corresponding two-way roadways with the same number of lanes.

## LOS CRITERIA

The maximum control delay at a signalized intersection for LOS D is 55 seconds. While that value may be reasonable based on user perception in an urbanized area, in a small town or at an isolated intersection on a rural highway, that delay would be considered LOS F. To overcome this difference in user perception, FDOT has adopted different control delay criteria in rural undeveloped and rural developed areas. The criteria are one-half, rounded up, of the urbanized area criteria. For arterials in rural developed areas, arterial Class I LOS thresholds apply. These LOS criteria are embedded in FDOT's rural undeveloped and rural developed Generalized Service Volume Tables. The LOS criteria appear on the back of each table.

### 3.5.1 Pedestrian and Bus Analyses

#### PEDESTRIAN LOS

PLOS is determined by the methodology contained in this handbook. **The methodology is consistent and unchanged from the 2013 Q/LOS Handbook.** The pedestrian LOS adjustment factors as they relate to bus LOS are shown in [Table 3-2](#).

**Table 3-2: PLOS Adjustment Factors on Bus LOS**

Pedestrian Level of Service	Adjustment Factor
Pedestrian LOS A	1.15
Pedestrian LOS B	1.10
Pedestrian LOS C	1.05
Pedestrian LOS D	1.00
Pedestrian LOS E	0.80
Pedestrian LOS F	0.55

## ROADWAY CROSSING DIFFICULTY

When catching a bus, transit users frequently have to cross a road. **Crossing difficulty is typically influenced by three broad factors: traffic signal density, crossing length, and vehicle volume.** It is more difficult to cross roadways with low signal densities than roadways with closely spaced, signalized intersections. Mid-block crossing difficulty increases with road width and lack of pedestrian refuges (i.e. restrictive or raised medians). Mid-block crossing difficulty also increases as the number of vehicles increase, which results in fewer gaps. These three broad factors and other major factors, such as vehicle speed, are interrelated. To account for crossing difficulty in a general way, FDOT's approach includes a set of roadway crossing adjustment factors which capture the crossing difficulty. **Roadway crossing adjustment factors are used to determine the adjusted bus frequency by applying a factor that captures crossing difficulty.**

## PASSENGER LOAD FACTOR

Bus crowding plays a role in the user's perception of QOS, particularly on overcrowded buses when no seating is available. FDOT's approach includes a set of passenger load factors, which are applied to help determine the adjusted bus frequency value. **Passenger load factors are used to determine the adjusted bus frequency value by applying a factor commensurate to the level of passenger crowding.** These factors can be found in [Chapter 7](#) of this Q/LOS Handbook.

## BUS STOP AMENITIES

Passenger comfort and safety within the passenger waiting areas play a role in user perception of the QOS and desirability of a transit system. FDOT's approach includes a set of bus stop amenity factors, which are used to help determine the adjusted bus frequency value. The factors can also be found in [Chapter 7](#) of this Q/LOS Handbook.

## BUS STOP TYPE

Delay time at bus stops plays a role in travel times along routes, and thus impacts overall average travel speed. **FDOT includes a bus stop type adjustment factor, which is used to add 15 to 35 seconds of delay per route for typical and major bus stops, respectively.**

## BUS FACILITY ANALYSIS

The TCQSM structure for Q/LOS analysis consists of points (e.g., bus stops), route segments, and systems. It does not include a facility analysis. Nevertheless, to maintain consistency, a method of aggregating segment-level bus frequency to facility-level was needed. At the generalized level, a simple average is acceptable. For example, if on a 3-mile facility, four buses serve the first 2 miles and two buses serve the last mile, then using a value of three buses  $[(4 + 2)/2]$  is acceptable for a generalized level analysis.

## 4 Roadway Variables

Florida's Generalized Service Volume Tables are based on the HCM, TCQSM, and Florida roadway, traffic, control (signalization), and multimodal data. **The resulting tables are valid in Florida, and FDOT encourages the use of the generalized planning level approach.** Recognizing varying characteristics with the state and differing roadway, traffic, control, and multimodal characteristics, the Generalized Service Volume Tables are not adequate for all analysis needs. **Chapters 4 through 7** provide a description of input variables used in the development of the Generalized Service Volume Tables. Roadway variables describe the geometric and functional characteristics of a facility.

### 4.1. Roadway Type

Compatible with the terminology of the HCM, this Q/LOS Handbook is based on three major roadway types:

- Freeways
- Uninterrupted flow highways
- Interrupted flow roadways

Note: when using the Generalized Service Volume Tables, the number of lanes for arterials and other interrupted flow facilities should be determined at major intersections, rather than mid-block.

#### 4.1.1. Freeways

**Freeways are multilane, divided highways with at least two lanes for exclusive use of traffic in each direction and full control of ingress and egress.**

#### 4.1.2. Highways

**Uninterrupted flow highways are roadways with a combination of roadway segments, which have average signalized intersection spacing greater than 2 miles and are not freeways.** Because of the significantly different operating characteristics, these types of roadways are frequently also distinguished as two-lane highways and multilane highways.

#### 4.1.3. Arterials

**Interrupted flow roadways or arterials are characterized by signals with average signalized intersection spacing less than or equal to 2 miles.** In this Q/LOS Handbook, signalized arterials are the predominant type of interrupted flow roadway. They primarily are operated by the state and serve through traffic. Also included in this category are signalized Non-State roadways, but not local streets. As used here, signalized intersections refer to all fixed causes of interruption to the traffic stream and may occasionally include stop signs or other control types.

Arterials are further classified based on posted speed. There are two arterial classes:

- Class I: Arterials with a posted speed of 40 mph or greater
- Class II: Arterials with a posted speed of 35 mph or less



## 4.2. Area Type

Four broad area type groupings are used in this Q/LOS Handbook, as shown in **Figure 4-1**:

- Core Urbanized areas (areas with a population of 1,000,000+) and Urbanized areas (other urbanized areas with a population of 50,000+)
- Transitioning areas (transitioning into urbanized areas)
- Urban areas (areas with a population of more than 5,000 not in urbanized areas)
- Rural areas (rural undeveloped areas or developed areas with less than 5,000 population)

**Figure 4-1: Area Types**



The area types in the Generalized Service Volume Tables correspond well with FDOT's LOS targets; however, there are a few special cases. **FDOT District LOS Coordinators should be consulted for applicable boundaries within their districts.**

There may be small lengths of roadways (e.g., approximately 6 miles for freeways, 3 miles for nonfreeways) between area types or adjacent to an area type that, from a logical and analytical sense, should be combined into one area type or another.

These situations typically occur with adjacent interchanges or in transitioning areas, but may also occur elsewhere. FDOT districts have the flexibility to adjust the area type boundaries or designate a roadway with a certain area



type under these circumstances.

**As Florida’s population grows, area types may change for a specific location or roadway in future years.** FDOT’s district offices (contact information available at <http://www.fdot.gov/info/moreDOT/districts/district.shtm>) should be consulted if analysts believe different area types are appropriate for a future study period.

### 4.2.1. Core Urbanized and Urbanized Areas

Core urbanized and urbanized areas are defined as approved boundary, which encompasses the entire Census Urbanized Area, as well as the surrounding geographic area likely to become urbanized within the next 20 years, as agreed on by FDOT, Federal Highway Administration (FHWA), and the Metropolitan/Transportation Planning Organization (MPO/TPO). **Core urbanized area types are distinguished by whether the area’s population is more or less than 1 million.** Currently, the grouping of more than 1 million applies to the MPO areas that include central cities: Fort Lauderdale, Jacksonville, Miami, Orlando, St. Petersburg, Tampa, and West Palm Beach. These are referred to as “core urbanized.” **The minimum population for an urbanized area is 50,000.**

Previously, core urbanized thresholds were developed by applying a different K factor to the urbanized design hourly volume (DHV) thresholds, but after careful consideration, it was noted that additional factors could be applied in the analysis process for a core urbanized area, such as speed and ramp density, and these should be considered. As a result, new DHV, directional design hourly volume (DDHV), and annual average daily traffic (AADT) thresholds were developed for core urbanized areas based on separate analysis from the urbanized thresholds. **The urbanized areas with less than 1 million population are referred to as “other urbanized.”**

### 4.2.2. Transitioning Areas

**Transitioning areas are fringe areas that exhibit characteristics between rural and urbanized/urban. Transitioning areas are intended to include areas that, based on their growth characteristics, are anticipated to become urbanized or urban in the next 20 years.**

Frequently, the Metropolitan Planning Area is used for the transitioning area adjacent to an FHWA Urbanized Area (Adjusted Census Urbanized Area Boundary). The definition of Metropolitan Planning Area mentions the “contiguous area expected to become urbanized with the 20-year forecast period.” It is the contiguous area that should be considered the transitioning area. However, in practice, most MPOs have not delineated those contiguous or transitioning areas, and many of the Metropolitan Planning Areas extend to remote rural areas of counties. When the MPO does not identify these transitioning areas, or areas adjacent to urban (but not urbanized) areas, FDOT districts, in cooperation with local governments, may delineate transitioning areas for LOS purposes.

Keeping the boundaries relatively consistent over time is desirable to achieve understanding by all potential parties. The transitioning boundary should be reviewed and adjusted as a part of the census cycle update, consistent with the setting of the FHWA Urbanized Area boundaries. It is appropriate to review the transitioning boundary in conjunction with a Long-Range Transportation Plan update. The FDOT District LOS Coordinators should be consulted for transitioning boundaries within their districts. It is recommended that boundaries for transitioning areas be based on the location of major roadways or at interchanges. This avoids portions of a freeway changing from transitioning to urbanized or rural between interchanges. It is desirable for an urban street to have the same designation between major roadways and not change mid-block when aligning the boundary with major roads is impractical.

### 4.2.3. Urban Areas

**An urban area has a population between 5,000 and 50,000 and is not within an urbanized area.** The boundaries for cities with populations over 5,000 and not within urbanized areas are primarily set by existing city limits and must be agreed upon by FDOT, the local government, and FHWA. However, the 5,000 population threshold is primarily a surrogate for areas that exhibit urban traffic characteristics. When a city has a population of less than 5,000 but the surrounding area has a population of more than 5,000 and the city has an urban character, then it is reasonable to classify it with a population of more than 5,000 in the Generalized Service Volume corresponding to a population of over 5,000. These are Generalized Service Threshold Volume Tables 2, 5 and 8 at the end of this handbook following the Glossary.

Other situations exist in which an area has a population of over 5,000 and yet, the area is more characteristic of a rural developed area. In this situation, it is reasonable to use the “developed areas less than 5,000 population” sections of Generalized Service Threshold Volume Tables 3, 6, and 9 included at the end of this handbook following the Glossary. In both of these situations, FDOT District Planning Offices, after consultation with the Central Office Systems Implementation Office, should determine the appropriate designation to use.

### 4.2.4. Rural Areas

Rural areas consist of two types:

- Rural undeveloped: areas in which there is no or minimal population or development
- Rural developed: areas consisting of cities and other populated areas with populations of less than 5,000 or along coastal roadways

Generally, the portion for cities or developed areas in Generalized Service Threshold Volume Tables 3, 6, and 9 should be applied to areas with a population between 500 and 5,000 and not immediately adjacent to urbanized, urban, or transitioning areas. This portion of the tables also should be generally applied to coastal roads not in urbanized, urban, or transitioning areas.

## 4.3. Number of Through Lanes

The number of through lanes is one of the most important variables to analyze a roadway’s capacity and LOS. Emphasis is placed on through lanes, or lanes that directly accommodate through traffic. The number includes shared lanes (e.g., through/right), but does not include exclusive turn lanes or two-way left-turn lanes on arterials, auxiliary lanes on freeways, or passing lanes on two-lane highways. Arterials are often described as having an odd number of lanes when two-way left-turn lanes are present. However, for highway capacity and LOS analyses, that is not appropriate. The two-way left-turn lane does not accommodate through vehicles, and the facility is more appropriately characterized as having an even number of lanes with a non-restrictive median.

Usually the total number of through lanes in both directions is used to describe roadways. However, this Q/LOS Handbook bases analyses upon a single peak direction. As an example, an LOS analysis for a six-lane freeway is based on three lanes, using the higher directional traffic volume. Similarly, an LOS analysis for a four-lane urban street would be based on two directional lanes.

A common question when using the Generalized Service Volume Tables is how do we handle odd number lanes along the facility. The Generalized Service Volume Tables contain adjustment factors based on certain

characteristics of the facility (i.e., turn lanes, medians, etc.). Any applicable adjustment factors are first applied and then the average service volumes are averaged.

For example, a rural undivided 5-lane arterial facility with exclusive left-turn lanes and without exclusive right-turn lanes will have an adjusted LOS C threshold of 35,388. This is calculated using the Generalized Service Volume Table 3. The LOS C thresholds for an undivided 4 and 6-lane arterial in a rural area is 29,300 and 45,200, respectively. To calculate the 5-lane LOS C threshold, first account for any applicable adjustment factors. For this example, the LOS thresholds must be adjusted by -5% for multilane arterials that have exclusive left-turn lanes and no exclusive right-turn lanes. After this adjustment is applied, the new 4 and 6-lane LOS C thresholds are 27,835 and 42,940, respectively. To obtain the final 5-lane LOS C threshold, the newly adjusted 4 and 6-lane LOS C thresholds, 27,835 and 42,940, are averaged to obtain the 5-lane LOS C threshold of 35,388 to be used in the analysis.

### 4.3.1. Arterials

An important aspect of this Q/LOS Handbook is the methodology for determining an arterial's number of through lanes. The ultimate result of the LOS analysis is a facility estimation of the LOS, and **it is widely recognized that signalized intersections are the arterial's primary capacity constraint; therefore, it is appropriate to place more emphasis on the intersections' characteristics than the mid-block characteristics.** Generally, mid-block segments have capacities far exceeding those of major intersections, and it is rare for significant delays to occur mid-block. By weighting the effects of intersections more heavily, a more accurate aggregate estimation is possible.

Site-specific characteristics (e.g., intensity and type of land use, driver behavior, speed, etc.) can dramatically affect the viability of add-on/drop-off pairs as through lanes; therefore, each approach should be examined on a case-by-case basis. Analysts are strongly cautioned to review all pertinent characteristics prior to adjusting the number of through lanes used. The reviews should be conducted during peak travel conditions. Analysts are encouraged to consult with their FDOT District LOS Coordinators prior to applying this concept. The following guidelines are offered as a capacity estimating tool only. This process should never be used for the design or redesign of an expanded intersection.

For any capacity estimation to be considered, two conditions should be met:

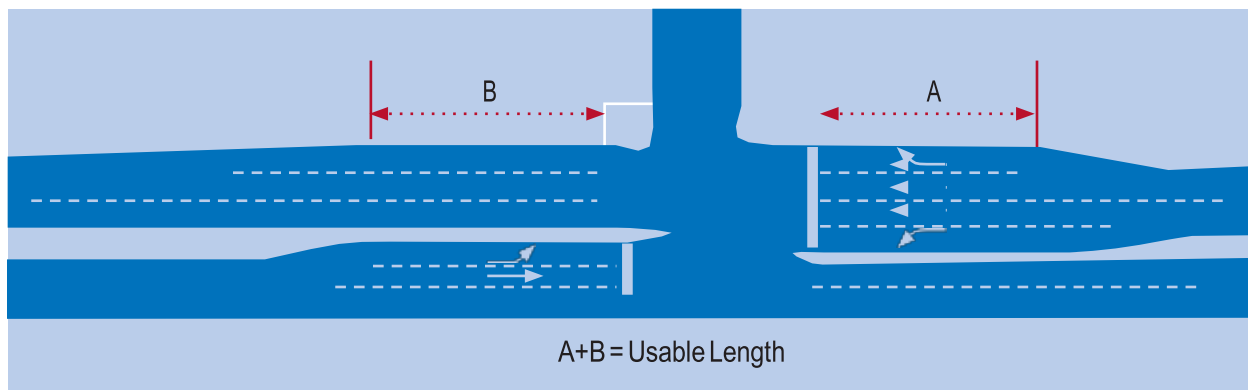
- The add and drop lanes must each be at least 800 feet in length
- The add-on/drop-off pair combined must be at least 1,760 feet in length

If either of these conditions is not met, then no additional capacity is assumed.

If the add-on/drop-off pair is at least one-third of a mile in length (roughly divided equally between approach and departure and exclusive of tapers and cross-street width, as represented by A+B in [Figure 4-2](#)), it may be reasonable to consider an additional one-half lane for capacity purposes. For example, in the accompanying diagram, if A = 1,000 feet and B = 1,000 feet, then it would be reasonable to consider that the intersection approach has 2.5 effective through lanes.

With a length of at least one-half mile (roughly divided equally between the add and drop lanes), it may be reasonable to consider the add-on/drop-off pair as adding up to one full through lane.

Figure 4-2: Usable Length

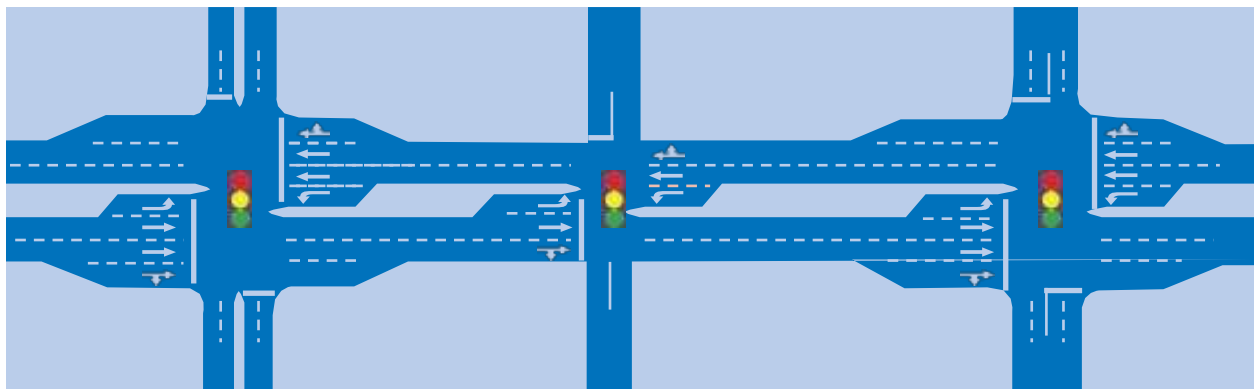


When using the Generalized Service Volume Tables, the number of through lanes on a facility is typically determined by the through and shared through/right lanes at major intersections rather than mid-block.

**Figure 4-3** shows the mid-block segments with four lanes, with two lanes in each direction. The major intersections each have six lanes, with two through and one shared through/right add-on/drop-off lane with tapers adequate for safe merging.

In this illustration, as in many cases, minor signalized intersections have green times so heavily weighted to the major urban street that they do not cause significant delays to through traffic. When this is the case, it is sometimes acceptable to disregard the number of lanes at these minor intersections; instead, the determination should be based on the lanes at major intersections. So in terms of the LOS, this particular facility has six lanes.

Figure 4-3: Example of Six-Lane Roadway



### 4.3.2. Highways

For uninterrupted flow highway facilities, the number of lanes is the basic segment or mid-block laneage. For example, a two-lane highway, which is widened to four lanes at major intersections, should be considered a two-lane highway.

## 4.4. Speed

### 4.4.1. Posted Speed

The maximum speed at which vehicles are legally allowed to travel over a roadway segment.

### 4.4.2. Free-Flow Speed

**Free-flow speed is the average speed of vehicles not operating under the influence of speed reduction conditions. In general, free-flow is the average speed under low-flow conditions and not influenced by control conditions, such as signalized intersections. The assumption used in this handbook is that the free-flow speed is 5 mph above the posted speed.** As an example, if an arterial has a posted speed of 40 mph, the default free-flow speed used is 45 mph; however, if a more accurate free-flow speed is available, it should be used.

## 4.5. Median Type

### 4.5.1. Arterials

As used in this document, medians may be classified in one of three ways:

- restrictive median (r)
- non-restrictive median (nr)
- no median (n)

**A restrictive median is a raised or grassed area normally at least 10 feet in width separating opposing mid-block traffic lanes and includes left-turn lanes.**

**A non-restrictive median is a painted at-grade area normally at least 10 feet in width separating opposing mid-block traffic lanes, and for arterials, accommodates mid-block left-turning vehicles to exit from through lanes.** Continuous two-way left-turn lanes are considered a non-restrictive median under this definition. Situations in which restrictive or non-restrictive medians are less than 10 feet wide are considered as having no median.

FDOT included the median factor to account for lowering mid-block average travel speeds when no median is present. From the aspect of getting left-turning vehicles out of the traffic stream, the difference between a restrictive and a non-restrictive median is relatively inconsequential. Thus, in determining automobile LOS, restrictive and non-restrictive medians are treated the same.

From a pedestrian point of view, there is a significant difference between non-restrictive medians and restrictive medians. Restrictive medians give pedestrians a much safer mid-block crossing. Thus, this type of median is a consideration in determining the pedestrian crossing factor that enters the bus LOS analysis. **A non-restrictive median provides no pedestrian refuge.**

**A pedestrian refuge is an area at least 5 feet but less than 10 feet in width (not a full, raised median) separating opposing mid-block traffic lanes and allowing pedestrians to cross the roadway more safely and comfortably.** From a pedestrian point of view, a pedestrian refuge has nearly the same benefit as a restrictive

median. In terms of pedestrian crossing difficulty, the difference between a restrictive median and pedestrian refuge is relatively small; therefore, in determining pedestrian crossing difficulty, the two may be treated the same.

Pedestrian refuges are not included as a distinct category. If an analyst needs to evaluate the effects of a pedestrian refuge, it should be treated as a restricted median for transit analysis, but as no median for automobile analysis.

## 4.6. Exclusive Turn Lanes

### 4.6.1. Arterials

#### EXCLUSIVE LEFT-TURN LANES

The exclusive left-turn lanes are reserved for the exclusive use of left-turning vehicles. The length of these lanes must accommodate turning demand such that left-turn traffic (1) is able to enter the turn lanes behind through queues or (2) can be stored in the turn lane to ensure the through lane traffic is not blocked. When left-turn lanes are not present, a shared lane exists which is included in the number of through lanes.

When analyzing arterials without left-turn lanes, the use of the Generalized Service Volume Tables is discouraged in all but the most basic analyses. If used, the Generalized Service Volume Tables include adjustment factors for the absence of left turn-lanes. To account for the absence of left-turn lanes, adjustment factors provided in the Generalized Service Volume Tables must be manually applied to the service volumes. However, the user is cautioned that research indicates that the true value of the reduction is highly dependent on the distribution of traffic volumes among all the various movements, and a constant reduction factor, as used in the tables is not accurate.

**Storage length refers to the total amount of storage available for left-turning vehicles, measured in feet.** The default value is 235 feet. For new turn lanes, FDOT Design Standards must be consulted (found at <https://www.fdot.gov/design/standardplans/DS.shtm>).

#### EXCLUSIVE RIGHT-TURN LANES

**Exclusive right-turn lanes are storage areas designated to exclusively accommodate right-turning vehicles.**

The length of these lanes must be able to accommodate turning demand to allow for the free flow of the through movement. The number of pedestrians crossing at these locations should also be considered and accommodated.

## 4.7. Roadway Lengths

To properly apply the Generalized Service Volume Tables, it is necessary to partition roadways into appropriate lengths for analysis. Setting lengths too short may not adequately capture traffic flow characteristics. Vehicles will not achieve the same average running speed on a segment as over a longer facility length. Short lengths would also be subject to bias caused by signal control delay.

Furthermore, analysis results would not conform to the concept of LOS that is based on the driver perception of the operation of roadways and may not show where the most significant impact of proposed development traffic will occur. Conversely, setting lengths too long may dilute the impact of hot spots by averaging them into other portions that operate better.

**FDOT District LOS Coordinators have primary responsibility for the segmentation of the State Highway System (SHS) for LOS purposes.** FDOT Central Office may combine smaller segmentation lengths of a facility for statewide reporting and other purposes.

In general, the partitioning of roadways for facility analyses should be based on the following considerations, ranked in order:

- Highway system structure (including facility type, number of lanes, etc.)
- Area type boundaries
- Lengths
- AADTs

At the local level, government agencies frequently make highway capacity and LOS termini at their own jurisdictional boundaries, regardless of the appropriate facility length and termini considerations described above. Jurisdictional boundaries by themselves are usually not appropriate termini for capacity and LOS analyses. Local governments are encouraged to consult with FDOT District LOS Coordinators for applicable segmentation within their jurisdictional boundaries.

### **4.7.1. Arterials**

For an arterial facility analysis, the general recommendation is that the facility be at least two (2) miles in length to use the service measure of average travel speed. Major intersecting arterials frequently serve as logical breaks in segmenting the arterial facility. In downtown areas, the general recommended length is at least one (1) mile.

When evaluating arterial section or facility LOS for planning, the roadway should begin and end at a signalized intersection. The following guidance is provided for some special cases:

- (1) Interchanges along an arterial: At a generalized planning level, it is typically appropriate to make a break at an interchange (highway system structure criterion) that does not include a signalized intersection.
- (2) Boundaries, especially urbanized area boundaries: When a signalized intersection lies just outside the boundary, it is proper to extend an analysis to the next signalized intersection if within 2 miles of a boundary for a conceptual planning analysis. For example, if a signalized intersection lies 1 mile beyond the existing urbanized boundary in a transitioning area, it is appropriate to include that signalized intersection and the 1 mile of transitioning area as part of an urbanized area analysis.



## 5 Traffic Variables

This chapter provides an overview of key traffic variables used in the development and use of the Generalized Service Volume Tables.

### 5.1. Volume and Demand

**Traffic volume is the most basic of all traffic parameters and is generally defined as the number of vehicles passing a point on a transportation facility during a specified time period.** Traffic volumes typically are developed separately from capacity/LOS analyses and provide input to those analyses. Various sources that determine traffic data include:

- FDOT's Florida Traffic Online (FTO) Web Application
- Extrapolation of historical growth trends
- FDOT's travel demand forecasting models
- Institute of Transportation Engineers (ITE) Trip Generation Manual

The sources listed below provide guidance on traffic forecasting and analysis:

- [FDOT's Project Traffic Forecasting \(PTF\) Handbook](#)
- HCM, Sixth Edition
- FDOT's Traffic Analysis Handbook

Volume is the parameter most often used to quantify traffic demand. **Traffic demand is the number of vehicles with drivers who desire to traverse a particular highway during a specified time period. While traffic demand expresses a desire, volume typically represents actual measurement.**

Misuse of measured volumes often occurs in capacity/LOS analyses causing traffic studies to report the observation and measurement of conditions as they presently exist. Current observations do not reflect constraints in the existing highway system that may prevent vehicles from accessing a desired segment of the system at any given point in time. Observed volumes on congested facilities are more a reflection of capacity constraints than of true demand.

Measured traffic volume cannot theoretically exceed roadway capacity, but traffic demand volume can exceed capacity. An example of a common misinterpretation of these two distinct terms typically occurs while collecting traffic data at an oversaturated intersection. The traffic volume that can physically be processed through a traffic signal is a measure of the capacity (or supply). When traffic volumes approach roadway capacity, the transportation system may experience abnormally long vehicle queues and excess vehicular delay. The length of the vehicle queue upstream of a traffic signal is a more accurate measure of the traffic demand that cannot be processed in the one-hour analysis period.

The impact of bottlenecks, alternative routes, latent demand, and future growth further complicates the relationship between measured traffic volume and traffic demand. **If questions arise as to the appropriateness of using measured volumes or demand volumes for capacity and LOS analyses, it is clear demand volumes should be used.**



## 5.2. Annual Average Daily Traffic (AADT)

**AADT is the total volume of vehicle traffic on a highway or roadway segment for one year divided by the number of days in the year.** Most planning applications require AADT volumes. Determining AADT values is a separate process and distinct from capacity/LOS analyses. FDOT routinely provides AADT values for state roads.

AADT values are easy to confuse with two other traffic count numbers that are used to estimate AADT. **The average daily traffic (ADT) is the total traffic volume during a given time period, more than a day and less than a year, divided by the number of days in that time period.** ADT is generated from a short-term traffic count and can be used to estimate AADT. Ensuring ADT counts are reflective of the normal average traffic is an important consideration when using them to estimate AADT on the roadways. Traffic taken during a four-day holiday, long weekend, or Saturday night when 50,000 or more football fans gather is not a normal occurrence.

**Peak season weekday average daily traffic (PSWADT) is the average weekday traffic during the peak season.** PSWADT numbers are normally generated by travel demand forecasting planning models, such as Florida Standard Urban Transportation Model Structure (FSUTMS). Like ADT, they can be converted to AADT by an adjustment factor.

FDOT operates two types of traffic monitoring programs: 1) continuous monitoring at selected locations using permanently installed equipment and 2) coverage counts at many temporary or short term sites using portable equipment. Further information about the traffic monitoring programs can be found in the FDOT PTF Handbook.

There are two count adjustment factors used to calculate AADT. The first, **axle correction factors are used to compensate for an axle counter's tendency to count more vehicles than are actually present.** For example, an axle counter would show a count of two when a four-axle truck runs over the sensor, even though only one vehicle is present. The second, **seasonal adjustment factors have been developed to adjust for the variation in traffic over the course of a year.** The peak season is the 13 consecutive weeks with the highest volumes. The weekly seasonal factors for those weeks will be the lowest, and the factors will be the highest for the weeks with the lowest volumes. The seasonal factor is used as follows:

$$\text{AADT} = (\text{short-term traffic count}) \times (\text{seasonal factor}) \times (\text{axle correction factor})$$

Although, for planning purposes AADT is usually used, actual capacity and LOS analyses are conducted on an hourly or sub-hourly directional basis. All of FDOT's Generalized Service Volume Tables are based on peak hour directional roadway, traffic, control, and multimodal characteristics. FDOT's hourly directional tables may be viewed as the most fundamental of the tables, because the daily tables are created by dividing the peak hour directional values by the directional distribution factor (D) and the planning analysis hour factor (K). Although the determination of AADT is outside the capacity/LOS analyses, the determination of K and D is a fundamental part of capacity/LOS analyses in planning stages because of the need to convert AADT to peak hour directional volumes.

## 5.3. Planning Analysis Hour Factor (K)

**The K factor is the ratio of the traffic volume in the study hour to AADT.** Historically, FDOT has used a variety of study hours and K factors depending on the application. Frequently used K factors included the 30th highest volume hour of the year (K30), 100th highest volume hour of the year (K100), highest hourly volume to daily volume (Kp/d), 5–6 p.m. weekday volume to AADT (K5-6pm), average p.m. weekday peak volume to AADT (Kpm), average a.m. peak weekday volume to AADT (Kam), and noon weekday volume to AADT (Knoon). In general, K factors

are used for peak hour traffic analyses, but analyses can also be based on low-volume conditions, such as the analysis of truck travel in early morning hours. Roadway, traffic, and control conditions vary considerably during the day, potentially affecting capacity values and service volume thresholds.

**Standard K is the primary planning analysis hour factor used in Florida, and the value is set based on the area type and facility type.** The use of Standard K represents a design approach in which the K factor for a roadway is established from the planning phase through the design phase of the project development process. Rather than being a variable, Standard K values are a fixed, cost-effective parameter, much like the use of 12-foot through lanes on major, high-speed roadways. Unless otherwise noted, all references in this Q/LOS Handbook that refer to a study hour or K factor refer to Standard K.

The Standard K factor is used to convert a peak hour volume to an AADT and vice versa. The Standard K factors used in the Generalized Service Volume Tables were obtained through a methodical process to obtain representative Standard K factors. On the freeways in the seven largest urbanized areas in Florida (Fort Lauderdale, Jacksonville, Miami, Orlando, St. Petersburg, Tampa, and West Palm Beach), Standard K represents a peak study period. For all other facilities, Standard K represents a peak hour not within the peak season. Standard K Factors for planning and design analysis are not directly applicable to the Turnpike, other toll roads, and managed lanes. For more information on the K Factors, refer to FDOT's PTF Handbook.

**The K factor generally drops as an area becomes more urbanized and high traffic volumes are spread out over longer time periods.** If adequate documentation is provided, FDOT would consider deviations from the Standard K table for special facility types.

The recommended Standard K factors can be found in the FDOT PTF Handbook and the analyst must refer to the PTF Handbook for use of appropriate K factors in projects. The K values used in development of the Generalized Service Volume Tables included in this handbook are consistent with the PTF Handbook. They are listed below:

- Urbanized (Core urbanized/Core freeways)
  - Freeways: 0.09 (0.085)
  - Highways: 0.090
  - Arterials: 0.090
- Transitioning
  - Freeways: 0.098 (average of Transitioning to Urbanized Areas and Urban)
  - Highways and arterials: 0.090
- Rural developed and rural undeveloped
  - Freeways: 0.105
  - Highways and arterials: 0.095

Standard K values on freeways in large urbanized areas range from 8.0 to 9.0 percent, while Standard K values on these “core freeways” in large urbanized areas are typically lower in this range. The lower K values signify a peak period, as opposed to a peak hour. The urban core freeway K values in large urbanized areas are available on [FDOT FTO Web Application](#) managed by FDOT's Transportation Data and Analytics (TDA) Office.

### 5.3.1 Multimodal Transportation Districts (MMTD)

The purpose of MMTDs is to encourage desirable transportation environments for all users, including transit passengers, pedestrians, cyclists, and motorists. The designation of such districts recognizes the inherent, integral relationship between transportation, land use, and urban design and the degree to which each of these elements affect the others. Local governments opting to designate an MMTD assign secondary priority to vehicle mobility and primary priority to assuring a safe, comfortable, and attractive pedestrian environment, with convenient connections to transit. FDOT supports local governments that are committed to such efforts. Implementing MMTDs should help foster the use of multiple modes of transportation, leading to a reduction in automobile use while maintaining high mobility characteristics in the area.

The primary way FDOT supports these designated areas is through its LOS targets. FDOT promotes lower acceptable automobile travel speeds for longer durations in the planning, design, and operations of its facilities.

## 5.4. Directional Distribution Factor (D)

**The peak hour D factor is the proportion of an hour's total volume occurring in the higher volume direction.**

The preferred approach to obtain D factor data is from the FTO Web Application, which provides a D factor for all state roads. The FTO Web Application reports the average of measured D values around the 200<sup>th</sup> highest hour from nearby and comparable roadway sites. The statewide minimum acceptable D factor is 0.51 ( this is not the default value and should only be used in an LOS analysis if adequate justification is provided for the specific roadway). The D factor of 0.55 was used in the Generalized Service Volume Tables for all facility and area types. Using such an approach provides statewide consistency and reasonable accuracy in the values indicated and at a minimum cost. Additional guidance and the recommended range of D factors can be found in the FDOT PTF Handbook.

## 5.5. Peak Hour Factor (PHF)

**The peak hour factor (PHF) is the hourly volume divided by the peak 15-minute rate of flow within the peak hour, specifically:**

$$PHF = \frac{(Hourly\ Volume)}{4(Peak\ 15 - minute)}$$

The planning-level approach for addressing volume variations within the study hour has been adopted within this handbook. PHF based on area type were used to develop the vehicular service volumes in this Q/LOS Handbook. The PHF associated with each area type is:

- Urbanized areas: 0.95
- Transitioning/urban areas: 0.92
- Rural areas: 0.88

The PHF associated with the area type is consistent with the sixth edition of the HCM. For more information on the PHF, refer to FDOT's PTF Handbook.

## 5.6. Base Saturation Flow Rate

The HCM uses the term “base saturation flow rate” for interrupted flow roadways and capacity, or base capacity, for uninterrupted flow roadways to describe the maximum steady flow. **Base saturation flow rate is the maximum steady flow rate, expressed in pcphpl, at which passenger cars can cross a point on interrupted flow roadways.** These are not the same as capacity, as normally used to define how many vehicles a roadway can reasonably accommodate. The base saturation flow rates/capacities for Florida’s roadway facilities are:

- Arterials and other interrupted flow facilities: 1,950 pcphpl (assuming 100 percent green time)
- Basic freeway segment (70 mph free flow speed): 2,400 pcphpl
- Uninterrupted flow multilane highway segments (60 mph free flow speed): 2,200 pcphpl
- Uninterrupted flow two-lane highway segments: 1,700 pcphpl

## 5.7. Heavy Vehicle Percent

The FHWA has a vehicle classification scheme in which vehicles larger than a pickup truck are considered heavy vehicles. This includes vehicles with more than four wheels or a classification group of four or higher. **The percentage of these heavy vehicles in a given hour is frequently referred to as a truck factor (T).** However, to be more consistent with HCM terminology and to overcome some definitional problems with the common understanding of the meaning of a truck, this Q/LOS Handbook uses the term “heavy vehicle” and makes use of the percent of heavy vehicles in a given hour.

The heavy vehicle percentage varies dramatically by the time of day, day of week, roadway type, and adjacent land uses. Operational characteristics of heavy vehicles also vary dramatically by type of heavy vehicle (e.g., a relatively small delivery truck compared to a fully loaded 18-wheel semi-truck) and whether they are operating on an uncongested freeway or on signalized roadways. The blast effect of heavy vehicles on bicyclists also varies significantly based on the type and speed of heavy vehicles.

## 5.8. Speed and Capacity Adjustment Factors

**The HCM 6<sup>th</sup> Edition has replaced the local adjustment factor (LAF) with the SAF and CAF. The LAF previously provided an adjustment to capacity to account for driver aggression, hurriedness, and familiarity with the facility.**

The SAF is used to adjust the speed of a facility based on a combination of sources, including weather and construction work zone effects. The SAF may also be used to calibrate the estimated free-flow speed for local conditions or other effects that contribute to a reduction in free-flow speed.

The CAF is used to adjust the capacity of a facility for reduced-capacity situations or to match field measurements. The capacity can be reduced to represent situations such as construction and maintenance activities, adverse weather, traffic incidents, and vehicle breakdowns.

The SAF and CAF can be used to adjust for driver familiarity (or unfamiliarity) with the facility. Additionally, these adjustment factors are used to calibrate a roadway to existing conditions. For the Generalized Service Volume Tables analysis, an SAF of 0.975 and a CAF of 0.968 was assumed for all analyses and area types. These values are derived from the HCM 6<sup>th</sup> Edition.

## 5.9. Percent Turns from Exclusive Turn Lanes

Percent turns from exclusive turn lanes is the percent of vehicles approaching an intersection served by an exclusive turn lane or lanes. More specifically, the percent left turns is the percentage of vehicles performing a left-turning movement at a signalized intersection, and the percent right turns is the percentage of vehicles performing a right-turning movement at a signalized intersection. Typically, the percent turns from an exclusive lane is the percent of traffic using an exclusive left-turn lane, with traffic predominantly moving straight ahead.

Some of the most complicated calculations within the HCM chapter on signalized intersections deal with accommodating left-turn movements. **The Generalized Service Volume Tables assume that left-turn lanes adequately serve left-turning vehicles.** In other words, the base condition assumes there is no queue spillback from the left-turn lane into the adjacent through lanes. If this assumption cannot be made, results obtained from the planning analysis tools are possibly inaccurate. For these reasons and more, the tables should not be used for intersection design or detailed traffic operations analysis.

The automobile LOS methodology described in this Q/LOS Handbook applies the HCM procedures to through traffic at each signalized intersection. Turning movement adjustments are made internally, based on the user-specified value of percent turns from exclusive lanes. Turning volumes are added to the through volumes to determine the overall service volumes shown in the Generalized Service Volume Tables.

**The accuracy of LOS calculations is highly dependent on the percent turns from exclusive turn lanes.** Although it is typically of moderate importance, at some key intersections, it may be one of the most significant variables. While FDOT does not routinely suggest acquiring percent turns from exclusive turn lanes, data collection should be considered at key intersections. Furthermore, some FDOT districts may require specific counts. If the percent turns at key intersections are obtained in the field, a value of 10 percent may be assumed for the other intersections, assuming an exclusive left-turn lane and no exclusive right-turn lane. If the percentage of turns from exclusive turn lanes is acquired, the turning movement count should be conducted during the peak hour, as illustrated in **Table 5-1**.

**Table 5-1: Calculation of Percent Turns from Exclusive Turn Lanes**

Measured Day	Peak Hour	Signalized Intersection	Total Peak Hour Predominant Approach Volume	Exclusive Lane Volume	% Turns from Exclusive Turn Lanes	
					A	B
22-Jan	4-5 PM	A	884	130	14.7%	16.7%
		B	900	150		
23-Jan	5-6 PM	A	1,152	150	13.0%	13.0%
		B	1,150	150		
24-Jan	5-6 PM	A	1,102	150	13.6%	14.7%
		B	1,090	160		
Totals	—	A	3,138	430	13.7%	14.6%
		B	3,140	460		

## SPECIAL TURNING MOVEMENT CASES

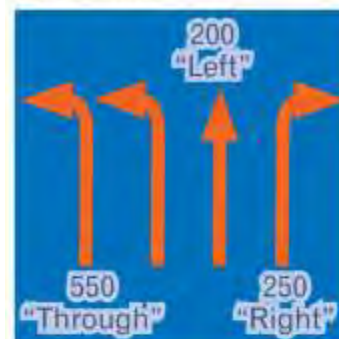
There are two special cases when dealing with turns from exclusive lanes. The first is when the predominant movement is a turn movement instead of the straight-ahead movement. The second involves T intersections.

In **Figure 5-1**, the predominant movement is the left-turning movement, and the 550 vehicles turning left should be considered the through movement. The 200 vehicles going straight ahead should be treated as left-turning vehicles with 20 percent left turns  $[(200/(550 + 200 + 250))]$  from an exclusive left-turn lane. The 250 vehicles turning right should be treated normally, with 25 percent right turns  $[(250/(550 + 200 + 250))]$  from an exclusive right-turn lane.

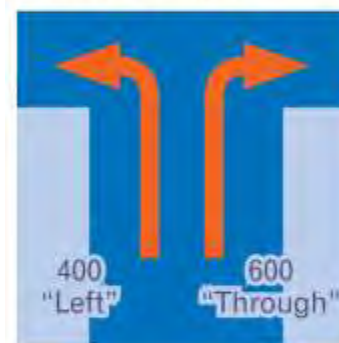
In **Figure 5-2**, all vehicles are turning from exclusive turn lanes at a T intersection. The 600 vehicles turning right is the predominant movement and should be considered through vehicles. The 400 vehicles turning left should be treated normally, which is to say there are 40 percent left-turns  $[400/(400 + 600)]$  from an exclusive left-turn lane.

In **Figure 5-3**, another T intersection is shown, featuring a shared left/through lane in addition to the predominant movement served by the exclusive right lane. Normally, a shared left/through lane does not have the same capacity as a through lane because of the effect of opposing vehicles blocking permitted left turns for the main movement. However, in this case, there is no opposing movement, and the capacity of this shared lane is virtually the same as a typical through lane. In this situation, an analyst should assume one through lane and one shared through lane with 20 percent left turns  $[(200/(200 + 200 + 600))]$ .

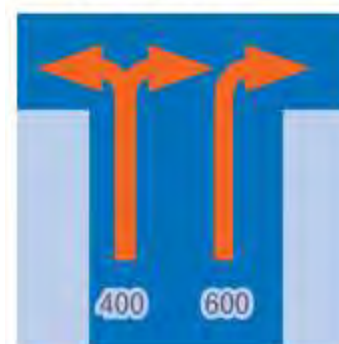
**Figure 5-1:**  
Predominant Turning Movement



**Figure 5-2:**  
Through Movement at a T Intersection with Exclusive Lanes



**Figure 5-3:**  
Through Movement at a T Intersection with Shared Lanes





## 6 Control Variables

This chapter provides an overview of each control variable used to generate the Generalized Service Volume Tables.

**Control variables refer to roadway or area traffic controls and regulations in effect for a roadway point or segment, including the type, phasing, and timing of traffic signals, stop signs, lane use and turn controls, and other similar measures.** In this Q/LOS Handbook, control variables refer to those regularly occurring at signalized intersections, unless otherwise noted. For uninterrupted flow facilities, such as freeways and highways, the LOS can readily be derived from the volume of vehicles and roadway capacity, and control variables are not applicable. For signalized roadways (interrupted flow), however,  $v/c$  is not sufficient to determine the LOS, and control variables must be considered. These include:

- Number of signals
- Arrival type
- Cycle length
- Effective green ratio (g/C)

The Generalized Service Volume Tables use default control variables that are representative of typical conditions on Florida roadways. The default control variables (or characteristics) — along with the roadway, traffic, and multimodal variables assumed in the creation of each table — are provided on the back of the Generalized Service Volume Tables.

**Table 6-1** provides an overview of the control variable input requirements within the Generalized Service Volume Tables.

**Table 6-1: Control Variable Input Requirements**

	Input Variable	Generalized Service Volume Tables
CONTROL	Number of Signals	D
	Arrival Type	D
	Signal Type	D
	Cycle Length (C)	D
	Through Effective Green Ratio (g/C)	D
	Exclusive Left Effective Green Ratio	D

Legend: D Default variables that cannot be altered

The effects that individual variables have on the computational process vary. **Table 6-2** indicates the sensitivity of the control variables on capacity and LOS.

**Table 6-2: Sensitivity of Control Variables on Service Volumes**

Control Variable	Sensitivity on Service Volumes
Number of Signals	high
Arrival Type	medium
Signal Type	low
Cycle Length (C)	medium
Through Effective Green Ratio (g/C)	high
Exclusive Left Effective Green Ratio	medium

Traffic variables, including AADT, Standard K, and D data, should be obtained from FDOT's FTO, PTF Handbook and field counts. Although turning movement counts at key intersections may be necessary, as discussed previously, FDOT does not recommend the use of travel time studies for LOS planning applications.

Field visits should be conducted to collect traffic and other items needed for analyses. Up-to-date aerial or satellite imagery may be sufficient for most of the data entry items. Signalization information is often available from the applicable traffic operations agency's signal timing plans. The applicable transit agency should be contacted for transit data.

## 6.1. Number of Signals

The cumulative effect of numerous traffic signals, lack of green time, and lack of effective signal progression often have a detrimental effect on the LOS of arterials. An important feature of FDOT's Generalized Service Volume Tables is the inclusion of the number of signals on the determination of the LOS.

The distance between signalized intersections is required to determine specific service volumes for a roadway. FDOT's Generalized Service Volume Tables use signalized intersections per mile as an input and assume uniform spacing. While this approach may be acceptable for an areawide analysis, precise distances between signalized intersections should be determined when an individual roadway is analyzed at the conceptual planning level.

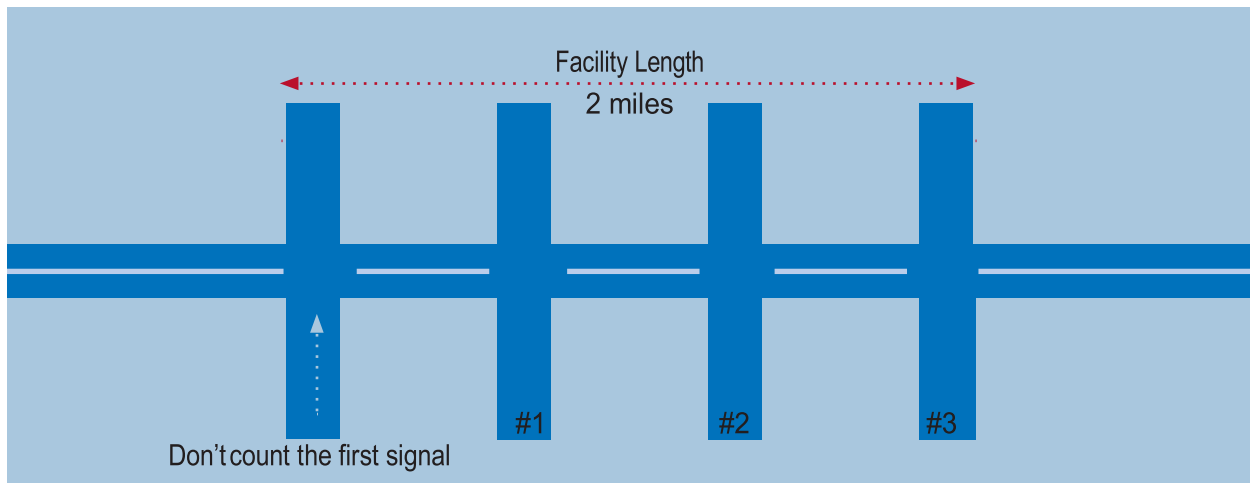
**For analysis purposes, 100 feet between signalized intersections is considered the minimum distance.** When the actual distance is less than 100 feet (e.g., side streets with wide medians), it is reasonable to consider these together as one signalized intersection.

Roadway and traffic characteristics often change over time. The number of signals per mile is frequently the most significant change. As development takes place and an area becomes more urbanized, the number of signals per mile is likely to increase. The LOS analysis of future conditions should, therefore, take into account changes in roadway and signalization characteristics.

To avoid double counting when determining the number of signals, only one intersection at the ends of the facility should be counted, as shown in **Figure 6-1**. In general, FDOT recommends including the last intersection within the analysis and ignoring the first, or entry, intersection. This allows the analysis to include the effects of delay, backup, and the LOS from the last intersection for the facility under study.



Figure 6-1: Total Number of Signals



For example, in southeast Florida, principal arterials are often spaced 1 mile apart, with other signalized intersections in between. In this situation, only one of the signalized intersections at the ends of the roadway, plus the signals in between, should be counted when determining the number of signals per mile. In general, the last signalized intersection in the peak flow direction would be counted, ignoring the first signalized intersection.

As discussed previously, the arterial should begin and end at a signalized intersection. In unusual situations when this assumption is not applicable (e.g., lane drops, ramp junctions, etc.), the following guidance is provided:

- For the Generalized Service Volume Tables, do not count the unsignalized terminus as a signalized intersection.

**In general, only fixed, periodic interruptions should be considered in determining the number of signals.**

Only one intersection at the ends of the facility should be counted. Draw bridges, at-grade railroad crossings, school zones, pedestrian crossings, and median openings should not be counted. Depending on the site-specific conditions or analysis desired, there may be exceptions to this general guidance.

When using the Generalized Service Volume Tables, an intersection with a stop sign for the through movement is considered a signalized intersection for a state-signalized arterial. When analyzing a Non-State signalized roadway, the roadway must have at least one signalized intersection.

## 6.2. Arrival Type

**Arrival type is a general categorization of the quality of signal progression.** The HCM defines six arrival types, with Type 1 representing the worst progression quality and Type 6 representing the best. Uncoordinated operation, or random arrivals, is represented by Type 3 and is appropriate for actuated signals. Arrival Type 4 is FDOT's default for coordinated signal systems. A more favorable progression (Types 5 or 6) may be appropriate when progression design strongly favors the peak direction of travel, and all signals are coordinated for the length of the facility. One-way facilities tend to have better quality progression than two-way facilities. A higher level of progression may also be appropriate around freeway interchanges, where signals are typically highly coordinated. The arrival type may vary significantly from one signal to the next, even in coordinated signal systems. Actuated-coordinated signals have varying green times, with breaks between groups of coordinated signals.

The assumption of very good progression in one direction does not imply efficient progression in the other direction. Even with less traffic volume, off-peak direction speeds could be lower, if favorable progression has been established for the peak direction only.

## 6.3. Signal Type

The signal type indicates the degree to which a traffic signal's cycle length, phase plan, and phase times are preset or actuated. The three main types are:

- Actuated
- Actuated-coordinated
- Pretimed

It should be noted that modern traffic signals can handle multiple settings and can vary by time of day. Consequently, a traffic signal's operation (actuated, coordinated-actuated, or pretimed) can change by the time of day to best meet traffic demands.

### 6.3.1. Actuated

**Actuated, or fully actuated signals, use vehicle detection for all signal phases on the main and side street approaches.** Each phase is subject to a minimum and maximum green time, and some phases may be skipped if there is no demand for the phase. The length of the green time observed in the field generally depends on the amount of vehicular demand for the phase. If there is little demand, then a relatively short green time will be allocated to the phase. If there is significant demand, a relatively long green time will be allocated, subject to the maximum green time for that phase. The minimum and maximum green times for each phase can be easily changed by entering new values into the traffic signal controller.

Because phases can be skipped, and the amount of green time for each phase generally depends on demand, the cycle length will often vary substantially from cycle to cycle. The exception occurs during periods of heavy vehicular demand, when all phases consistently reach their maximum values, making it seem as if the cycle length is fixed. Actuated signal operations are most frequently used when the signalized intersection is isolated, or when there is a desire to minimize delay without concern for progression.

### 6.3.2. Actuated-Coordinated

A subset of actuated control is referred to as actuated-coordinated control. **In this type of signal operation, the cycle length is typically fixed, while the amount of green time for the main street through phase varies.** It consists of a minimum amount of green time plus any unused time from the minor phases. Holding the main street green in this manner at all of the signals along a facility allows platoons of vehicles to move relatively unimpeded along the main street with decent progression. Actuated-coordinated signal operations are typically used in Florida's developed areas, especially during peak travel times. This type of operation typically offers the best balance of capacity and progression for the main street through movement.

### 6.3.3. Pretimed

**Pretimed signals use a preset sequence of phase times in a repetitive order and make no use of vehicle detection.** Each phase is green for a fixed period of time, irrespective of vehicular demand, and none of

**the phases can be skipped. Thus, the cycle length is fixed.** This type of signal operation is most frequently used in downtown areas with high signal density, or when the desire is to maximize progression without extensive concern about maximizing capacity for the through movement.

## 6.4. Cycle Length (C)

**Cycle length (C) is the total time for a signal to complete a sequence of signal indications for all traffic movements.** The cycle lengths used in the development of the arterial service volume tables were based on representative cycle lengths for different functional classifications of arterials and for different area types. Cycle lengths are typically highest on principal arterials in urbanized areas, where the primary purpose of the facility is to provide a high level of mobility to through movements on the mainline and where roadways are typically at or near capacity during peak periods. Lower cycle lengths are typically used for the less saturated conditions typical of rural areas to provide better access and service to all directions. The cycle lengths used to develop the Generalized Service Volume Tables are provided on the back of each table.

## 6.5. Effective Green Ratio (g/C)

**One of the most significant variables used in calculating the highway capacity and LOS on a signalized roadway is the through movement's effective green time (g) to signal cycle length ratio (g/C).** It is the amount of time allocated for the through movement (typically calculated as the green plus yellow plus all-red indication times less the lost time) divided by C. Along with the number of through lanes, it is usually one of the two most important factors for determining the capacity of a roadway's through movement at any given intersection and for the roadway as a whole. Despite this, for generalized analyses, g/C is often ignored, because:

- g/C ratio typically varies from intersection to intersection along an arterial
- g/C ratio typically varies by time of day

Ignoring g/C undermines any arterial LOS analysis at a generalized planning level. This Handbook includes guidance to provide default g/Cs for generalized planning arterial analyses.

A major simplifying assumption that is essential to the development of the Generalized Service Volume Tables is the selection of one g/C for all intersections on an arterial. The g/C ratio of 0.44 was used for arterial analysis for all area types. FDOT has determined that for generalized planning analyses, the weighted average g/C ratio yields the closest results to actual conditions. **The weighted g/C ratio of an arterial is the average of the critical intersection through movement g/C ratio and the average of all the other intersections through movement g/C ratios for urban streets.** For example, if there are four signals with a through g/C ratio of 0.50 and one signal with a through g/C ratio of 0.40, then the weighted average g/C ratio for urban street is 0.45 (Refer to HCM for additional information). Essentially, the worst intersection is given equal weight to all the other intersections combined.

As an example, for the through movement phase, G is the green displayed time, Y the yellow displayed time (typically 3 or 4 seconds), R the all-red indication (typically 1 or 2 seconds), and C the cycle length. The most representative situation in Florida is for cycles to consist of four phases and 12 indications: one phase each to accommodate the main road through movement, the side road left movement, the side road through movement, and the main road left movement, with G, Y, and R indications for each of the four phases. The effective green time, which includes the effects of vehicular startup and clearance lost times is g.

FDOT's preferred approach for g/C determination for current year analyses is to use the actual signal timing plan from the traffic operations agency for the p.m. peak hour (typically 5–6 p.m.) for each signalized intersection. This is a consistent and cost-effective approach that provides reasonable accuracy. If the signal is actuated,  $(G + 4)/C$  should be used for the through movement. This assumes the typical  $Y + R$  time of 4 seconds as additional time allocated to the through movement as a result of unused time from the other movements. If the signal is pretimed, the g/C for the through movement should be used.

For consistency and ease of review, FDOT recommends using signal timing plans from the applicable traffic operations agency.

Analysts should be aware that signal timing plans come in a variety of forms, use many notations, and are not designed to directly address the determination of g/C. It may be necessary to coordinate with the operating agency directly to interpret the output values.

Analysts should calculate and input g/C for the through movement at all intersections. The g/C for left turning movements need only be collected at major intersections. A 10 percent value can be assumed as the left g/C for other intersections.

In previous FDOT guidance, FDOT offered two other methods for determining g/C:

- actual signal timings from the traffic operations agency
- field studies

Both approaches have some merit; however, after FDOT analyzed and tested both approaches, the preferred approach of using signal timing plans in general offers the best combination of consistency, accuracy, and cost-effectiveness. The use of field studies for g/C is discouraged, unless an early agreement by the affected parties is reached. The maximum acceptable facility through movement g/C ratios during the peak hour typically should not exceed:

- State principal arterials
  - Current year: 0.50
  - Long term ( $\geq 10$  years out): 0.47
- Other roadways: 0.44

Under most circumstances, arterial facilities are 1.5–5.0 miles in length and include principal arterials as terminus points. The g/C value of 0.50 approximates FDOT's maximum allowable arterial capacity volumes of 1,000 vehicles per hour per lane (vphpl) and 950 vphpl in large urbanized areas and other urbanized areas, respectively.

## 7 Multimodal Variables

This chapter provides an overview of each multimodal variable used within Generalized Service Volume Tables to allow the user to recognize these variations and analyze multimodal LOS on specific roadways. Where applicable, generally acceptable ranges are provided. Multimodal variables describe the various geometric and demand characteristics that are needed to determine pedestrian, bicycle, and bus LOS. As with the control variables, multimodal variables are only applicable for arterial analyses:

- Paved shoulder/bicycle lane
- Outside lane width
- Pavement condition
- Sidewalk
- Sidewalk/roadway separation
- Sidewalk protective barrier
- Bus frequency
- Bus stop amenities
- Bus stop type
- Passenger loads

**Table 7-1** provides an overview of the multimodal variable input requirements within the Generalized Service Volume Tables.

**Table 7-1: Multimodal Variable Input Requirements**

Input Variable	Generalized Service Volume Tables
Paved Shoulder/Bicycle Lane	R
Outside Lane Width	D
Pavement Condition	D
Sidewalk	R
Sidewalk/Roadway Separation	D
Sidewalk/Roadway Protective Barrier	D
Bus Frequency	R
Bus Stop Amenities	D
Bus Stop Type	D
Passenger Loads	D

Legend: R Required table input  
D Default cannot be altered

The effects that individual variables have on the computational process vary. **Table 7-2** indicates the sensitivity of the multimodal variables on the capacity and LOS.

**Table 7-2: Sensitivity of Multimodal Variables on Service Volumes**

Control Variable	Sensitivity on Service Volumes
Paved Shoulder/Bicycle Lane	high
Outside Lane Width	low
Pavement Condition	low
Sidewalk	high
Sidewalk/Roadway Separation	medium
Sidewalk/Roadway Protective Barrier	medium
Bus Frequency	high
Bus Stop Amenities	low
Bus Stop Type	low
Passenger Loads	low

## 7.1. Paved Shoulder/Bicycle Lane

Within this Q/LOS Handbook, a bicycle lane is a designated or undesignated (paved shoulder) portion of a roadway for bicycles adjacent to vehicle lanes. Painted lines separate paved shoulders/bicycle lanes from vehicle lanes.

**For planning purposes, a designated bicycle lane is usually 4 to 5 feet in width and has a bicycle logo. An undesignated bicycle lane is usually 4 feet in width and does not have a bicycle logo.** To be considered a paved shoulder/bicycle lane, at least 3 feet of paved shoulder must exist outside the painted line. Facilities with striped shoulders between 1 and 3 feet should be considered as having wide outside lane widths.

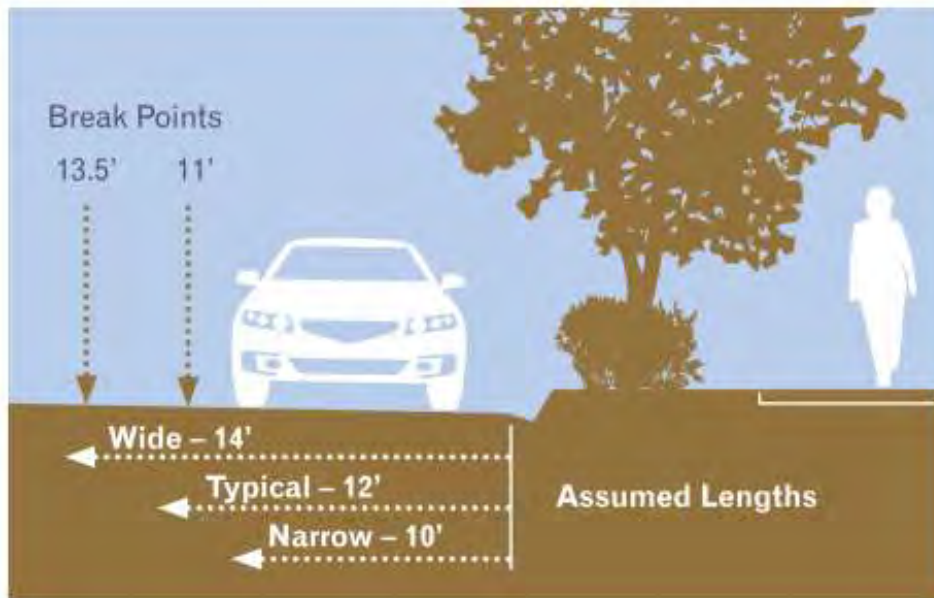
## 7.2. Outside Lane Width

Within this Q/LOS Handbook, **the outside lane width is the width, in feet, of a roadway's outside vehicle through lane, not including the gutter.** This factor is usually important in the determination of a roadway's BLOS. The majority of the SHS lane widths are 12 feet. Many local roads and some state highways have 14-foot outside lanes; these are sometimes referred to as wide curb lanes. Many other local roads and some state facilities have outside lane widths less than 12 feet.

These dimensions as shown in **Figure 7-1**, are for planning analyses only:

- Wide: greater than or equal to 13.5 feet.
- Typical: greater than or equal to 11 feet and less than 13.5 feet.
- Narrow: less than 11 feet.

Figure 7-1: Outside Lane Width



### 7.3. Pavement Condition

**Pavement condition for BLOS analysis is a general classification of the roadway surface where bicycling usually occurs, not necessarily that drivers of vehicles experience.** Three general classifications are used: desirable, typical, and undesirable. These general classifications are used in lieu of detailed pavement surface grades found in the operational model on which this planning technique is based.

- Desirable pavement condition is new or recently resurfaced pavement. The pavement still maintains a dark black color, is free of cracks, and rides smoothly.
- Typical pavement condition is the most common type of pavement condition of Florida's roadways and is used in the Generalized Service Volume Tables. Generally, the pavement has a light gray color, the surface appears worn, and may have some cracks; however, the ride for the bicyclist is smooth.
- Undesirable pavement condition consists of pavement with noticeable cracks, broken pavement, or ruts. There may be existing or partially filled potholes, or drainage grates hazardous to bicycles. When the bicycle riding surface contains loose dirt, gravel, or debris, even if the roadway surface is typical or desirable, then it would be considered undesirable.

In general, FDOT recommends the use of a typical pavement condition for most analyses, especially those involving future years.

For analysts familiar with FHWA's PAVECON factors, "desirable" would equate to a 4.5 or 5.0 rating, "typical" would equate to a 3.0 to 4.0 rating, and "undesirable" would equate to 2.5 or less.

### 7.4. Sidewalk

Within this Q/LOS Handbook, a sidewalk is a paved walkway for pedestrians at the side of a roadway, typically 5 feet in width. Paved roadway shoulders are not considered sidewalks. Because LOS analyses are directional, the existence of a sidewalk is based on the directional side of the arterial being analyzed.



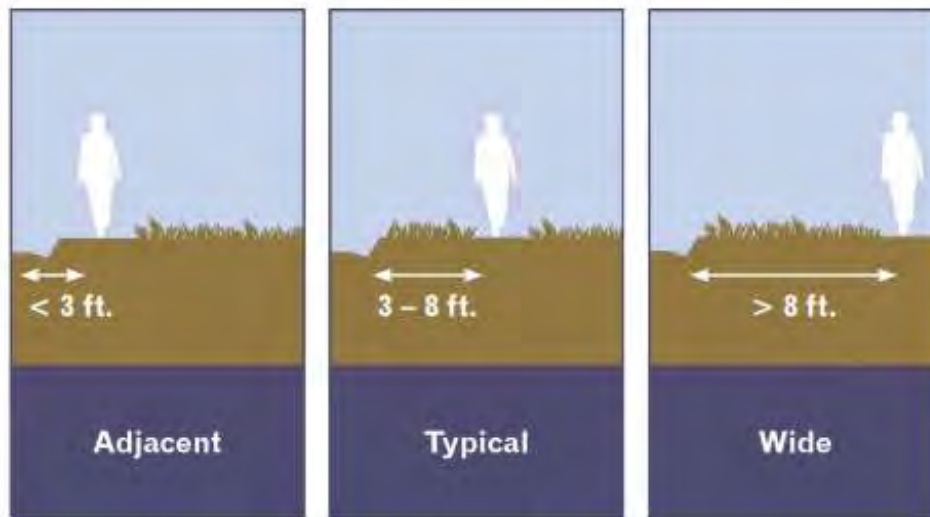
## SIDEWALK/ROADWAY SEPARATION

Sidewalk/roadway separation is the lateral distance in feet from the outside edge of pavement to the inside edge of the sidewalk. Within this Q/LOS Handbook, sidewalk/roadway separation is classified in three ways, as shown in **Figure 7-2**:

- Adjacent: less than or equal to 3.0 feet
- Typical: greater than 3.0 feet and less than or equal to 8.0 feet
- Wide: greater than 8.0 feet

In general, pedestrians tend to walk toward the outer half of sidewalks, away from traffic.

**Figure 7-2: Sidewalk/Roadway Separation**



In downtown environments, sidewalks frequently extend at least 10-12 feet from the curb. When there are no tree plantings or other sidewalk/roadway protective barriers, sidewalks should be classified as adjacent. When there are tree plantings or some other barrier between where people walk and the outside edge of the travel lane, sidewalks are assumed to have typical separation.

**When on-street parking and sidewalks both exist, the sidewalk/roadway separation should be considered wide, regardless of how close the sidewalk is to the edge of the pavement.** Essentially, on-street parking adds approximately 8 additional feet between pedestrians and vehicles.

### 7.5. Sidewalk Protective Barrier

In addition to sidewalk width, this Q/LOS Handbook adds an overall sidewalk protective barrier factor to include the added benefits of trees, on-street parking, or other barriers.

### 7.6. Bus Frequency

**Bus frequency, also known as headway, refers to the number of scheduled, fixed-route buses that have a potential to stop on a given roadway segment in one direction of flow in a one-hour time period.** Express buses with no potential of stopping along a roadway are not included.



## 7.7. Bus Stop Amenities

The bus stop is often the first component of any transit system a passenger will encounter, and available amenities for comfort or safety can greatly influence the perceived QOS along a route. Rather than quantify all potential bus stop components, this Q/LOS Handbook creates four categories of bus stop amenities: excellent, good, fair, and poor. Having shelter from the weather and a place to sit is the most desirable condition at any bus stop, regardless of type, and is considered an excellent condition. A shelter without a bench represents a good condition, because rain, wind, and sun could otherwise deter choice riders. A stop with only a bench is less desirable than a stop with only a shelter and is considered a fair condition. A stop with no bench and no shelter is considered a poor condition. Because excellent bus stops may improve a user's perception of the system, the bus stop amenity factor is used to increase the adjusted bus frequency value. Bus stops with no amenities are uninviting and discourage use, and the variable is, therefore, used to decrease the adjusted bus frequency value, as shown in **Table 7-3**.

**Table 7-3: Bus Stop Amenity Factors**

Bus Stop Amenities	Adjustment Factor
Excellent	1.1
Good	1.0
Fair	1.0
Poor	0.9

## 7.8. Bus Stop Type

Bus travel speed depends not only on distances and congestion along the route, but also the number of stops and the dwell time at each stop. Typical bus stops delay a bus for around 15 seconds, while major stations with numerous boardings and alightings can add around 35 seconds of delay.

## 7.9. Passenger Loads

Just as traffic congestion contributes to the degradation of the LOS, crowding on buses can affect the QOS. Because overcrowded buses may reduce the overall desirability of a route, a passenger load factor is used to modify the adjusted bus frequency value, as shown in **Table 7-4**.

**Table 7-4: Passenger Load Factor**

Passenger Load Factor	Adjustment Factor
< 30%	1.05
< 70%	1.00
≤ 100%	0.95
> 100%	0.85

## 8 Future Year Analyses

Traffic and development conditions change on roadways over time. This raises questions about what input values, analysis tools, and LOS targets should be used for capacity and LOS analyses in future years. Analysis years and planning horizons vary appreciably in transportation planning. To help with understanding and for simplification in this text, **“long term” means 10 or more years from the current year, and “short term” means less than 10 years from the current year.** However, for a specific application, FDOT district LOS coordinators should be consulted for more detailed guidance.

For future year analyses, it is important to consider changes in the appropriate roadway, traffic volumes, land use, signal control, and multimodal characteristics. For example, under existing conditions in a transitioning area, signalization may be very infrequent; however, as development occurs, more signalized intersections can be anticipated and should be accounted for in future year capacity and LOS analyses. The traffic and control variables relevant to this handbook are discussed in the following sections. Refer to the FDOT PTF Handbook and the Traffic Analysis Handbook for further guidance on future year traffic development and analyses.

### 8.1. Change in Traffic Variables

#### 8.1.1. AADT

Historical growth trends and the state’s travel demand forecasting models are typically used for long-term traffic projections. Analysts and reviewers of capacity and LOS analyses need to agree on what future AADT values to use. Additional information can be found in the PTF Handbook.

For site impact analyses, volumes are frequently presented in terms of trips generated by the site rather than roadway-specific AADT, K, and D values. Institute of Transportation Engineer’s (ITE’s) Trip Generation Handbook is typically used for trip generation for site impact analyses; however, FDOT should be consulted about supplemental material. In all cases, care should be given to ensure final values are compatible with statewide Standard K and D factors.

#### 8.1.2. Planning Analysis Hour Factor (K)

As areas become more developed, measured K values often drop, primarily for two reasons. The first is that more urban situations typically are not subject to highly volatile volumes, such as holiday traffic in rural areas. Generally, more developed areas are subject to frequent recurring volumes, such as weekday commuter traffic. The second is that as congestion develops, the spreading of the peak travel hour traffic also occurs. Refer to FDOT PTF Handbook for Standard K values used by facility type.

For future year generalized planning analyses, the Standard K values for the assumed area and facility types on the backs of FDOT’s Generalized Service Volume Tables are appropriate. In the longer term, it may be necessary to determine if the area is projected to transition into a different area type over the analysis period.

#### 8.1.3. Directional Distribution Factor (D)

For future year generalized planning analyses performed in this handbook, the D factor value for all area

**and facility types is 0.55.** If a site-specific analysis is conducted in the short term, FDOT's preferred approach is to use the FDOT's 200<sup>th</sup> Highest Hour Traffic Count Report from the FTO Web Application. In the longer term, some lowering of the factor may be appropriate. The analyst should refer to the D factors and their acceptable range in FDOT PTF Handbook.

## 8.2. Change in Control Variables

Making traffic and roadway projections into the future is a well-accepted practice for generalized planning analysis. For reasonable generalized planning analysis of signalized roadways, control variables must be addressed in the short and long terms. **Typically, the two most important control variables are the through movement g/C and signal density.**

### 8.2.1 g/C

Determining current and future g/Cs for a roadway is complicated, and judgments must be made. In the short and long terms:

- For Class II arterials, using the existing g/Cs is appropriate
- For Class I arterials not subject to significant development pressure, using the existing g/Cs is appropriate
- For Class I arterials incurring significant new development pressure, it is appropriate to lower through movement g/Cs
- For new individual signals, through movement g/Cs will vary greatly; however, for planning purposes, none should be assumed to be higher than 0.55

Within the HCS, an acceptable method to estimate future g/C ratios is by conducting intersection capacity analyses. The HCS will determine the required g/C ratios to progress through traffic movements on the major street, while simultaneously minimizing the delay to the minor street approaches.

### 8.2.2 Signal Density

As areas grow in population, additional traffic signals are frequently installed. Usually, these new signals do not significantly affect the capacity of roadways, unless they are in a previously undeveloped area or are so closely spaced that queue spillback occurs. They can play a major role in the determination of the LOS if stops occur more frequently and average travel speeds drop.

In short- and long-term analyses, it is appropriate to consider the probability of new traffic signals, especially based on proposed new developments. In the absence of specific development plans or intersecting traffic volume cross-product signalization criteria, general guidance should be used in developed areas.

In the short term:

- For Class II arterials, using the existing signalized intersection locations is appropriate
- For Class I arterials not subject to significant development pressure, using the existing signalized intersection locations is appropriate
- For Class I arterials incurring significant new development pressure, one additional signalized intersection per mile may be assumed

In the long term:

- For Class II arterials, one additional signalized intersection per mile may be assumed
- For Class I in small towns, one additional signalized intersection per mile may be assumed

Because of the wide variety of circumstances along generally uninterrupted flow highways in rural areas, no specific guidance can be given on future signal locations. However, for capacity and LOS purposes, the possibility of new signalized intersections should be considered. Because of the importance of signal density on the LOS on state roadways, for site impact applications, the number of new signals should be reviewed and approved by the FDOT district prior to use in an analysis.

Typically, other roadway, traffic, control, and multimodal variables do not have as large of an effect on the capacity and LOS as the ones addressed above. If some of these other inputs (e.g., turning movement percentages) were determined in a current year analysis, they can usually be applied to future year analysis. If these other variables were not determined for a current year analysis, the statewide default values on the backs of the Generalized Service Volume Tables may be assumed.

## 9 Maximum Capacity Volumes

The use of highway capacity and LOS analysis, whether applied appropriately or not, has resulted in projected traffic volumes beyond normal capacity ranges found on Florida facilities. There are multiple reasons for this, but to aid analysts and reviewers on what capacity values will normally be acceptable, FDOT has adopted a set of general guidelines. The values provided below are based on site-specific freeway studies and counts, as well as arterial maximum acceptable g/C ratios.

### 9.1. Arterials

For arterials, the maximum generally acceptable per-lane approach volumes are:

- Large urbanized: 1,000 vehicles per hour per lane (vphpl)
- Other urbanized: 950 vphpl
- Transitioning: 920 vphpl
- Urban: 920 vphpl
- Rural: 850 vphpl

The Maximum volumes may vary due to widely varying g/C, turning movements at intersections, and the segmentation of roadways. The maximum volumes represent a weighted g/C of approximately 0.50, which is the average of the critical g/C and the average of all other g/Cs along an urban street facility. Typically, there will be at least one principal arterial intersecting an urban street being analyzed. Such intersections are usually the critical intersections (hot spots) for an arterial analysis, and g/C ratios for the through movements are in the range of about 0.40. Although these intersections are frequently flared out to achieve greater capacity, the through movement g/C ratios cannot increase appreciably if all intersection movements are included. Therefore, the use of a 0.50 g/C ratio for determining the capacity of an urban street should represent the upper bounds of what can be reasonably expected.

Arterial facility analyses typically involve intersecting principal arterials, but section analyses may not have intersecting principal arterials. Under these circumstances, urban street through movements during peak travel hours may feature g/C ratios in the 0.50 to 0.60 range. Such values may be appropriate for segment or section analyses; however, the use of such high g/C ratios is not normally acceptable for a facility analysis and may represent an inappropriate segmentation of roadways.

Another situation in which g/C ratios may be above 0.50 is in the outlying parts of urbanized areas or in transitioning areas for both arterials and generally uninterrupted flow highways. In these areas, signals have typically been recently installed, and side traffic has not yet reached the high levels that it will in future years. Therefore, although current maximum volumes per lane may be higher than those shown above, in the future, such values will likely not be sustained and should be avoided in the arterial analysis.

### 9.2. Freeways

For freeway facilities and sections, the maximum volumes at 70 mph free flow speed are 2,400 pcphpl as per HCM.

Freeway operational measures such as ramp metering may result in higher volumes.

In general, the implementation of ramp metering could have a 5 percent or less improvement on capacity.

### 9.3. Highways

For highway segments (generally uninterrupted flow highways), the maximum per-lane approach volumes as per HCM are:

- Two-lane
  - Developed: 1,700 pcphpl
  - Undeveloped: 1,700 pcphpl
- Multilane
  - Developed (55 mph free flow speed): 2,100 pcphpl
  - Undeveloped (60 mph free flow speed): 2,200 pcphpl

## 10 Florida's LOS Policy

### REQUIREMENTS FOR LOS TARGETS FOR THE STATE HIGHWAY SYSTEM

It is FDOT's intent to plan, design, and operate the SHS at an acceptable LOS for the traveling public. The LOS targets are consistent with FDOT's Policy on Level of Service Targets for the SHS, [Topic No. 000-525-006](#). The policy outlines the automobile mode LOS target for urbanized areas and outside urbanized areas. The automobile mode LOS targets for the SHS during peak travel hours are D in urbanized areas and C outside urbanized areas. FDOT shall work with local governments to establish appropriate LOS targets for multimodal mobility and system design. The targets shall be responsive to all users, for context, roadway function, network design, and user safety.

# 11 Generalized Planning Analysis

## 11.1. Introduction

FDOT's Generalized Service Volume Tables found at the end of this Q/LOS Handbook are the primary analysis tool in conducting this type of planning analysis. **Although considered a good generalized planning tool, the Generalized Service Volume Tables are not detailed enough for project development and environment (PD&E) traffic analysis, final design, or operational analysis work, and should not be used for those purposes.** In addition, the Generalized Service Volume Tables cannot be relied upon when approaching LOS E and LOS F thresholds, because of operational fluctuations at the thresholds. More detailed analysis should be performed in these situations.

Specific applications of the Generalized Service Volume Tables include:

- Generalized comprehensive plan amendment analyses
- Statewide highway system deficiencies and needs
- Statewide mobility performance measure reporting
- Areawide baseline capacity (e.g., MPO boundaries) and service volume values for travel demand forecasting models
- Areawide influence areas (e.g., impact areas) for major developments
- Future year analyses (e.g., SIS Needs Plans, MPO LRTPs which have a 10 to 25-year planning horizon)
- Baseline capacity and service volumes for concurrency management systems

Generalized Service Volume Tables must be appropriately applied using the right area type and facility type designations and interpreted selecting the right values from the tables. The adjustment factors must be applied, as applicable.

It is quite possible that no single roadway has the exact values for all the roadway, traffic volumes, land use, signal control, and multimodal variables used in the Generalized Service Volume Tables. The tables must be applied with care to roadway facilities and in the determination of the LOS grade.

The automobile, bicycle, and pedestrian parts of the Generalized Service Volume Tables were developed based on the definitions and methodology of the HCM. Nationally the TCQSM is the comparable document to the HCM for bus analyses.

FDOT's Generalized Service Volume Tables consist of five area types grouped into three tables:

- Urbanized areas
- Areas transitioning into urbanized/urban areas, or cities with population of more than 5,000 not in urbanized areas
- Rural undeveloped areas, or cities and developed areas with population of less than 5,000

Most planning applications begin with AADT volumes given as an input, or end with AADT as a calculated output. Therefore, the generalized daily service volumes shown in Tables 1 through 3 depict the AADT based on a standard peak hour. Some local and regional entities have adopted two-direction peak hour standards.



Tables 4 through 6 provide generalized peak hour two-way service volumes. Generalized peak hour directional volumes (Tables 7 through 9) are provided, because traffic engineering analyses are conducted on an hourly directional basis. These hourly directional tables may be viewed as the most fundamental of the tables, because the two-way tables are simply the peak hour directional values divided by D, and the daily tables are simply the peak hour directional values divided by the D and K factors.

All three sets of tables are internally consistent. All of the volumes within the tables are based on the Standard K factors. The urban/transitioning freeways are based on the average of urbanized and rural Standard K factors. The PHFs of 0.95, 0.92, and 0.88 were used in the creation of the urbanized, transitioning/urban, and rural tables, respectively. The 200th highest hour for the directional distribution variable is approximately equivalent to the typical peak hour of a day during a peak season in a developed area. Again, it is stressed that the daily, peak hour two-way, and peak hour directional tables are internally consistent and based on the same time period and directional flow of traffic.

The input values used to generate the Generalized Service Volume Tables can be found on the backs of Tables 1 through 9 and yield the results on the fronts of the Tables.

The Generalized Service Volume Tables present maximum service volumes, or the highest numbers of vehicles, for a given LOS. Any number greater than the value shown for a roadway with a given number of lanes would drop the LOS to the next letter grade.

**The Generalized Service Volume Tables should not be referred to as capacity tables.** In general, the values shown are the maximum service volumes for a given LOS based on roadway, traffic, control, and multimodal conditions during the peak hour in the peak travel direction. Whereas the maximum service volume deals with the highest number of vehicles for a given LOS, capacity deals with the maximum number of vehicles or persons that can pass a point during a specified time period under prevailing roadway, traffic, and control conditions. Many of the LOS E service volumes in the hourly directional tables also represent the capacity of the roadway, but in general, most of the values do not reflect a roadway's capacity.

A clear case of not representing capacity values is the daily tables. Roadway capacities for the day far exceed the volumes shown in the daily tables. All roadways are underutilized in the early morning hours and many heavily congested roads will have volumes higher than the highest volumes shown in the daily tables, because traffic is backed up for more than a one-hour time period.

Another case of not representing capacity is the arterial LOS E service volumes. **The primary criterion for the LOS on arterials is the average travel speed, not the capacity of the roadway.** The average travel speed along arterials is made of many control variables (e.g., progression, cycle length), not just the capacity (i.e., v/c ratios) of signalized intersections. Only in the special case of when the capacity of signalized intersections controls how many vehicles can pass through the intersections does capacity essentially dictate the lowest acceptable average travel speeds along arterials.

FDOT's Generalized Service Volume Tables are:

- Annual Average Daily Service Volume Tables
  - Table 1: urbanized areas
  - Table 2: transitioning into urbanized areas or urban areas

- Table 3: rural undeveloped or rural developed areas
- Peak hour two-way service volume
  - Table 4: urbanized areas
  - Table 5: transitioning into urbanized areas or urban areas
  - Table 6: rural undeveloped or rural developed areas
- Peak hour directional service volume tables
  - Table 7: urbanized areas
  - Table 8: transitioning into urbanized areas or urban areas
  - Table 9: rural undeveloped or rural developed areas

## 11.2. Special Cases

The volumes in the Generalized Service Volume Tables should be considered as average volumes over the facility under analysis.

For example: If a 4-mile facility has AADT counts of:

- Segment 1 - 23,000
- Segment 2 - 22,000
- Segment 3 - 25,000
- Segment 4 - 23,000 and
- Segment 5 - 27,000

FDOT recommends the use of the average value 24,000 for comparison to the tables to determine the LOS.

The use of the average volume works reasonably well, unless there is one segment that has a widely disparate value, in which case a median value may be more appropriate.

### 11.2.1. Mid-Block Considerations

In general, Q/LOS analyses for interrupted flow facilities primarily focus on signalized intersections. The majority of motorist aggravation is generally attributable to delay, which primarily occurs at signalized intersections on arterials. Therefore, when using the Generalized Service Volume Tables, the number of lanes for arterials and other interrupted flow facilities should be determined at major intersections rather than mid-block.

Travelers place a greater emphasis on mid-block considerations while traveling on uninterrupted flow facilities and non-automobile modes. **For example, on two-lane highways in rural undeveloped areas, the LOS is largely determined by the ability to pass other vehicles.** For freeways, most travelers are concerned about the operation of the whole facility and not the operation of particular interchanges. For bicycle and pedestrian movements, the BLOS and PLOS models are calibrated for mid-block conditions. For bus LOS, the emphasis is on the ability to travel by bus over the length of facility, with less importance placed on individual intersections. Therefore, in general, the number of lanes for these situations reflect mid-block considerations.

### 11.2.2. Non-State Signalized Roadways Adjustment

The primary purpose of this Q/LOS Handbook is to compute the LOS for state facilities. However, the Generalized Service Volume Tables are structured and are reasonably well-suited to local governments that desire to use them to evaluate roads under local jurisdiction. A feature of the urbanized and transitioning/urban Generalized Service Volume Tables is that Non-State roadways are addressed. The only types of roadways not addressed in the tables are unsignalized local streets and unpaved roads.

The mere fact that roadways are operated and maintained by different governmental entities has no effect on the capacity or LOS of the roadways. **However, in general, Non-State roadways have lower capacities and service volumes than state facilities, because they have lower green times at signalized intersections.** The Generalized Service Volume Tables contain a 10 percent adjustment factor for Non-State roadways.

The HCM LOS criteria address arterials rather than collectors or local streets. FDOT considers it appropriate for local governments to decide how to analyze collectors.

Uninterrupted flow facilities are analyzed the same, regardless of whether they are state facilities or not.

### 11.2.3. Variations in Levels of Service

Higher Q/LOS for the automobile, bicycle, and pedestrian modes may not be achieved, even with extremely low traffic volumes, given the default values used in the Generalized Service Volume Tables. In the case of automobiles, the higher Q/LOS cannot be achieved primarily because the control characteristics simply will not allow vehicles to attain relatively high average travel speeds. In the case of bicycles and pedestrians, it is primarily caused by the lack of facilities serving those modes. The tables have adequate footnotes to reflect this unachievable concept.

Lower Q/LOS for the automobile, bicycle, and pedestrian modes may not be applicable, even with extremely high traffic volumes, given the default values used in the Generalized Service Volume Tables. In the case of automobiles, the lower Q/LOS are not applicable, primarily because the control characteristics do not allow enough vehicles to pass through an intersection in an hour. If vehicles could get through the intersection, they could obtain the applicable LOS speed threshold, but there is not enough capacity at the intersection to let them pass through.

In the case of bicycles and pedestrians, it is primarily caused by the existence of facilities adequately serving those modes. For example, if a sidewalk exists, it is very difficult to establish a set of conditions in which the LOS to the pedestrian is F.

Essentially, once the maximum service volume is reached, the next LOS grade is F. For example, in Service Volume Table 1 for multilane Class I arterials, if demand volumes are greater than the LOS D threshold, then the LOS is F, and if the volume is at the LOS D threshold, the LOS is D; essentially, LOS E does not exist.

### 11.2.4. Median and Turn Lane Adjustment (Divided/Undivided Roadways)

For simplicity, the Generalized Service Volume Tables have factors to adjust for the effects of mid-block medians and exclusive turn lanes at intersections. The cumulative effects of medians and exclusive turn lanes from common

occurrences are shown in the Generalized Service Volume Tables.

**A median has the effect of changing the adjusted saturation flow rate or service volume by 5 percent.** In Florida, most two-lane roadways do not have a median (e.g., a two-way left turn lane), so the tables assume no median for those facilities. However, if there is a median, appropriate service volumes should be increased 5 percent. Most multilane arterials and highways in Florida have medians, so the tables are set up to assume medians for those facilities. However, if there is no median, appropriate service volumes should be decreased 5 percent.

Most major roadways in Florida have exclusive left-turn lanes at intersections, except those with very low volumes. **If a roadway does not have left-turn lanes at major intersections, its service volume drops 20 to 25 percent, depending on the number of lanes, as indicated in the table.** The common design practice in Florida is to use shared through/right-turn lanes to accommodate right-turning vehicles. However, exclusive right-turn lanes have large capacity and service volume impacts for vehicles at major intersections.

### 11.2.5. One-Way Facility Adjustments

For simplicity, the urbanized and transitioning/urban area Generalized Service Volume Tables have an intuitive factor for the effects of one-way streets on vehicles. **Essentially, one-way pairs are assumed to have a 20 percent higher service volumes than corresponding two-way roadways with the same number of lanes.**

However, the Generalized Service Volume Tables treat each facility of a one-way pair separately. To account for that, the volumes in the daily and hourly two-way Tables 1 through 6 should be multiplied by 0.6, while the volumes in the hourly directional Tables 7 through 9 should be multiplied by 1.2, to obtain the correct volume and LOS.

For example, the AADT LOS D threshold for a 2-lane Class I arterial one-way facility in a transitioning area would be 9,720. This example is calculated using the Generalized Service Volume Table 2. The AADT LOS D threshold for a 2-lane Class I arterial in a transitioning area is 16,200. To calculate the LOS D threshold for a one-way facility, multiply 16,200 by the one-way facility adjustment, 0.6, to calculate the one-way facility LOS D threshold of 9,720.

### 11.2.6. Auxiliary Lane Adjustment

Freeway auxiliary lanes (lanes connecting on- and off-ramps) usually have significant capacity and LOS benefits. The values contained in the tables indicate their importance in a general way. To apply the values, simply add the volume shown in the freeway adjustment to the maximum service volume shown in the table.

### 11.2.7. Ramp Metering Adjustment

Freeway ramp metering has the benefit of smoothing out traffic demand entering a freeway during peak travel times. This benefit is reflected by increasing the service volumes shown on the tables by 5 percent.

### 11.2.8. Bicycle LOS (BLOS)

The bicycle portions of the Generalized Service Volume Tables make primary use of the two most important factors in determining the LOS for bicyclists: the existence of paved shoulders/bicycle lanes and vehicle volumes. **It is important to note that the volumes shown in the tables are not the number of bicyclists; rather, they are the number of vehicles in the outside lane.** Unlike automobile LOS, which is highly dependent on the number

of other vehicles on the roadway, **BLOS is not determined by how many other bicyclists are on road; rather, it is primarily determined by the bicycle accommodations on the roadway and volume of vehicles.**

The other factor used in the Generalized Service Volume Tables is the volume of vehicles in the outside lane. For analysis purposes, vehicle volumes are assumed to be equally spread across the number of directional roadway lanes. Unlike the automobile entries in the table, in which the number of lanes is an entry into the tables, a step of multiplying the volume by the number of lanes is needed to use the volume (hourly directional, hourly two-way, or daily) of vehicles. For example, in Table 7, the LOS C threshold for zero percent bicycle lane coverage is 150 vehicles for the outside lane. If the roadway has four lanes, then the 150 vehicles would be multiplied by 2 (number of directional lanes) to determine the maximum volume of vehicles for BLOS C in one direction of flow. The additional step was included to simplify the appearance of the tables and save space.

### 11.2.9. Pedestrian LOS (PLOS)

**The pedestrian portions of the Generalized Service Volume Tables make primary use of the two most important factors in determining the LOS for pedestrians: the existence of a sidewalk and vehicle volumes. It is important to note that the volumes shown in the tables are not the number of pedestrians; rather, they are the number of vehicles in the outside lane.** Unlike automobile LOS, which is highly dependent on the number of other vehicles on the roadway, PLOS is not determined by how many other pedestrians use the facility; rather, it is primarily determined by the presence of sidewalks and the volume of vehicles.

The other factor used in these tables is the volume of vehicles in the outside lane. For analysis purposes, vehicle volumes are assumed to be equally spread across the number of directional roadway lanes. Unlike the automobile entries in the table, in which the number of lanes is an entry into the tables, a step of multiplying the vehicle volume by the number of lanes is needed to use the volume (hourly directional, hourly nondirectional, or daily) of vehicles. For example, in Table 7, the LOS C threshold for 100 percent sidewalk coverage is 540 vehicles for the outside lane. If the roadway has four lanes, then the 540 vehicles would be multiplied by 2 (number of directional lanes) to determine the maximum volume of vehicles for PLOS C in one direction of flow. The additional step was included to simplify the appearance of the tables and save space.

All techniques in this Q/LOS Handbook are based on a directional analysis. For example, in the case of evaluating the automobile LOS on arterials, the LOS is for the peak directional flow, and the LOS for the off-peak direction could be higher, lower, or the same. This directional technique results in some unique perspectives when evaluating PLOS. Sidewalks, whether on one or both sides of a road, serve pedestrians in both directions, unlike facilities for the other modes. Furthermore, analysts should be especially careful when using the Generalized Service Volume Tables for determining PLOS when there is a sidewalk only on one side of the roadway. Because all the Generalized Service Volume Tables are based on peak hour directional analyses, PLOS based on the tables should be considered applicable only to the direction of the peak flow of traffic. When using the tables, there is typically a difference of two LOS grades if the sidewalk is, or is not, on the same side of roadway as the peak flow of traffic. Generally, having sidewalks on both sides of arterials in developed areas is considered desirable; yet, the Generalized Service Volume Tables do not adequately reflect that concept.

### 11.2.10. Bus LOS

**The bus portions of the Generalized Service Volume Tables are primarily dependent on bus frequency,**

**which is the number of scheduled fixed-route buses that have a potential to stop in a given segment in the peak direction of flow in a one-hour time period.** That measure is supplemented by pedestrian accessibility. In the Generalized Service Volume Tables, pedestrian accessibility is represented by two broad ranges of sidewalk coverage.

There are two unique aspects of bus mode entries of the Generalized Service Volume Tables. First, it is important to note that the volumes shown in the tables are the number of buses per hour. Unlike automobile, bicycle, and PLOS thresholds, the bus mode LOS thresholds are not related to the number of vehicles on the roadway. Second, regardless of the table used, all numbers are shown in terms of buses per hour for the peak hour in the peak direction. Thus, even in the daily urbanized table (Table 1), the threshold values shown are still in terms of peak hour directional buses.

### 11.3. Service Volume Calculation Process

**All service volumes and resulting tables are first calculated for the peak hour in the peak direction.** The peak hour two-way values are obtained by dividing the peak hour peak direction service volumes by D. The daily volumes are obtained by dividing the peak hour two-way service volumes by K.

Peak hour directional and peak hour two-way service volumes are rounded to the nearest 10 vehicles. Daily service volumes are rounded to the nearest 100 vehicles.

#### 11.3.1. Arterial LOS

For the automobile mode, arterial analyses starts with a volume of 10 vph and then calculates the v/c ratio at each intersection. Then, the speed on each segment is calculated, which also accounts for the signal delay and the overall average speed for the facility. The average speed is checked against the average speed criterion for LOS A. If the speed is below the LOS A threshold, the volume is incremented by either 50 vph (if the difference in the actual speed and LOS threshold speed is large) or 10 vph (if the difference in actual speed and LOS threshold speed is small). This process is repeated until the average facility speed is approximately equal to the LOS A threshold. The volume level at which this occurs is the service volume for LOS A. The volume (i.e., LOS A service volume) is then incremented by 10 vph and incrementally increased until the average facility speed is approximately equal to the LOS B threshold speed. This process repeats for LOS C, D, and E. If at any point during this process the v/c ratio exceeds 1.0 for the full hour, the calculation is stopped. If that condition is met, this volume becomes the service volume for whichever LOS letter grade was being evaluated at the time, as well as for the lower Q/LOS grades.

For the bicycle and pedestrian modes, again the analyses is started with a volume of 10 vph and then BLOS and PLOS scores are calculated based on the BLOS and PLOS models. Then, that score is checked against the LOS A criterion. If the score is below the LOS A threshold value, the volume is incremented by 10 vph. This process is repeated until the facility score is approximately equal to the LOS A threshold. The volume level at which this occurs is then the service volume for LOS A. The volume (i.e., LOS A service volume) is then incremented by 10 vph and incrementally increased until the average facility score is approximately equal to the LOS B threshold volume. This process repeats for LOS C, D, and E. If at any point during this process the vehicle v/c ratio exceeds 1.0 for the full hour, the calculation is stopped. If that condition is met, this volume becomes the service volume for whichever LOS letter grade was being evaluated at the time as well as for the lower Q/LOS grades.



For the bus mode, the LOS service frequency criteria that appear in the TCQSM is used, modified by PLOS, relative auto speed, bus stop amenities, and passenger load factors.

### **11.3.2. Freeway Facilities LOS**

For freeways, the HCS7 freeway facilities module was used to obtain the service volume thresholds. The automobile volume is incrementally increased until the demand flow rate to the mean speed of the traffic stream produces an average facility density that is approximately equal to the LOS A threshold. The volume level at which this occurs is the service volume for LOS A. The volume (i.e., LOS A service volume) is then incrementally increased by 10 vph and until the average facility density is approximately equal to the LOS B threshold speed. This process repeats for LOS C, D, and E. If at any point during this process the v/c ratio exceeds 1.0 for the full hour, the calculation stops. If that condition is met, this volume becomes the service volume for whichever LOS letter grade was being evaluated at the time, as well as for the lower Q/LOS grades. The traffic factors and other inputs such as CAF and SAF used in the analyses are discussed in the previous sections of this handbook and listed at the back of the Generalized Service Volume Tables.

### **11.3.3. Highways LOS**

For multilane uninterrupted flow highways, HCS7's multilane highways procedure starts with a volume of 10 vph and then calculates density. If the density is below the LOS A threshold density, the volume is incremented by 10 vph. This process is repeated until the average density is approximately equal to the LOS A threshold. The volume level at which this occurs is then the service volume for LOS A. The volume (i.e., LOS A service volume) is then increased by 10 vph until the average facility density is approximately equal to the LOS B threshold density. This process repeats for LOS C, D, and E. If at any point during this process the v/c ratio exceeds 1.0 for the full hour, the calculation stops. If that condition is met, this volume becomes the service volume for whichever LOS letter grade was being evaluated at the time, as well as for the lower Q/LOS grades. The traffic factors and other inputs such as CAF and SAF used in the analyses are discussed in the previous sections of this handbook and listed at the back of the Generalized Service Volume Tables. A different free flow speed is used in the analyses for multilane uninterrupted flow highways passing through undeveloped areas and developed areas.

For two-lane uninterrupted flow highways, the computational process is similar to the process followed for multilane uninterrupted flow highways. The HCS7's two-lane highways module is dependent on the highway class (I, II, or III). The traffic factors and other inputs used in the analyses are discussed in the previous sections of this handbook and listed at the back of the Generalized Service Volume Tables. A different free flow speed is used in the analyses for two-lane uninterrupted flow highways passing through undeveloped areas and developed areas.

## Glossary

<b>Acceleration lane</b>	A freeway lane extending from the on-ramp gore to where its taper ends.
<b>Accessibility</b>	The dimension of mobility that addresses the ease in which travelers can engage in desired activities.
<b>Actuated control</b>	All approaches to the signalized intersection have vehicle detectors, with each phase subject to a minimum and maximum green time, and some phases may be skipped if no vehicle is detected. Same as <i>actuated</i> and <i>fully actuated control</i> .
<b>Actuated-Coordinated control</b>	The fixed-cycle signal control of an intersection in which the through movement on the designated main roadway gets the unused green time from side movements because of limited or no vehicle activation from side movements. Same as <i>coordinated-actuated</i> .
<b>Add-on/drop-off lanes</b>	The roadway lanes added before an intersection and dropped after the intersection. Same as <i>expanded intersections</i> .
<b>Adjusted saturation flow rate</b>	In this Q/LOS Handbook, the base saturation flow rate times the effect of many roadway variables and traffic variables.
<b>Adjustment factor</b>	In the Generalized Service Volume Tables: additive or multiplicative factors to adjust service volumes.
<b>All-way stop control</b>	An intersection with a stop sign at all approaches.
<b>Annual average daily traffic</b>	The volume passing a point or segment of a roadway in both directions for one year, divided by the number of days in the year.
<b>Areawide analysis</b>	An evaluation within a geographic boundary.
<b>Arrival type</b>	A general categorization of the quality of signal progression.
<b>Arterial</b>	A signalized roadway that primarily serves through traffic with average signalized intersection spacing of 2 miles or less; a type of roadway based on FDOT's functional classification.
<b>Auxiliary lane</b>	An additional lane on a freeway connecting an on-ramp of one interchange to the off-ramp of the downstream interchange.
<b>Average daily traffic</b>	The total traffic volume during a given time period (more than a day and less than a year) divided by the number of days in that time period.
<b>Average travel speed</b>	The facility length divided by the average travel time of all vehicles traversing the facility, including all stopped delay times.
<b>Axle correction factors</b>	The adjustment factors used to calculate the annual average daily traffic by compensating for an axle counter's tendency to count more vehicles than are present.
<b>Base conditions</b>	The best possible characteristic in terms of capacity for a given type of facility.



<b>Base saturation flow rate</b>	The maximum steady flow rate, expressed in passenger cars per hour per lane, at which passenger cars can cross a point on interrupted flow roadways.
<b>Basic segment</b>	In this Q/LOS Handbook, the length of a freeway in which operations are unaffected by interchanges. Same as <i>basic freeway segment</i> .
<b>Basic two-lane highway Segments</b>	A highway segment upstream of the intersection influence area and downstream of the affected downstream highway segment, and thus not affected by signalized intersections.
<b>Bicycle lane</b>	In this Q/LOS Handbook, a designated or undesignated portion of roadway for bicycles adjacent to vehicle lanes.
<b>Bicycle level of service score</b>	A numerical value calculated by the BLOS Model that corresponds to a BLOS.
<b>Bus frequency</b>	The number of buses per hour serving one direction of a roadway facility.
<b>Bus stop</b>	An area where bus passengers wait for, board, alight, and transfer.
<b>Bus stop amenities</b>	Enhancements for comfort or safety that can greatly influence the perceived QOS along a route. Four categories of bus stop amenities exist: excellent, good, fair, and poor.
<b>Bus stop amenity factors</b>	Factors used to determine the adjusted bus frequency value by applying a factor commensurate to the quality of bus stop amenities.
<b>Bus stop type adjustment factors</b>	Factors that adjust travel times along bus routes by adding 15 to 35 seconds of delay per route for typical and major bus stops, respectively.
<b>Capacity</b>	The maximum sustainable flow rate at which persons or vehicles reasonably can be expected to traverse a point or a uniform section of roadway during a given time period under prevailing conditions. As typically used in this Q/LOS Handbook, the maximum number of vehicles that can pass a point in one hour under prevailing roadway, traffic and control conditions.
<b>Capacity adjustment factor</b>	An adjustment factor used in the HCS7 freeways and multilane highways module to adjust the capacity of a facility for reduced capacity situations or to match field measurements. The capacity can be reduced to represent incident situations, such as construction and maintenance activities, adverse weather, traffic incidents, and vehicle breakdowns.
<b>Capacity constrained</b>	A condition in which traffic <i>demand</i> exceeds the capacity of a roadway.
<b>Capacity utilization</b>	The dimension of mobility that addresses the quantity of operations relative to capacity.
<b>Captive rider</b>	A transit rider who is limited by circumstances to use transit as a primary source of transportation.
<b>Choice rider</b>	A transit rider who chooses to take transit over other readily available transportation options.
<b>Class I arterial</b>	A roadway that has posted speeds of 40 mph or higher.

<b>Class II arterial</b>	A roadway that has posted speeds of 35 mph or less.
<b>Collector</b>	A roadway providing land access and traffic circulation with residential, commercial and industrial areas.
<b>Concurrency</b>	A systematic process utilized by local governments to ensure new development does not occur unless adequate infrastructure is in place to support growth.
<b>Context classification</b>	A classification assigned to a roadway that broadly identifies the various built environments in Florida, based on existing or future land use characteristics, development patterns, and the roadway connectivity of an area.
<b>Control delay</b>	The component of delay that results when a signal causes traffic to reduce speed or stop.
<b>Control variables</b>	The parameters associated with roadway controls.
<b>Core freeways</b>	The major, non-toll freeways going through the urbanized core areas of the largest metropolitan areas, such as Interstate 4 in Orlando. FDOT has adopted lower K values for these freeways to represent a peak period, as opposed to a peak hour analysis. The lower K values affect daily service volumes only in the Generalized Service Volume Tables.
<b>Critical signalized intersection</b>	The signalized intersection with the lowest volume-to-capacity ratio ( $v/c$ ), typically the one with the lowest effective green ratio ( $g/C$ ) for the through movement. Same as <i>critical signalized intersection</i> .
<b>Cycle length</b>	The time it takes a traffic signal to go through one complete sequence of signal indications.
<b>Deceleration lane</b>	A freeway lane extending from the taper to the off-ramp gore.
<b>Delay</b>	The additional travel time experienced by a traveler.
<b>Demand</b>	The number of persons or vehicles desiring service on a roadway. Same as <i>demand traffic</i> .
<b>Density</b>	The number of vehicles, averaged over time, occupying a given length of lane or roadway; usually expressed as vehicles per mile or vehicles per mile per lane.
<b>Developed areas</b>	All areas not rural undeveloped. Same as rural developed areas.
<b>Directional distribution factor</b>	The proportion of an hour's total volume occurring in the higher volume direction.
<b>Effective green ratio</b>	Typically in this Q/LOS Handbook, the ratio of the effective green time ( $g$ ) for the through movement at a signal intersection to its cycle length ( $C$ ).
<b>Effective green time</b>	The time allocated for the through movement to proceed; calculated as the through movement green plus yellow plus all-red indication times less the lost time.
<b>Exclusive left-turn storage length</b>	The total amount of storage length, in feet, for exclusive left-turn lanes.
<b>Exclusive right-turn lanes</b>	A storage area designated to only accommodate right-turning vehicles.

<b>Exclusive turn lane</b>	A storage area designated to only accommodate left- or right-turning vehicles; in this Q/LOS Handbook, the turn lane must be long enough to accommodate enough turning vehicles to allow the free flow of the through movement.
<b>Five-lane section</b>	A roadway with four through lanes, two in each direction, separated by a two-way left turn lane; in the Generalized Service Volume Tables, a five-lane section is treated as a roadway with four lanes and a median.
<b>Flow rate</b>	In this Q/LOS Handbook, the equivalent hourly rate at which vehicles pass a point on a roadway for a 15-minute period.
<b>Free flow speed</b>	In this Q/LOS Handbook, the average speed of vehicles under low-flow traffic conditions and not under the influence of signals, stop signs, or other fixed causes of interruption, generally assumed to be 5 mph over the posted speed limit.
<b>Freeway</b>	A multilane, divided highway with at least two lanes for the exclusive use of traffic in each direction and full control of ingress and egress.
<b>Freeway segment</b>	In this Q/LOS Handbook, a basic segment, interchange or toll plaza.
<b>FSUTMS</b>	Florida Standard Urban Transportation Model Structure; Florida's software that forecasts travel demand.
<b>Functional classification</b>	The assignment of roads into systems according to the character of service they provide in relation to the total road network.
<b>Generalized Service Volume Tables</b>	Maximum service volumes based on areawide roadway, traffic, and control variables and presented in tabular form.
<b>Generalized planning</b>	A broad type of planning application that includes statewide analyses, initial problem identification, and future year analyses. In this Q/LOS Handbook, typically performed by using the Generalized Service Volume Tables.
<b>Gore</b>	The point located immediately between the left edge of a ramp pavement and the right edge of the roadway pavement at a merge or diverge area.
<b>Headway</b>	The time, in seconds, between two successive vehicles as they pass a point on a roadway.
<b>Heavy vehicle</b>	An FHWA vehicle classification of 4 or higher; essentially, vehicles with more than 4 wheels touching the pavement during normal operation.
<b>Heavy vehicle factor</b>	The adjustment factor for heavy vehicles.
<b>Heavy vehicle percent</b>	The percentage of heavy vehicles in the traffic stream.
<b>Highway capacity analysis</b>	An examination of the maximum of vehicles or persons that can reasonably be expected to pass a point on a roadway during a specified time period under prevailing roadway, traffic, and control conditions. Same as <i>capacity analysis</i> .
<b>Highway Capacity Manual</b>	The Transportation Research Board's document on highway capacity and QOS.
<b>Highway Capacity Software 7</b>	Software that replicates the HCM, Sixth Edition.

<b>Interchange</b>	In this Q/LOS Handbook, the influence area associated with the off-ramp influence area, overpass/underpass, and on-ramp influence area of a connection to a freeway. Same as <i>freeway interchange influence area</i> .
<b>Interrupted flow</b>	A category of roadways characterized by signals, stop signs, or other fixed causes of periodic delay or interruption to the traffic stream, with average spacing less than or equal to 2.0 miles.
<b>Intersection influence area</b>	In this Q/LOS Handbook, a segment of an uninterrupted flow highway influenced by an isolated intersection.
<b>Interval</b>	A period of time in which all traffic signal indications remain constant.
<b>Isolated intersection</b>	An intersection occurring along an uninterrupted flow highway.
<b>Large urbanized area</b>	A Metropolitan Planning Organization urbanized area greater than 1 million in population; in Florida, these seven areas consist of the following central cities: Fort Lauderdale, Jacksonville, Miami, Orlando, St. Petersburg, Tampa, and West Palm Beach.
<b>Lateral clearance</b>	Clearance distance from edges of outside lanes to fixed obstructions.
<b>Level of service</b>	A quantitative stratification of the QOS to a typical traveler of a service or facility into six letter-grade levels, with A describing the highest quality and F describing the lowest quality; a discrete stratification of a QOS continuum.
<b>Level of service targets</b>	The same as the statewide minimum LOS targets for the State Highway System.
<b>Load factor</b>	The ratio of passengers actually carried to the total passenger capacity of a bus.
<b>Local adjustment factor</b>	In the 2013 Q/LOS Handbook, an adjustment factor FDOT used to adjust base saturation flow rates or base capacities to better match actual Florida traffic volumes; mostly consisted of a driver population factor and an area type factor.
<b>Maximum service volume</b>	The highest number of vehicles for a given LOS.
<b>Median</b>	In this Q/LOS Handbook, areas at least 10 feet wide that are restrictive or non-restrictive, which separate opposing-direction mid-block traffic lanes and, on arterials, contain turn lanes that allow left-turning vehicles to exit from the through traffic lanes.
<b>Median type</b>	A classification of roadway medians as restrictive, non-restrictive, or no median.
<b>Mid-block</b>	In this Q/LOS Handbook, the part of a roadway between two signalized intersections.
<b>Mobility</b>	The movement of people and goods.
<b>Mode</b>	A method of travel; in this Q/LOS Handbook, either automobile, bus, bicycle, or pedestrian.
<b>Motorized mode</b>	A method of travel by automobile or bus.

<b>MPO/TPO</b>	Metropolitan/Transportation Planning Organization.
<b>Multilane highway</b>	A nonfreeway roadway with two or more lanes in each direction and, although occasional interruptions to flow at signalized intersections may exist, is generally uninterrupted flow.
<b>Multimodal</b>	In this Q/LOS Handbook, more than one mode.
<b>Multimodal Transportation District</b>	An area in which secondary priority is given to vehicle mobility, and primary priority is given to ensuring a safe, comfortable, and attractive pedestrian environment, with convenient interconnection to transit (F.S. 163.3180[15]).
<b>No passing zone</b>	In this Q/LOS Handbook, a segment of a two-lane highway along which passing is prohibited in the analysis direction.
<b>Non-restrictive median</b>	A painted, at-grade area separating opposing mid-block traffic lanes.
<b>Non-State signalized roadway</b>	A signalized roadway not on the State Highway System.
<b>Number of effective lanes</b>	In terms of capacity, the equivalent number of through lanes. Typically, the number is expressed as a fraction (e.g., 2.7) to reflect the partial beneficial effects of freeway auxiliary lanes or arterial add-on/drop-off lanes.
<b>Number of through lanes</b>	<p>The number of lanes relevant to an analysis of a roadway's LOS.</p> <p><b>FOR ARTERIALS</b></p> <ul style="list-style-type: none"> <li>■ Usually at the signalized intersection, not mid-block</li> <li>■ Usually through and shared right-turn lanes</li> <li>■ Maybe a fractional number reflecting add-on/drop-off lanes or other special lane utilization considerations</li> <li>■ Using the Generalized Service Volume Tables, the number at major signalized intersections</li> </ul> <p><b>FOR FREEWAYS AND UNINTERRUPTED FLOW HIGHWAYS</b></p> <ul style="list-style-type: none"> <li>■ Does not include auxiliary lanes between two points</li> <li>■ Usually the predominant number of through lanes between two points</li> </ul>
<b>Off-ramp influence area</b>	The geographic limits affecting the capacity of a freeway associated with traffic exiting a freeway. Same as <i>diverge area</i> .
<b>On-ramp influence area</b>	The geographic limits affecting the capacity of a freeway associated with traffic entering a freeway. Same as <i>merge area</i> .
<b>One-way</b>	A type of roadway in which vehicles are allowed to move in only one direction.
<b>Operational analysis</b>	A detailed analysis of a roadway's present or future LOS, as opposed to a generalized planning.
<b>Other urbanized area</b>	A Metropolitan Planning Organization urbanized area with less than 1 million in population.
<b>Oversaturated</b>	A traffic condition in which demand exceeds capacity.
<b>Passenger load factors</b>	Factors used to determine the adjusted bus frequency value by applying a factor commensurate to the level of passenger crowding.

<b>Passing lane</b>	A lane added to provide passing opportunities in one direction of travel on a two-lane highway. Two-way left-turn lanes are not considered passing lanes.
<b>Paved shoulder/bicycle lane</b>	In this Q/LOS Handbook, pavement at least 3 feet in width separated by a solid pavement marking from the outside vehicle through lane to the edge of the pavement.
<b>Peak direction</b>	The course of the higher flow of traffic.
<b>Peak hour</b>	In this Q/LOS Handbook, a one-hour time period with high volume.
<b>Peak hour factor</b>	The ratio of the hourly volume to the peak 15-minute flow rate for that hour; specifically, hourly volume/(4 x peak 15-minute volume).
<b>Peak period</b>	A multi-hour analysis period with high volume; peak periods rather than peak hours are typically used for the analysis of core freeways or roadways within a Multimodal Transportation District.
<b>Peak season</b>	The 13 consecutive weeks with the highest daily volumes for an area.
<b>Peak season weekday average daily traffic</b>	The average daily traffic for Monday through Friday during the peak season.
<b>Pedestrian</b>	An individual traveling on foot and other non-motorized modes such as skateboards, scooters and both motorized and non-motorized wheelchairs.
<b>Pedestrian accessibility</b>	In this Q/LOS Handbook, the ease in which a pedestrian can reach a bus stop.
<b>Pedestrian LOS Model</b>	The operational methodology from which this Q/LOS Handbook's pedestrian Q/LOS analyses are based.
<b>Pedestrian level of service score</b>	A numerical value calculated by the PLOS Model that corresponds to a PLOS.
<b>Pedestrian/sidewalk/roadway separation</b>	The lateral distance, in feet, from the outer edge of the pavement to where a pedestrian walks on a sidewalk.
<b>Percent time spent following</b>	The average percent of total travel time that vehicles must travel in platoons behind slower vehicles because of the inability to pass on a two-lane highway.
<b>Performance measure</b>	A qualitative or quantitative factor used to evaluate a particular aspect of travel quality.
<b>Person flow</b>	The capacity on uninterrupted and interrupted flow facilities, defined in terms of persons per hour.
<b>Phase</b>	The part of a traffic signal's cycle allocated to any combination of traffic movements receiving the right of way simultaneously during one or more intervals.
<b>Planning analysis hour factor</b>	The ratio of the traffic volume in the study hour to the annual average daily traffic.
<b>Planning horizon</b>	A time period, typically 20 years, applicable to the analysis of a project, roadway or service.
<b>Platoon</b>	A group of vehicles traveling together as a group, either voluntarily or



involuntarily because of signal control, geometrics, or other factors.

<b>Point</b>	A boundary between links. In this Q/LOS Handbook, usually a signalized intersection, but maybe other places where modal users enter, leave, or cross a facility, or roadway characteristics change.
<b>Posted speed</b>	The maximum speed at which vehicles are legally allowed to travel over a roadway segment.
<b>Pretimed control</b>	Traffic signal control in which the cycle length, phase plan, and phase times are preset and repeated continuously, according to a preset plan.
<b>Prevailing conditions</b>	Existing circumstances that primarily include roadway, traffic, and control conditions, but may also include weather, construction, incidents, lighting, and area type.
<b>Principal arterial</b>	A signalized roadway that primarily serves through traffic between centers of metropolitan areas and provides a high degree of mobility. In this Q/LOS Handbook, principal arterials have approximately one signal every half mile and a posted speed limit of 50 mph.
<b>Quality of service</b>	A traveler-based perception of how well a service or facility is operating.
<b>Quality/level of service</b>	A combination of the broad QOS and more detailed LOS concepts.
<b>Queue spillback</b>	When a link's queue of vehicles extends to upstream links.
<b>Ramp overlap segment</b>	The length for which the upstream on-ramp influence area and the downstream off-ramp influence area overlap.
<b>Restrictive median</b>	A raised or grassed area that restricts crossing movements.
<b>Roadway</b>	A general categorization of an open way for persons and vehicles to traverse; in this Q/LOS Handbook, it encompasses streets, arterials, freeways, highways, and other facilities.
<b>Roadway class</b>	The categories of two-lane highways; two-lane highways are primarily grouped by area type. Same as <i>class</i> .
<b>Roadway variables</b>	The parameters associated with roadways. Also known as <i>roadway characteristics</i> .
<b>Rolling terrain</b>	A combination of horizontal and vertical alignments causing heavy vehicles to reduce their running speeds substantially below that of passenger cars, but not to operate at crawl speeds for a significant amount of time.
<b>Route</b>	As used in the TCQSM, a designated, specified path to which a bus is assigned.
<b>Route segment</b>	As used in the TCQSM, a portion of a bus route ranging from two stops to the entire length of the route.
<b>Running speed</b>	The distance a vehicle travels divided by the travel time the vehicle is in motion.
<b>Rural area</b>	In the Generalized Service Volume Tables, areas that are not

	urbanized areas, transitioning areas, or urban areas.
<b>Rural developed areas</b>	The portions of rural areas that are along coastal roadways or in generally populated areas with a population of less than 5,000.
<b>Rural undeveloped areas</b>	Portions of rural areas with no or minimal population or development.
<b>Scheduled fixed route</b>	In this Q/LOS Handbook, bus service provided on a repetitive, fixed-schedule basis along a specific route, with buses stopping to pick up and deliver passengers to specific locations.
<b>Seasonal adjustment factor</b>	A factor used to adjust for the variation in traffic over the course of a year.
<b>Section</b>	A group of consecutive segments that have similar roadway characteristics, traffic characteristics and, as appropriate, control characteristics for a mode of travel. A characteristic describing laneage (e.g., three-lane section, five-lane section, seven-lane section).
<b>Segment</b>	A portion of a facility defined by two boundary points; usually the length of roadway from one signalized intersection to the next signalized intersection.
<b>Service measure</b>	A specific performance measure used to assign a LOS to a set of operating conditions for a transportation facility or service.
<b>Service volume table</b>	Maximum service volumes based on roadway, traffic and control variables and presented in tabular form.
<b>Seven-lane section</b>	A roadway with six through lanes, three in each direction separated by a two-way left-turn lane; in the Generalized Service Volume Tables, a seven-lane section is treated as a roadway with six lanes and a median.
<b>Shared lane</b>	A roadway lane shared by two or three traffic movements; in Florida, a shared lane usually serves through and right-turning traffic movements.
<b>Sidewalk</b>	A paved walkway for pedestrians at the side of a roadway.
<b>Sidewalk/roadway protective barrier</b>	Physical barriers separating pedestrians on sidewalks and vehicles.
<b>Sidewalk/roadway separation</b>	The lateral distance in feet from the outside edge of the pavement to the inside edge of the sidewalk.
<b>Signal</b>	In this Q/LOS Handbook, a traffic control device regulating the flow of traffic with green, yellow, and red indications. A traffic control device that routinely stops vehicles during the study period; excluded from this definition are flashing yellow lights, railroad crossings, draw bridges, yield signs, and other control devices.
<b>Signal density</b>	The number of signals intersections per mile.
<b>Signal type</b>	The kind of traffic signal (actuated, pretimed or coordinated-actuated) with respect to the way its cycle length, phase plan, and phase times are operated.



<b>Signalized intersection</b>	A place where two roadways cross and have a signal controlling traffic movements.
<b>Signalized intersection spacing</b>	The distance between signalized intersections.
<b>Simple average</b>	An average that gives equal weight to each component.
<b>Speed</b>	In this Q/LOS Handbook, the same as average travel speed, unless specifically noted.
<b>Speed adjustment factor</b>	An adjustment factor in HCS 7's freeways and multilane highways module, used to adjust the speed of a facility to account for the effects of adverse weather and construction work zones. The SAF also may be used to calibrate estimates of free-flow speed for local conditions or other effects that contribute to a reduction in free-flow speed.
<b>Standard K</b>	FDOT's standard peak hour to annual average daily traffic ratio (K), based on a roadway's characteristics (facility type) and location (area type). Values of less than 9 percent essentially represent a multi-hour peak period rather than a peak hour.
<b>State Highway System</b>	All roadways that FDOT operates and maintains; the State Highway System consists of the Florida Intrastate Highway System and other state roads.
<b>Stochastic</b>	A description of a type of model that incorporates variability and uncertainty into analysis.
<b>Strategic Intermodal System</b>	Florida's system of transportation facilities and services of statewide and interregional significance.
<b>Termini</b>	In this Q/LOS Handbook, the beginning and endpoints of a facility.
<b>Three-lane section</b>	A roadway with two through lanes separated by a two-way left-turn lane. In the Generalized Service Volume Tables, a three-lane section is treated as a roadway with two lanes and a median. An exclusive passing lane on a two-lane highway is not considered a three-lane section.
<b>Threshold</b>	The breakpoints between LOS differentiations.
<b>Threshold delay</b>	The additional travel time represented by the difference between the time associated with a roadway's generally accepted speed (LOS D threshold in urbanized areas and LOS C threshold in nonurbanized areas) and average travel speed. Same as LOS threshold delay.
<b>Through movement</b>	In this Q/LOS Handbook, the traffic stream with the greatest number of vehicles passing directly through a point. Typically, this is the straight-ahead movement, but occasionally it may be a turning movement.
<b>Traffic demand</b>	The number of vehicles with drivers who desire to traverse a particular highway during a specified time period.
<b>Traffic volume</b>	The number of vehicles passing a point on a highway during a specified time period.
<b>Transit</b>	In this Q/LOS Handbook, the same as <i>bus</i> .

<b>Transit Capacity and Quality of Service Manual (TCQSM)</b>	The document and operational methodology from which this Q/LOS Handbook's bus Q/LOS analyses are based.
<b>Transitioning area</b>	An area adjacent to an urbanized area that exhibits characteristics between rural and urbanized/urban, and will be urbanized in the next 20 years.
<b>Transportation planning boundaries</b>	Precisely defined lines that delineate geographic areas. These boundaries are used throughout transportation planning in Florida. Their mapping is described in <a href="#">Urban Boundaries and Functional Classification of Roadways FDOT's Procedure Topic No. 525-020-311</a> .
<b>Travel time</b>	The average time spent by vehicles traversing a roadway.
<b>Two-lane highway</b>	A roadway with one lane in each direction on which passing maneuvers must be made in the opposing lane and, although occasional interruptions to flow at signalized intersections may exist, is generally uninterrupted flow.
<b>Two-way</b>	Movement allowed in either direction.
<b>Two-way left-turn lane</b>	A lane that simultaneously serves left-turning vehicles traveling in opposite directions. Same as continuous left-turn lane.
<b>Two-way stop control</b>	The type of traffic control at an intersection where drivers on the minor street, or a driver turning left from the major street, wait for a gap in major-street traffic to complete a maneuver.
<b>Undesignated bicycle lane</b>	A lane, usually 4 feet in width, that does not contain a bicycle logo.
<b>Undivided</b>	As used in the Generalized Service Volume Tables, a roadway with no median.
<b>Uninterrupted flow</b>	A category of roadway not characterized by signals, stop signs, or other fixed causes of periodic delay or interruption to traffic stream.
<b>Uninterrupted flow highway</b>	A nonfreeway roadway that generally has uninterrupted flow, with average signalized intersection spacing of greater than 2.0 miles; a two-lane highway or a multilane highway.
<b>Urban area</b>	A place with a population between 5,000 and 50,000 and not in an urbanized area. The applicable boundary includes the census' urban area and the surrounding geographical area agreed on by the FDOT, the local government, and the FHWA. The boundaries are commonly called FHWA Urban Area Boundaries and include areas expected to develop medium density before the next decennial census.

<b>Urbanized area</b>	An area within a Metropolitan Planning Organization's (MPO) designated urbanized area boundary. The minimum population for an urbanized area is 50,000 people. Based on the census, any area the U.S. Bureau of Census designates as urbanized, together with any surrounding geographical area agreed on by the FDOT, the relevant MPO, and the FHWA, commonly called the FHWA Urbanized Area Boundary.
<b>Volume-to-capacity ratio</b>	The ratio of demand flow rate to capacity of a signalized intersection, segment or facility.
<b>Weaving distance</b>	A length of freeway over which traffic streams across paths through lane-changing maneuvers. Same as <i>weaving segment</i> .
<b>Weighted effective green ratio</b>	In this Q/LOS Handbook, the average of the critical intersection's through effective green ratio and the average of all the other signalized intersections' through effective green ratios along the arterial facility.

TABLE 1

Generalized **Annual Average Daily** Volumes for Florida's  
Urbanized Areas

January 2020

INTERRUPTED FLOW FACILITIES						UNINTERRUPTED FLOW FACILITIES					
STATE SIGNALIZED ARTERIALS						FREEWAYS					
Class I (40 mph or higher posted speed limit)						Core Urbanized					
Lanes	Median	B	C	D	E	Lanes	B	C	D	E	
2	Undivided	*	16,800	17,700	**	4	47,600	66,400	83,200	87,300	
4	Divided	*	37,900	39,800	**	6	70,100	97,800	123,600	131,200	
6	Divided	*	58,400	59,900	**	8	92,200	128,900	164,200	174,700	
8	Divided	*	78,800	80,100	**	10	115,300	158,900	203,600	218,600	
						12	136,500	192,400	246,200	272,900	
Class II (35 mph or slower posted speed limit)						Urbanized					
Lanes	Median	B	C	D	E	Lanes	B	C	D	E	
2	Undivided	*	7,300	14,800	15,600	4	45,900	62,700	75,600	85,400	
4	Divided	*	14,500	32,400	33,800	6	68,900	93,900	113,600	128,100	
6	Divided	*	23,300	50,000	50,900	8	91,900	125,200	151,300	170,900	
8	Divided	*	32,000	67,300	68,100	10	115,000	156,800	189,300	213,600	
Non-State Signalized Roadway Adjustments						Freeway Adjustments					
(Alter corresponding state volumes by the indicated percent.)						Auxiliary Lanes Ramp					
Non-State Signalized Roadways - 10%						Present in Both Directions Metering					
						+ 20,000 + 5%					
Median & Turn Lane Adjustments						UNINTERRUPTED FLOW HIGHWAYS					
Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors		Lanes	Median	B	C	D	E
2	Divided	Yes	No	+5%		2	Undivided	11,700	18,000	24,200	32,600
2	Undivided	No	No	-20%		4	Divided	36,300	52,600	66,200	75,300
Multi	Undivided	Yes	No	-5%		6	Divided	54,600	78,800	99,400	113,100
Multi	Undivided	No	No	-25%							
—	—	—	Yes	+ 5%							
One-Way Facility Adjustment						Uninterrupted Flow Highway Adjustments					
Multiply the corresponding two-directional volumes in this table by 0.6						Lanes	Median	Exclusive left lanes		Adjustment factors	
						2	Divided	Yes		+5%	
						Multi	Undivided	Yes		-5%	
						Multi	Undivided	No		-25%	
BICYCLE MODE <sup>2</sup>						<sup>1</sup> Values shown are presented as two-way annual average daily volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.					
(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)											
<b>Paved Shoulder/Bicycle</b>											
Lane Coverage	B	C	D	E		<sup>2</sup> Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.					
0-49%	*	2,900	7,600	19,700							
50-84%	2,100	6,700	19,700	>19,700							
85-100%	9,300	19,700	>19,700	**		<sup>3</sup> Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.					
<b>PEDESTRIAN MODE<sup>2</sup></b>											
(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)						* Cannot be achieved using table input value defaults.					
Sidewalk Coverage	B	C	D	E							
0-49%	*	*	2,800	9,500							
50-84%	*	1,600	8,700	15,800		** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.					
85-100%	3,800	10,700	17,400	>19,700							
BUS MODE (Scheduled Fixed Route) <sup>3</sup>						<b>Source:</b> Florida Department of Transportation Systems Implementation Office <a href="https://www.fdot.gov/planning/systems/">https://www.fdot.gov/planning/systems/</a>					
(Buses in peak hour in peak direction)											
Sidewalk Coverage	B	C	D	E							
0-84%	> 5	≥ 4	≥ 3	≥ 2							
85-100%	> 4	≥ 3	≥ 2	≥ 1							

**TABLE 1**  
(continued)

Generalized **Annual Average Daily** Volumes for Florida's  
Urbanized Areas

January 2020

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities				Interrupted Flow Facilities					
					State Arterials			Class I		
	Freeways	Core Freeways	Highways		Class I		Class II		Bicycle	Pedestrian
ROADWAY CHARACTERISTICS										
Area type (urban, rural)	urban	urban								
Number of through lanes (both dir.)	4-10	4-12	2	4-6	2	4-8	2	4-8	4	4
Posted speed (mph)	70	65	50	50	45	50	30	30	45	45
Free flow speed (mph)	75	70	55	55	50	55	35	35	50	50
Auxiliary Lanes (n,y)	n	n								
Median (d, twlt, n, nr, r)				d	n	r	n	r	r	r
Terrain (l,r)	l	l	l	l	l	l	l	l	l	l
% no passing zone			80							
Exclusive left turn lane impact (n, y)			[n]	y	y	y	y	y	y	y
Exclusive right turn lanes (n, y)					n	n	n	n	n	n
Facility length (mi)	3	3	5	5	2	2	1.9	1.8	2	2
TRAFFIC CHARACTERISTICS										
Planning analysis hour factor (K)	0.090	0.085	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
Directional distribution factor (D)	0.55	0.55	0.55	0.55	0.550	0.560	0.565	0.560	0.565	0.565
Peak hour factor (PHF)	0.95	0.95	0.95	0.95	1.000	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)	2,400	2,400	1,700	2,200	1,950	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	4.0	4.0	2.0	2.0	1.0	1.0	1.0	1.0	2.5	2.0
Speed Adjustment Factor (SAF)	0.975	0.975		0.975						
Capacity Adjustment Factor (CAF)	0.968	0.968		0.968						
% left turns					12	12	12	12	12	12
% right turns					12	12	12	12	12	12
CONTROL CHARACTERISTICS										
Number of signals					4	4	10	10	4	6
Arrival type (1-6)					3	3	4	4	4	4
Signal type (a, c, p)					c	c	c	c	c	c
Cycle length (C)					120	150	120	120	120	120
Effective green ratio (g/C)					0.44	0.45	0.44	0.44	0.44	0.44
MULTIMODAL CHARACTERISTICS										
Paved shoulder/bicycle lane (n, y)									n, 50%, y	n
Outside lane width (n, t, w)									t	t
Pavement condition (d, t, u)									t	
On-street parking (n, y)										
Sidewalk (n, y)										n, 50%, y
Sidewalk/roadway separation(a, t, w)										t
Sidewalk protective barrier (n, y)										n
LEVEL OF SERVICE THRESHOLDS										
Level of Service	Freeways	Highways		Arterials			Bicycle	Ped	Bus	
	Density	Two-Lane	Multilane	Class I ats	Class II ats		Score	Score	Buses/hr.	
		%ffs	Density							
B	≤ 17	> 83.3	≤ 17	> 31 mph	> 22 mph		≤ 2.75	≤ 2.75	≤ 6	
C	≤ 24	> 75.0	≤ 24	> 23 mph	> 17 mph		≤ 3.50	≤ 3.50	≤ 4	
D	≤ 31	> 66.7	≤ 31	> 18 mph	> 13 mph		≤ 4.25	≤ 4.25	< 3	
E	≤ 39	> 58.3	≤ 35	> 15 mph	> 10 mph		≤ 5.00	≤ 5.00	< 2	

% ffs = Percent free flow speed ats = Average travel speed

TABLE 2

**Generalized Annual Average Daily Volumes for Florida's  
Transitioning Areas and  
Areas Over 5,000 Not In Urbanized Areas<sup>1</sup>**

January 2020

INTERRUPTED FLOW FACILITIES						UNINTERRUPTED FLOW FACILITIES					
STATE SIGNALIZED ARTERIALS						FREEWAYS					
Class I (40 mph or higher posted speed limit)						Lanes	B	C	D	E	
Lanes	Median	B	C	D	E	4	45,100	59,000	70,300	72,600	
2	Undivided	*	14,400	16,200	**	6	65,300	86,600	104,100	108,900	
4	Divided	*	34,000	35,500	**	8	85,900	114,500	138,100	145,300	
6	Divided	*	52,100	53,500	**	10	101,600	135,600	161,900	181,800	
Class II (35 mph or slower posted speed limit)						Freeway Adjustments					
Lanes	Median	B	C	D	E	Auxiliary Lanes				Ramp	
2	Undivided	*	6,500	13,300	14,200	Present in Both Directions				Metering	
4	Divided	*	9,900	28,800	31,600	+ 20,000				+ 5%	
6	Divided	*	16,000	44,900	47,600						
Non-State Signalized Roadway Adjustments											
(Alter corresponding state volumes by the indicated percent.)											
Non-State Signalized Roadways - 10%											
Median & Turn Lane Adjustments											
Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors							
2	Divided	Yes	No	+5%							
2	Undivided	No	No	-20%							
Multi	Undivided	Yes	No	-5%							
Multi	Undivided	No	No	-25%							
—	—	—	Yes	+ 5%							
One-Way Facility Adjustment											
Multiply the corresponding two-directional volumes in this table by 0.6											
BICYCLE MODE <sup>2</sup>											
(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)											
Paved Shoulder/Bicycle Lane Coverage						B	C	D	E		
0-49%						*	2,600	6,100	19,500		
50-84%						1,900	5,500	18,400	>19,500		
85-100%						7,500	19,500	>19,500	**		
PEDESTRIAN MODE <sup>2</sup>											
(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)											
Sidewalk Coverage						B	C	D	E		
0-49%						*	*	2,800	9,400		
50-84%						*	1,600	8,600	15,600		
85-100%						3,800	10,500	17,100	>19,500		
BUS MODE (Scheduled Fixed Route) <sup>3</sup>											
(Buses in peak hour in peak direction)											
Sidewalk Coverage						B	C	D	E		
0-84%						> 5	≥ 4	≥ 3	≥ 2		
85-100%						> 4	≥ 3	≥ 2	≥ 1		

UNINTERRUPTED FLOW HIGHWAYS					
Lanes	Median	B	C	D	E
2	Undivided	11,300	17,300	23,400	31,600
4	Divided	34,600	49,900	63,000	71,700
6	Divided	51,700	74,800	94,600	107,400
Uninterrupted Flow Highway Adjustments					
Lanes	Median	Exclusive left lanes	Adjustment factors		
2	Divided	Yes	+5%		
Multi	Undivided	Yes	-5%		
Multi	Undivided	No	-25%		

<sup>1</sup>Values shown are presented as two-way annual average daily volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.

<sup>2</sup> Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.

<sup>3</sup> Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.

\* Cannot be achieved using table input value defaults.

\*\* Not applicable le for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.

Source:  
Florida Department of Transportation  
Systems Implementation Office  
<https://www.fdot.gov/planning/systems/>

<sup>1</sup>Values shown are presented as two-way annual average daily volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.

<sup>2</sup>Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.

<sup>3</sup>Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.

\* Cannot be achieved using table input value defaults.

\*\* Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.

Source:  
Florida Department of Transportation  
Systems Implementation Office  
<https://www.fdot.gov/planning/systems/>

TABLE 2  
(continued)

Generalized **Annual Average Daily** Volumes for Florida's  
Transitioning Areas and  
Areas Over 5,000 Not In Urbanized Areas

January 2020

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities			Interrupted Flow Facilities					
				State Arterials			Class I		
	Freeways	Highways		Class I		Class II		Bicycle	Pedestrian
ROADWAY CHARACTERISTICS									
Area type (urban, rural)	urban								
Number of through lanes (both dir.)	4-10	2	4-6	2	4-6	2	4-6	4	4
Posted speed (mph)	70	50	50	45	50	30	30	45	45
Free flow speed (mph)	75	55	55	50	55	35	35	50	50
Auxiliary lanes (n,y)	n								
Median (d, n, nr, r)			d	n	y	n	y	r	r
Terrain (l,r)	l	l	l	l	l	l	l	l	l
% no passing zone		60							
Exclusive left turn lane impact (n, y)		[n]	y	y	y	y	y	y	y
Exclusive right turn lanes (n, y)				n	n	n	n	n	n
Facility length (mi)	6	5	5	1.8	2	2	2	2	2
TRAFFIC CHARACTERISTICS									
Planning analysis hour factor (K)	0.098	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
Directional distribution factor (D)	0.55	0.55	0.55	0.550	0.570	0.570	0.565	0.570	0.570
Peak hour factor (PHF)	0.92	0.92	0.92	1.000	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)	2,400	1,700	2,200	1,950	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	9.0	4.0	4.0	2.0	3.0	2.0	3.0	3.0	3.0
Speed Adjustment Factor (SAF)	0.975		0.975						
Capacity Adjustment Factor (CAF)	0.968		0.968						
% left turns				12	12	12	12	12	12
% right turns				12	12	12	12	12	12
CONTROL CHARACTERISTICS									
Number of signals				5	4	10	10	4	6
Arrival type (1-6)				4	3	4	4	4	4
Signal type (a, c, p)				c	c	c	c	c	c
Cycle length (C)				120	150	120	150	120	120
Effective green ratio (g/C)				0.44	0.45	0.44	0.45	0.44	0.44
MULTIMODAL CHARACTERISTICS									
Paved shoulder/bicycle lane (n, y)								n, 50%, y	n
Outside lane width (n, t, w)								t	t
Pavement condition (d, t, u)								t	
On-street parking (n, y)								n	n
Sidewalk (n, y)									n, 50%, y
Sidewalk/roadway separation (a, t, w)									t
Sidewalk protective barrier (n, y)									n
LEVEL OF SERVICE THRESHOLDS									
Level of Service	Freeways	Highways		Arterials		Bicycle	Ped	Bus	
	Density	Two-Lane	Multilane	Class I	Class II	Score	Score	Buses/hr.	
		%ffs	Density	ats	ats				
B	≤ 17	> 83.3	≤ 17	> 31 mph	> 22 mph	≤ 2.75	≤ 2.75	≤ 6	
C	≤ 24	> 75.0	≤ 24	> 23 mph	> 17 mph	≤ 3.50	≤ 3.50	≤ 4	
D	≤ 31	> 66.7	≤ 31	> 18 mph	> 13 mph	≤ 4.25	≤ 4.25	< 3	
E	≤ 39	> 58.3	≤ 35	> 15 mph	> 10 mph	≤ 5.00	≤ 5.00	< 2	

% ffs = Percent free flow speed ats = Average travel speed



TABLE 3

**Generalized Annual Average Daily Volumes for Florida's**  
**Rural Undeveloped Areas and**  
**Developed Areas Less Than 5,000 Population<sup>1</sup>**

January 2020

INTERRUPTED FLOW FACILITIES						UNINTERRUPTED FLOW FACILITIES					
<b>STATE SIGNALIZED ARTERIALS</b>						<b>FREEWAYS</b>					
Lanes	Median	B	C	D	E	Lanes	B	C	D	E	
2	Undivided	*	12,900	14,200	**	4	34,800	48,000	56,700	63,200	
4	Divided	*	29,300	30,400	**	6	48,900	69,000	82,600	94,800	
6	Divided	*	45,200	45,800	**	8	62,900	90,400	108,400	126,400	
<b>Non-State Signalized Roadway Adjustments</b>						<b>Freeway Adjustments</b>					
(Alter corresponding state volumes by the indicated percent.)						Auxiliary Lanes					
Non-State Signalized Roadways						Present in Both Directions					
						+ 20,000					
<b>Median &amp; Turn Lane Adjustments</b>						<b>UNINTERRUPTED FLOW HIGHWAYS</b>					
Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors		<b>Rural Undeveloped</b>					
2	Divided	Yes	No	+5%		Lanes	Median	B	C	D	E
2	Undivided	No	No	-20%		2	Undivided	4,600	8,600	14,000	28,500
Multi	Undivided	Yes	No	-5%		4	Divided	31,200	44,900	55,700	62,700
Multi	Undivided	No	No	-25%		6	Divided	46,800	67,600	83,500	94,200
—	—	—	Yes	+ 5%		<b>Developed Areas</b>					
<b>One-Way Facility Adjustment</b>						Lanes	Median	B	C	D	E
Multiply the corresponding two-directional volumes in this table by 0.6						2	Undivided	10,300	15,700	21,300	28,500
						4	Divided	29,300	42,300	54,000	61,600
						6	Divided	44,000	63,600	81,200	92,400
<b>BICYCLE MODE<sup>2</sup></b>						<b>Passing Lane Adjustments</b>					
(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)						Alter LOS B-D volumes in proportion to the passing lane length to the highway segment length					
<b>Rural Undeveloped</b>						<b>Uninterrupted Flow Highway Adjustments</b>					
Paved Shoulder/Bicycle Lane Coverage	B	C	D	E		Lanes	Median	Exclusive left lanes	Adjustment factors		
0-49%	*	1,300	2,000	3,200		2	Divided	Yes	+5%		
50-84%	1,000	2,100	3,200	10,600		Multi	Undivided	Yes	-5%		
85-100%	2,600	3,900	18,500	>18,500		Multi	Undivided	No	-25%		
<b>Developed Areas</b>						<sup>1</sup> Values shown are presented as two-way annual average daily volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.					
Paved Shoulder/Bicycle Lane Coverage	B	C	D	E		<sup>2</sup> Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.					
0-49%	*	2,300	4,900	15,600		* Cannot be achieved using table input value defaults.					
50-84%	1,700	4,500	13,300	18,500		** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.					
85-100%	5,900	18,500	>18,500	**		<b>Source:</b> Florida Department of Transportation Systems Implementation Office <a href="https://www.fdot.gov/planning/systems/">https://www.fdot.gov/planning/systems/</a>					
<b>PEDESTRIAN MODE<sup>2</sup></b>											
(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)											
Sidewalk Coverage	B	C	D	E							
0-49%	*	*	2,700	9,200							
50-84%	*	1,500	8,400	14,900							
85-100%	3,600	10,200	16,700	>19,200							



TABLE 3  
(continued)

Generalized **Annual Average Daily** Volumes for Florida's  
Rural Undeveloped Areas and  
Developed Areas Less Than 5,000 Population

January 2020

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities					Interrupted Flow Facilities				
	Freeways	Highways				Arterials	Bicycle	Pedestrian		
		Undeveloped		Developed						
ROADWAY CHARACTERISTICS										
Area type (urban, rural)	rural									
Number of through lanes (both dir.)	4-8	2	4-6	2	4-6	2	4-6	4	4	2
Posted speed (mph)	70	55	55	50	50	45	45	55	45	45
Free flow speed (mph)	75	60	60	55	55	50	50	60	50	50
Auxiliary lanes (n,y)	n									
Median (d, n, nr, r)			d		d	n	r	r	r	n
Terrain (l,r)	l	l	l	l	l	l	l	l	l	l
% no passing zone		20		60						
Exclusive left turn lanes (n, y)		[n]	y	[n]	y	y	y	y	y	y
Exclusive right turn lanes (n, y)						n	n	n	n	n
Facility length (mi)	18	10	10	5	5	1.9	2.2	4	2	2
TRAFFIC CHARACTERISTICS										
Planning analysis hour factor (K)	0.105	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095
Directional distribution factor (D)	0.55	0.55	0.55	0.55	0.55	0.550	0.550	0.570	0.570	0.550
Peak hour factor (PHF)	0.88	0.88	0.88	0.88	0.88	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)	2,400	1,700	2,200	1,700	2,200	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	12.0	5.0	12.0	5.0	8.0	3.0	3.0	6.0	3.5	3.0
Speed Adjustment Factor (SAF)	0.975		0.975		0.975					
Capacity Adjustment Factor (CAF)	0.968		0.968		0.968					
% left turns						12	12		12	12
% right turns						12	12		12	12
CONTROL CHARACTERISTICS										
Number of signals						5	6	2	4	4
Arrival type (1-6)						3	3	3	3	3
Signal type (a, c, p)						c	c	a	a	a
Cycle length (C)						90	90	60	90	90
Effective green ratio (g/C)						0.44	0.44	0.37	0.44	0.44
MULTIMODAL CHARACTERISTICS										
Paved shoulder/bicycle lane (n, y)								n,50%,y	n,50%,y	n
Outside lane width (n, t, w)								t	t	t
Pavement condition (d, t, u)								t	t	
Sidewalk (n, y)										n,50%,y
Sidewalk/roadway separation(a, t,w)										t
Sidewalk protective barrier (n, y)										n
LEVEL OF SERVICE THRESHOLDS										
Level of Service	Freeways	Highways					Arterials	Bicycle	Pedestrian	
		Two-Lane ru		Two-Lane rd	Multilane ru	Multilane rd				
	Density	%tsf	ats	%ffs	Density	Density				
B	≤ 14	≤ 50	≤ 55	> 83.3	≤ 14	≤ 14				
C	≤ 22	≤ 65	≤ 50	> 75.0	≤ 22	≤ 22				
D	≤ 29	≤ 80	≤ 45	> 66.7	≤ 29	≤ 29				
E	≤ 36	> 80	≤ 40	> 58.3	≤ 34	≤ 34				
Level of Service	Arterials		Bicycle		Pedestrian					
	Major City/Co.(ats)		Score		Score					
B	> 31 mph		≤ 2.75		≤ 2.75					
C	> 23 mph		≤ 3.50		≤ 3.50					
D	> 18 mph		≤ 4.25		≤ 4.25					
E	> 15 mph		< 5.00		< 5.00					

%tsf = Percent time spent following %ffs = Percent of free flow speed ats = Average travel speed ru = Rural undeveloped rd = Rural developed

TABLE 4

Generalized **Peak Hour Two-Way** Volumes for Florida's  
Urbanized Areas<sup>1</sup>

January 2020

INTERRUPTED FLOW FACILITIES						UNINTERRUPTED FLOW FACILITIES					
<b>STATE SIGNALIZED ARTERIALS</b>						<b>FREEWAYS</b>					
<b>Class I (40 mph or higher posted speed limit)</b>						<b>Core Urbanized</b>					
Lanes	Median	B	C	D	E	Lanes	B	C	D	E	
2	Undivided	*	1,510	1,600	**	4	4,050	5,640	6,800	7,420	
4	Divided	*	3,420	3,580	**	6	5,960	8,310	10,220	11,150	
6	Divided	*	5,250	5,390	**	8	7,840	10,960	13,620	14,850	
8	Divided	*	7,090	7,210	**	10	9,800	13,510	17,040	18,580	
						12	11,600	16,350	20,930	23,200	
<b>Class II (35 mph or slower posted speed limit)</b>						<b>Urbanized</b>					
Lanes	Median	B	C	D	E	Lanes	B	C	D	E	
2	Undivided	*	660	1,330	1,410	4	4,130	5,640	7,070	7,690	
4	Divided	*	1,310	2,920	3,040	6	6,200	8,450	10,510	11,530	
6	Divided	*	2,090	4,500	4,590	8	8,270	11,270	13,960	15,380	
8	Divided	*	2,880	6,060	6,130	10	10,350	14,110	17,310	19,220	
<b>Non-State Signalized Roadway Adjustments</b>						<b>Freeway Adjustments</b>					
(Alter corresponding state volumes by the indicated percent.)						Auxiliary Lanes					
Non-State Signalized Roadways - 10%						Present in Both Directions + 1,800					
<b>Median &amp; Turn Lane Adjustments</b>						Ramp Metering + 5%					
Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors		<b>UNINTERRUPTED FLOW HIGHWAYS</b>					
2	Divided	Yes	No	+5%		Lanes	Median	B	C	D	E
2	Undivided	No	No	-20%		2	Undivided	1,050	1,620	2,180	2,930
Multi	Undivided	Yes	No	-5%		4	Divided	3,270	4,730	5,960	6,780
Multi	Undivided	No	No	-25%		6	Divided	4,910	7,090	8,950	10,180
—	—	—	Yes	+ 5%		<b>Uninterrupted Flow Highway Adjustments</b>					
<b>One-Way Facility Adjustment</b>						Lanes	Median	Exclusive left lanes	Adjustment factors		
Multiply the corresponding two-directional volumes in this table by 0.6						2	Divided	Yes	+5%		
						Multi	Undivided	Yes	-5%		
						Multi	Undivided	No	-25%		
<b>BICYCLE MODE<sup>2</sup></b>						<sup>1</sup> Values shown are presented as peak hour directional volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.					
(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)						<sup>2</sup> Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.					
<b>Paved Shoulder/Bicycle</b>						<sup>3</sup> Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.					
Lane Coverage	B	C	D	E		* Cannot be achieved using table input value defaults.					
0-49%	*	260	680	1,770		** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.					
50-84%	190	600	1,770	>1,770		<b>Source:</b>					
85-100%	830	1,700	>1,770	**		Florida Department of Transportation					
<b>PEDESTRIAN MODE<sup>2</sup></b>						Systems Implementation Office					
(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)						<a href="https://www.fdot.gov/planning/systems/">https://www.fdot.gov/planning/systems/</a>					
Sidewalk Coverage	B	C	D	E							
0-49%	*	*	250	850							
50-84%	*	150	780	1,420							
85-100%	340	960	1,560	>1,770							
<b>BUS MODE (Scheduled Fixed Route)<sup>3</sup></b>											
(Buses in peak hour in peak direction)											
Sidewalk Coverage	B	C	D	E							
0-84%	> 5	≥ 4	≥ 3	≥ 2							
85-100%	> 4	≥ 3	≥ 2	≥ 1							

**TABLE 4**  
(continued) Generalized **Peak Hour Two-Way** Volumes for Florida's  
Urbanized Areas

January 2020

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities				Interrupted Flow Facilities					
					State Arterials			Class I		
	Freeways	Core Freeways	Highways		Class I		Class II		Bicycle	Pedestrian
ROADWAY CHARACTERISTICS										
Area type (urban, rural)	urban	urban								
Number of through lanes (both dir.)	4-10	4-12	2	4-6	2	4-8	2	4-8	4	4
Posted speed (mph)	70	65	50	50	45	50	30	30	45	45
Free flow speed (mph)	75	70	55	55	50	55	35	35	50	50
Auxiliary Lanes (n,y)	n	n								
Median (d, twlt, n, nr, r)				d	n	r	n	r	r	r
Terrain (l,r)	l	l	l	l	l	l	l	l	l	l
% no passing zone			80							
Exclusive left turn lane impact (n, y)			[n]	y	y	y	y	y	y	y
Exclusive right turn lanes (n, y)					n	n	n	n	n	n
Facility length (mi)	3	3	5	5	2	2	1.9	1.8	2	2
TRAFFIC CHARACTERISTICS										
Planning analysis hour factor (K)	0.090	0.085	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
Directional distribution factor (D)	0.55	0.55	0.55	0.55	0.550	0.560	0.565	0.560	0.565	0.565
Peak hour factor (PHF)	0.95	0.95	0.95	0.95	1.000	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)	2,400	2,400	1,700	2,200	1,950	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	4.0	4.0	2.0	2.0	1.0	1.0	1.0	1.0	2.5	2.0
Speed Adjustment Factor (SAF)	0.975	0.975		0.975						
Capacity Adjustment Factor (CAF)	0.968	0.968		0.968						
% left turns					12	12	12	12	12	12
% right turns					12	12	12	12	12	12
CONTROL CHARACTERISTICS										
Number of signals					4	4	10	10	4	6
Arrival type (1-6)					3	3	4	4	4	4
Signal type (a, c, p)					c	c	c	c	c	c
Cycle length (C)					120	150	120	120	120	120
Effective green ratio (g/C)					0.44	0.45	0.44	0.44	0.44	0.44
MULTIMODAL CHARACTERISTICS										
Paved shoulder/bicycle lane (n, y)									n, 50%, y	n
Outside lane width (n, t, w)									t	t
Pavement condition (d, t, u)									t	
On-street parking (n, y)										
Sidewalk (n, y)										n, 50%, y
Sidewalk/roadway separation(a, t, w)										t
Sidewalk protective barrier (n, y)										n
LEVEL OF SERVICE THRESHOLDS										
Level of Service	Freeways	Highways		Arterials			Bicycle	Ped	Bus	
	Density	Two-Lane	Multilane	Class I ats	Class II ats		Score	Score	Buses/hr.	
		%ffs	Density							
B	≤ 17	> 83.3	≤ 17	> 31 mph	> 22 mph		≤ 2.75	≤ 2.75	≤ 6	
C	≤ 24	> 75.0	≤ 24	> 23 mph	> 17 mph		≤ 3.50	≤ 3.50	≤ 4	
D	≤ 31	> 66.7	≤ 31	> 18 mph	> 13 mph		≤ 4.25	≤ 4.25	< 3	
E	≤ 39	> 58.3	≤ 35	> 15 mph	> 10 mph		≤ 5.00	≤ 5.00	< 2	

% ffs = Percent free flow speed ats = Average travel speed



**TABLE 5** Generalized **Peak Hour Two-Way** Volumes for Florida's  
(continued) Transitioning Areas and  
Areas Over 5,000 Not In Urbanized Areas

January 2020

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities			Interrupted Flow Facilities					
				State Arterials				Class I	
	Freeways	Highways		Class I		Class II		Bicycle	Pedestrian
ROADWAY CHARACTERISTICS									
Area type (urban, rural)	urban								
Number of through lanes (both dir.)	4-10	2	4-6	2	4-6	2	4-6	4	4
Posted speed (mph)	70	50	50	45	50	30	30	45	45
Free flow speed (mph)	75	55	55	50	55	35	35	50	50
Auxiliary lanes (n,y)	n								
Median (d, n, nr, r)			d	n	y	n	y	r	r
Terrain (l,r)	l	l	l	l	l	l	l	l	l
% no passing zone		60							
Exclusive left turn lane impact (n, y)		[n]	y	y	y	y	y	y	y
Exclusive right turn lanes (n, y)				n	n	n	n	n	n
Facility length (mi)	6	5	5	1.8	2	2	2	2	2
TRAFFIC CHARACTERISTICS									
Planning analysis hour factor (K)	0.098	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
Directional distribution factor (D)	0.55	0.55	0.55	0.550	0.570	0.570	0.565	0.570	0.570
Peak hour factor (PHF)	0.92	0.92	0.92	1.000	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)	2,400	1,700	2,200	1,950	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	9.0	4.0	4.0	2.0	3.0	2.0	3.0	3.0	3.0
Speed Adjustment Factor (SAF)	0.975		0.975						
Capacity Adjustment Factor (CAF)	0.968		0.968						
% left turns				12	12	12	12	12	12
% right turns				12	12	12	12	12	12
CONTROL CHARACTERISTICS									
Number of signals				5	4	10	10	4	6
Arrival type (1-6)				4	3	4	4	4	4
Signal type (a, c, p)				c	c	c	c	c	c
Cycle length (C)				120	150	120	150	120	120
Effective green ratio (g/C)				0.44	0.45	0.44	0.45	0.44	0.44
MULTIMODAL CHARACTERISTICS									
Paved shoulder/bicycle lane (n, y)								n, 50%, y	n
Outside lane width (n, t, w)								t	t
Pavement condition (d, t, u)								t	
On-street parking (n, y)								n	n
Sidewalk (n, y)									n, 50%, y
Sidewalk/roadway separation (a, t, w)									t
Sidewalk protective barrier (n, y)									n
LEVEL OF SERVICE THRESHOLDS									
Level of Service	Freeways	Highways		Arterials		Bicycle	Ped	Bus	
	Density	Two-Lane	Multilane	Class I	Class II	Score	Score	Buses/hr.	
		%ffs	Density	ats	ats				
B	≤ 17	> 83.3	≤ 17	> 31 mph	> 22 mph	≤ 2.75	≤ 2.75	≤ 6	
C	≤ 24	> 75.0	≤ 24	> 23 mph	> 17 mph	≤ 3.50	≤ 3.50	≤ 4	
D	≤ 31	> 66.7	≤ 31	> 18 mph	> 13 mph	≤ 4.25	≤ 4.25	< 3	
E	≤ 39	> 58.3	≤ 35	> 15 mph	> 10 mph	≤ 5.00	≤ 5.00	< 2	

% ffs = Percent free flow speed ats = Average travel speed

TABLE 6

**Generalized Peak Hour Two-Way Volumes for Florida's**  
**Rural Undeveloped Areas and**  
**Developed Areas Less Than 5,000 Population<sup>1</sup>**

January 2020

INTERRUPTED FLOW FACILITIES						UNINTERRUPTED FLOW FACILITIES					
<b>STATE SIGNALIZED ARTERIALS</b>						<b>FREEWAYS</b>					
Lanes	Median	B	C	D	E	Lanes	B	C	D	E	
2	Undivided	*	1,220	1,350	**	4	3,650	5,040	5,950	6,640	
4	Divided	*	2,790	2,890	**	6	5,130	7,250	8,670	9,950	
6	Divided	*	4,300	4,350	**	8	6,600	9,490	11,380	13,270	
<b>Non-State Signalized Roadway Adjustments</b>						<b>Freeway Adjustments</b>					
(Alter corresponding state volumes by the indicated percent.)						Auxiliary Lanes					
Non-State Signalized Roadways - 10%						Present in Both Directions					
						+ 1,800					
<b>Median &amp; Turn Lane Adjustments</b>						<b>UNINTERRUPTED FLOW HIGHWAYS</b>					
						<b>Rural Undeveloped</b>					
Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors		Lanes	Median	B	C	D	E
2	Divided	Yes	No	+5%		2	Undivided	440	820	1,330	2,710
2	Undivided	No	No	-20%		4	Divided	2,960	4,270	5,290	5,960
Multi	Undivided	Yes	No	-5%		6	Divided	4,450	6,420	7,930	8,950
Multi	Undivided	No	No	-25%		<b>Developed Areas</b>					
—	—	—	Yes	+ 5%		Lanes	Median	B	C	D	E
<b>One-Way Facility Adjustment</b>						2	Undivided	980	1,490	2,020	2,710
Multiply the corresponding two-directional volumes in this table by 0.6						4	Divided	2,780	4,020	5,130	5,850
						6	Divided	4,180	6,040	7,710	8,780
<b>BICYCLE MODE<sup>2</sup></b>						<b>Passing Lane Adjustments</b>					
(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)						Alter LOS B-D volumes in proportion to the passing lane length to the highway segment length					
<b>Rural Undeveloped</b>						<b>Uninterrupted Flow Highway Adjustments</b>					
Paved Shoulder/Bicycle Lane Coverage	B	C	D	E		Lanes	Median	Exclusive left lanes	Adjustment factors		
0-49%	*	120	190	300		2	Divided	Yes	+5%		
50-84%	100	200	310	1,010		Multi	Undivided	Yes	-5%		
85-100%	250	370	1,760	>1,760		Multi	Undivided	No	-25%		
<b>Developed Areas</b>						<sup>1</sup> Values shown are presented as peak hour directional volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.					
Paved Shoulder/Bicycle Lane Coverage	B	C	D	E		<sup>2</sup> Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.					
0-49%	*	220	460	1,480		* Cannot be achieved using table input value defaults.					
50-84%	170	430	1,270	>1,760		** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.					
85-100%	560	1,760	>1,760	**		Source: Florida Department of Transportation Systems Implementation Office <a href="https://www.fdot.gov/planning/systems/">https://www.fdot.gov/planning/systems/</a>					
<b>PEDESTRIAN MODE<sup>2</sup></b>											
(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)											
Sidewalk Coverage	B	C	D	E							
0-49%	*	*	220	840							
50-84%	*	120	780	1,390							
85-100%	320	940	1,560	>1,820							

**TABLE 6**  
(continued)

**Generalized Peak Hour Two-Way Volumes for Florida's**  
**Rural Undeveloped Areas and**  
**Developed Areas Less Than 5,000 Population**

January 2020

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities					Interrupted Flow Facilities				
	Freeways	Highways				Arterials	Bicycle	Pedestrian		
		Undeveloped		Developed						
ROADWAY CHARACTERISTICS										
Area type (urban, rural)	rural									
Number of through lanes (both dir.)	4-8	2	4-6	2	4-6	2	4-6	4	4	2
Posted speed (mph)	70	55	55	50	50	45	45	55	45	45
Free flow speed (mph)	75	60	60	55	55	50	50	60	50	50
Auxiliary lanes (n,y)	n									
Median (d, n, nr, r)			d		d	n	r	r	r	n
Terrain (l,r)	l	l	l	l	l	l	l	l	l	l
% no passing zone		20		60						
Exclusive left turn lanes (n, y)		[n]	y	[n]	y	y	y	y	y	y
Exclusive right turn lanes (n, y)						n	n	n	n	n
Facility length (mi)	18	10	10	5	5	1.9	2.2	4	2	2
TRAFFIC CHARACTERISTICS										
Planning analysis hour factor (K)	0.105	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095
Directional distribution factor (D)	0.55	0.55	0.55	0.55	0.55	0.550	0.550	0.570	0.570	0.550
Peak hour factor (PHF)	0.88	0.88	0.88	0.88	0.88	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)	2,400	1,700	2,200	1,700	2,200	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	12.0	5.0	12.0	5.0	8.0	3.0	3.0	6.0	3.5	3.0
Speed Adjustment Factor (SAF)	0.975		0.975		0.975					
Capacity Adjustment Factor (CAF)	0.968		0.968		0.968					
% left turns						12	12		12	12
% right turns						12	12		12	12
CONTROL CHARACTERISTICS										
Number of signals						5	6	2	4	4
Arrival type (1-6)						3	3	3	3	3
Signal type (a, c, p)						c	c	a	a	a
Cycle length (C)						90	90	60	90	90
Effective green ratio (g/C)						0.44	0.44	0.37	0.44	0.44
MULTIMODAL CHARACTERISTICS										
Paved shoulder/bicycle lane (n, y)								n,50%,y	n,50%,y	n
Outside lane width (n, t, w)								t	t	t
Pavement condition (d, t, u)								t	t	
Sidewalk (n, y)										n,50%,y
Sidewalk/roadway separation(a, t,w)										t
Sidewalk protective barrier (n, y)										n
LEVEL OF SERVICE THRESHOLDS										
Level of Service	Freeways	Highways					Arterials	Bicycle	Pedestrian	
		Two-Lane ru		Two-Lane rd		Multilane ru				Multilane rd
	Density	%tsf	ats	%ffs	Density	Density				
B	≤ 14	≤ 50	≤ 55	> 83.3	≤ 14	≤ 14				
C	≤ 22	≤ 65	≤ 50	> 75.0	≤ 22	≤ 22				
D	≤ 29	≤ 80	≤ 45	> 66.7	≤ 29	≤ 29				
E	≤ 36	> 80	≤ 40	> 58.3	≤ 34	≤ 34				
Level of Service	Arterials		Bicycle		Pedestrian					
	Major City/Co.(ats)		Score		Score					
B	> 31 mph		≤ 2.75		≤ 2.75					
C	> 23 mph		≤ 3.50		≤ 3.50					
D	> 18 mph		≤ 4.25		≤ 4.25					
E	> 15 mph		≤ 5.00		≤ 5.00					

%tsf = Percent time spent following %ffs = Percent of free flow speed ats = Average travel speed ru = Rural undeveloped rd = Rural developed



TABLE 7

Generalized **Peak Hour Directional** Volumes for Florida's  
Urbanized Areas

January 2020

January 2024

INTERRUPTED FLOW FACILITIES						UNINTERRUPTED FLOW FACILITIES					
STATE SIGNALIZED ARTERIALS						FREEWAYS					
Class I (40 mph or higher posted speed limit)						Core Urbanized					
Lanes	Median	B	C	D	E	Lanes	B	C	D	E	
1	Undivided	*	830	880	**	2	2,230	3,100	3,740	4,080	
2	Divided	*	1,910	2,000	**	3	3,280	4,570	5,620	6,130	
3	Divided	*	2,940	3,020	**	4	4,310	6,030	7,490	8,170	
4	Divided	*	3,970	4,040	**	5	5,390	7,430	9,370	10,220	
						6	6,380	8,990	11,510	12,760	
Class II (35 mph or slower posted speed limit)						Urbanized					
Lanes	Median	B	C	D	E	Lanes	B	C	D	E	
1	Undivided	*	370	750	800	2	2,270	3,100	3,890	4,230	
2	Divided	*	730	1,630	1,700	3	3,410	4,650	5,780	6,340	
3	Divided	*	1,170	2,520	2,560	4	4,550	6,200	7,680	8,460	
4	Divided	*	1,610	3,390	3,420	5	5,690	7,760	9,520	10,570	
Non-State Signalized Roadway Adjustments						Freeway Adjustments					
(Alter corresponding state volumes by the indicated percent.)						Auxiliary Lane Ramp Metering					
Non-State Signalized Roadways - 10%						+ 1,000 + 5%					
Median & Turn Lane Adjustments						UNINTERRUPTED FLOW HIGHWAYS					
Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors		Lanes	Median	B	C	D	E
1	Divided	Yes	No	+5%		1	Undivided	580	890	1,200	1,610
1	Undivided	No	No	-20%		2	Divided	1,800	2,600	3,280	3,730
Multi	Undivided	Yes	No	-5%		3	Divided	2,700	3,900	4,920	5,600
Multi	Undivided	No	No	-25%							
—	—	—	Yes	+ 5%							
One-Way Facility Adjustment						Uninterrupted Flow Highway Adjustments					
Multiply the corresponding directional volumes in this table by 1.2						Lanes	Median	Exclusive left lanes	Adjustment factors		
						1	Divided	Yes	+5%		
						Multi	Undivided	Yes	-5%		
						Multi	Undivided	No	-25%		
BICYCLE MODE <sup>2</sup>						<sup>1</sup> Values shown are presented as peak hour directional volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.					
(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)											
Paved Shoulder/Bicycle											
Lane Coverage	B	C	D	E							
0-49%	*	150	390	1,000							
50-84%	110	340	1,000	>1,000							
85-100%	470	1,000	>1,000	**							
PEDESTRIAN MODE <sup>2</sup>						<sup>2</sup> Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.					
(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)											
Sidewalk Coverage											
0-49%	*	*	140	480							
50-84%	*	80	440	800							
85-100%	200	540	880	>1,000							
BUS MODE (Scheduled Fixed Route) <sup>3</sup>						<sup>3</sup> Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.					
(Buses in peak hour in peak direction)											
Sidewalk Coverage											
0-84%	> 5	≥ 4	≥ 3	≥ 2							
85-100%	> 4	≥ 3	≥ 2	≥ 1							
						* Cannot be achieved using table input value defaults.					
						** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.					
						Source: Florida Department of Transportation Systems Implementation Office <a href="https://www.fdot.gov/planning/systems/">https://www.fdot.gov/planning/systems/</a>					



**TABLE 7**  
(continued)

**Generalized Peak Hour Directional Volumes for Florida's  
Urbanized Areas**

January 2020

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities				Interrupted Flow Facilities					
					State Arterials				Class I	
	Freeways	Core Freeways	Highways		Class I		Class II		Bicycle	Pedestrian
ROADWAY CHARACTERISTICS										
Area type (urban, rural)	urban	urban								
Number of through lanes (both dir.)	4-10	4-12	2	4-6	2	4-8	2	4-8	4	4
Posted speed (mph)	70	65	50	50	45	50	30	30	45	45
Free flow speed (mph)	75	70	55	55	50	55	35	35	50	50
Auxiliary Lanes (n,y)	n	n								
Median (d, twlt, n, nr, r)				d	n	r	n	r	r	r
Terrain (l,r)	l	l	l	l	l	l	l	l	l	l
% no passing zone			80							
Exclusive left turn lane impact (n, y)			[n]	y	y	y	y	y	y	y
Exclusive right turn lanes (n, y)					n	n	n	n	n	n
Facility length (mi)	3	3	5	5	2	2	1.9	1.8	2	2
TRAFFIC CHARACTERISTICS										
Planning analysis hour factor (K)	0.090	0.085	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
Directional distribution factor (D)	0.55	0.55	0.55	0.55	0.550	0.560	0.565	0.560	0.565	0.565
Peak hour factor (PHF)	0.95	0.95	0.95	0.95	1.000	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)	2,400	2,400	1,700	2,200	1,950	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	4.0	4.0	2.0	2.0	1.0	1.0	1.0	1.0	2.5	2.0
Speed Adjustment Factor (SAF)	0.975	0.975		0.975						
Capacity Adjustment Factor (CAF)	0.968	0.968		0.968						
% left turns					12	12	12	12	12	12
% right turns					12	12	12	12	12	12
CONTROL CHARACTERISTICS										
Number of signals					4	4	10	10	4	6
Arrival type (1-6)					3	3	4	4	4	4
Signal type (a, c, p)					c	c	c	c	c	c
Cycle length (C)					120	150	120	120	120	120
Effective green ratio (g/C)					0.44	0.45	0.44	0.44	0.44	0.44
MULTIMODAL CHARACTERISTICS										
Paved shoulder/bicycle lane (n, y)									n, 50%, y	n
Outside lane width (n, t, w)									t	t
Pavement condition (d, t, u)									t	
On-street parking (n, y)										
Sidewalk (n, y)										n, 50%, y
Sidewalk/roadway separation(a, t, w)										t
Sidewalk protective barrier (n, y)										n
LEVEL OF SERVICE THRESHOLDS										
Level of Service	Freeways	Highways		Arterials			Bicycle	Ped	Bus	
	Density	Two-Lane	Multilane	Class I ats	Class II ats	Score	Score	Buses/hr.		
		%ffs	Density							
B	≤ 17	> 83.3	≤ 17	> 31 mph	> 22 mph	≤ 2.75	≤ 2.75	≤ 6		
C	≤ 24	> 75.0	≤ 24	> 23 mph	> 17 mph	≤ 3.50	≤ 3.50	≤ 4		
D	≤ 31	> 66.7	≤ 31	> 18 mph	> 13 mph	≤ 4.25	≤ 4.25	< 3		
E	≤ 39	> 58.3	≤ 35	> 15 mph	> 10 mph	≤ 5.00	≤ 5.00	< 2		

% ffs = Percent free flow speed ats = Average travel speed

TABLE 8

**Generalized Peak Hour Directional Volumes for Florida's  
Transitioning Areas and  
Areas Over 5,000 Not In Urbanized Areas<sup>1</sup>**

January 2020

INTERRUPTED FLOW FACILITIES

STATE SIGNALIZED ARTERIALS

Class I (40 mph or higher posted speed limit)

Lanes	Median	B	C	D	E
1	Undivided	*	710	800	**
2	Divided	*	1,740	1,820	**
3	Divided	*	2,670	2,740	**

Class II (35 mph or slower posted speed limit)

Lanes	Median	B	C	D	E
1	Undivided	*	330	680	720
2	Divided	*	500	1,460	1,600
3	Divided	*	810	2,280	2,420

Non-State Signalized Roadway Adjustments

(Alter corresponding state volumes by the indicated percent.)

Non-State Signalized Roadways - 10%

Median & Turn Lane Adjustments

Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors
1	Divided	Yes	No	+5%
1	Undivided	No	No	-20%
Multi	Undivided	Yes	No	-5%
Multi	Undivided	No	No	-25%
—	—	—	Yes	+ 5%

One-Way Facility Adjustment

Multiply the corresponding directional volumes in this table by 1.2

BICYCLE MODE<sup>2</sup>

(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Paved Shoulder/Bicycle Lane Coverage	B	C	D	E
0-49%	*	140	320	1,000
50-84%	100	280	940	>1,000
85-100%	380	1,000	>1,000	**

PEDESTRIAN MODE<sup>2</sup>

(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Sidewalk Coverage	B	C	D	E
0-49%	*	*	140	480
50-84%	*	80	440	800
85-100%	200	540	880	>1,000

BUS MODE (Scheduled Fixed Route)<sup>3</sup>

(Buses in peak hour in peak direction)

Sidewalk Coverage	B	C	D	E
0-84%	> 5	≥ 4	≥ 3	≥ 2
85-100%	> 4	≥ 3	≥ 2	≥ 1

UNINTERRUPTED FLOW FACILITIES

FREEWAYS

Lanes	B	C	D	E
2	2,430	3,180	3,790	3,910
3	3,520	4,670	5,610	5,870
4	4,630	6,170	7,440	7,830
5	5,480	7,310	8,730	9,800

Freeway Adjustments

Auxiliary Lane	Ramp Metering
+ 1,000	+ 5%

UNINTERRUPTED FLOW HIGHWAYS

Lanes	Median	B	C	D	E
1	Undivided	560	860	1,160	1,560
2	Divided	1,710	2,470	3,120	3,550
3	Divided	2,560	3,700	4,680	5,320

Uninterrupted Flow Highway Adjustments

Lanes	Median	Exclusive left lanes	Adjustment factors
1	Divided	Yes	+5%
Multi	Undivided	Yes	-5%
Multi	Undivided	No	-25%

<sup>1</sup>Values shown are presented as peak hour directional volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.

<sup>2</sup>Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.

<sup>3</sup>Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.

\* Cannot be achieved using table input value defaults.

\*\* Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.

Source:

Florida Department of Transportation

Systems Implementation Office

<https://www.fdot.gov/planning/systems/>

**TABLE 8**  
(continued)

**Generalized Peak Hour Directional Volumes for Florida's  
Transitioning Areas and  
Areas Over 5,000 Not In Urbanized Areas**

January 2020

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities			Interrupted Flow Facilities					
				State Arterials			Class I		
	Freeways	Highways		Class I		Class II		Bicycle	Pedestrian
ROADWAY CHARACTERISTICS									
Area type (urban, rural)	urban								
Number of through lanes (both dir.)	4-10	2	4-6	2	4-6	2	4-6	4	4
Posted speed (mph)	70	50	50	45	50	30	30	45	45
Free flow speed (mph)	75	55	55	50	55	35	35	50	50
Auxiliary lanes (n,y)	n								
Median (d, n, nr, r)			d	n	y	n	y	r	r
Terrain (l,r)	l	l	l	l	l	l	l	l	l
% no passing zone		60							
Exclusive left turn lane impact (n, y)		[n]	y	y	y	y	y	y	y
Exclusive right turn lanes (n, y)				n	n	n	n	n	n
Facility length (mi)	6	5	5	1.8	2	2	2	2	2
TRAFFIC CHARACTERISTICS									
Planning analysis hour factor (K)	0.098	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
Directional distribution factor (D)	0.55	0.55	0.55	0.550	0.570	0.570	0.565	0.570	0.570
Peak hour factor (PHF)	0.92	0.92	0.92	1.000	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)	2,400	1,700	2,200	1,950	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	9.0	4.0	4.0	2.0	3.0	2.0	3.0	3.0	3.0
Speed Adjustment Factor (SAF)	0.975		0.975						
Capacity Adjustment Factor (CAF)	0.968		0.968						
% left turns				12	12	12	12	12	12
% right turns				12	12	12	12	12	12
CONTROL CHARACTERISTICS									
Number of signals				5	4	10	10	4	6
Arrival type (1-6)				4	3	4	4	4	4
Signal type (a, c, p)				c	c	c	c	c	c
Cycle length (C)				120	150	120	150	120	120
Effective green ratio (g/C)				0.44	0.45	0.44	0.45	0.44	0.44
MULTIMODAL CHARACTERISTICS									
Paved shoulder/bicycle lane (n, y)								n, 50%, y	n
Outside lane width (n, t, w)								t	t
Pavement condition (d, t, u)								t	
On-street parking (n, y)								n	n
Sidewalk (n, y)									n, 50%, y
Sidewalk/roadway separation (a, t, w)									t
Sidewalk protective barrier (n, y)									n
LEVEL OF SERVICE THRESHOLDS									
Level of Service	Freeways	Highways		Arterials		Bicycle	Ped	Bus	
	Density	Two-Lane	Multilane	Class I	Class II	Score	Score	Buses/hr.	
		%ffs	Density	ats	ats				
B	≤ 17	> 83.3	≤ 17	> 31 mph	> 22 mph	≤ 2.75	≤ 2.75	≤ 6	
C	≤ 24	> 75.0	≤ 24	> 23 mph	> 17 mph	≤ 3.50	≤ 3.50	≤ 4	
D	≤ 31	> 66.7	≤ 31	> 18 mph	> 13 mph	≤ 4.25	≤ 4.25	< 3	
E	≤ 39	> 58.3	≤ 35	> 15 mph	> 10 mph	≤ 5.00	≤ 5.00	< 2	

% ffs = Percent free flow speed ats = Average travel speed

TABLE 9

**Generalized Peak Hour Directional Volumes for Florida's**  
**Rural Undeveloped Areas and**  
**Developed Areas Less Than 5,000 Population<sup>1</sup>**

January 2020

INTERRUPTED FLOW FACILITIES						UNINTERRUPTED FLOW FACILITIES					
<b>STATE SIGNALIZED ARTERIALS</b>						<b>FREEWAYS</b>					
Lanes	Median	B	C	D	E	Lanes	B	C	D	E	
1	Undivided	*	670	740	**	2	2,010	2,770	3,270	3,650	
2	Divided	*	1,530	1,580	**	3	2,820	3,990	4,770	5,470	
3	Divided	*	2,360	2,400	**	4	3,630	5,220	6,260	7,300	
<b>Non-State Signalized Roadway Adjustments</b>						<b>Freeway Adjustments</b>					
(Alter corresponding state volumes by the indicated percent.)						Auxiliary Lane + 1,000					
Non-State Signalized Roadways - 10%											
<b>Median &amp; Turn Lane Adjustments</b>						<b>UNINTERRUPTED FLOW HIGHWAYS</b>					
Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors		<b>Rural Undeveloped</b>					
1	Divided	Yes	No	+5%		Lanes	Median	B	C	D	E
1	Undivided	No	No	-20%		1	Undivided	240	450	730	1,490
Multi	Undivided	Yes	No	-5%		2	Divided	1,630	2,350	2,910	3,280
Multi	Undivided	No	No	-25%		3	Divided	2,450	3,530	4,360	4,920
—	—	—	Yes	+ 5%		<b>Developed Areas</b>					
<b>One-Way Facility Adjustment</b>						Lanes	Median	B	C	D	E
Multiply the corresponding directional volumes in this table by 1.2						1	Undivided	540	820	1,110	1,490
						2	Divided	1,530	2,210	2,820	3,220
						3	Divided	2,300	3,320	4,240	4,830
<b>BICYCLE MODE<sup>2</sup></b>						<b>Passing Lane Adjustments</b>					
(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)						Alter LOS B-D volumes in proportion to the passing lane length to the highway segment length					
<b>Rural Undeveloped</b>						<b>Uninterrupted Flow Highway Adjustments</b>					
Paved Shoulder/Bicycle Lane Coverage	B	C	D	E		Lanes	Median	Exclusive left lanes	Adjustment factors		
0-49%	*	70	110	170		1	Divided	Yes	+5%		
50-84%	60	120	180	580		Multi	Undivided	Yes	-5%		
85-100%	140	210	1,000	>1,000		Multi	Undivided	No	-25%		
<b>Developed Areas</b>						<sup>1</sup> Values shown are presented as peak hour directional volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the HCM and the Transit Capacity and Quality of Service Manual.  <sup>2</sup> Level of service for the bicycle and pedestrian modes in this table is based on number of vehicles, not number of bicyclists or pedestrians using the facility.  * Cannot be achieved using table input value defaults.  ** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.  Source: Florida Department of Transportation Systems Implementation Office <a href="https://www.fdot.gov/planning/systems/">https://www.fdot.gov/planning/systems/</a>					
Paved Shoulder/Bicycle Lane Coverage	B	C	D	E							
0-49%	*	120	260	840							
50-84%	100	240	720	1,000							
85-100%	320	1,000	>1,000	**							
<b>PEDESTRIAN MODE<sup>2</sup></b>											
(Multiply vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)											
Sidewalk Coverage	B	C	D	E							
0-49%	*	*	120	460							
50-84%	*	80	430	770							
85-100%	180	520	860	>1,000							

**TABLE 9**  
(continued)

**Generalized Peak Hour Directional Volumes for Florida's**  
**Rural Undeveloped Areas and**  
**Developed Areas Less Than 5,000 Population**

January 2020

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities					Interrupted Flow Facilities				
	Freeways	Highways				Arterials	Bicycle	Pedestrian		
		Undeveloped	Developed							
ROADWAY CHARACTERISTICS										
Area type (urban, rural)	rural									
Number of through lanes (both dir.)	4-8	2	4-6	2	4-6	2	4-6	4	4	2
Posted speed (mph)	70	55	55	50	50	45	45	55	45	45
Free flow speed (mph)	75	60	60	55	55	50	50	60	50	50
Auxiliary lanes (n,y)	n									
Median (d, n, nr, r)			d		d	n	r	r	r	n
Terrain (l,r)	l	l	l	l	l	l	l	l	l	l
% no passing zone		20		60						
Exclusive left turn lanes (n, y)		[n]	y	[n]	y	y	y	y	y	y
Exclusive right turn lanes (n, y)						n	n	n	n	n
Facility length (mi)	18	10	10	5	5	1.9	2.2	4	2	2
TRAFFIC CHARACTERISTICS										
Planning analysis hour factor (K)	0.105	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095
Directional distribution factor (D)	0.55	0.55	0.55	0.55	0.55	0.550	0.550	0.570	0.570	0.550
Peak hour factor (PHF)	0.88	0.88	0.88	0.88	0.88	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)	2,400	1,700	2,200	1,700	2,200	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	12.0	5.0	12.0	5.0	8.0	3.0	3.0	6.0	3.5	3.0
Speed Adjustment Factor (SAF)	0.975		0.975		0.975					
Capacity Adjustment Factor (CAF)	0.968		0.968		0.968					
% left turns						12	12		12	12
% right turns						12	12		12	12
CONTROL CHARACTERISTICS										
Number of signals						5	6	2	4	4
Arrival type (1-6)						3	3	3	3	3
Signal type (a, c, p)						c	c	a	a	a
Cycle length (C)						90	90	60	90	90
Effective green ratio (g/C)						0.44	0.44	0.37	0.44	0.44
MULTIMODAL CHARACTERISTICS										
Paved shoulder/bicycle lane (n, y)								n,50%,y	n,50%,y	n
Outside lane width (n, t, w)								t	t	t
Pavement condition (d, t, u)								t	t	
Sidewalk (n, y)										n,50%,y
Sidewalk/roadway separation(a, t,w)										t
Sidewalk protective barrier (n, y)										n
LEVEL OF SERVICE THRESHOLDS										
Level of Service	Freeways	Highways					Arterials	Bicycle	Pedestrian	
		Two-Lane ru		Two-Lane rd		Multilane ru				Multilane rd
	Density	%tsf	ats	%ffs	Density	Density				
B	≤ 14	≤ 50	≤ 55	> 83.3	≤ 14	≤ 14				
C	≤ 22	≤ 65	≤ 50	> 75.0	≤ 22	≤ 22				
D	≤ 29	≤ 80	≤ 45	> 66.7	≤ 29	≤ 29				
E	≤ 36	> 80	≤ 40	> 58.3	≤ 34	≤ 34				
Level of Service	Arterials		Bicycle		Pedestrian					
	Major City/Co.(ats)		Score		Score					
B	> 31 mph		≤ 2.75		≤ 2.75					
C	> 23 mph		≤ 3.50		≤ 3.50					
D	> 18 mph		≤ 4.25		≤ 4.25					
E	> 15 mph		< 5.00		< 5.00					

%tsf = Percent time spent following %ffs = Percent of free flow speed ats = Average travel speed ru = Rural undeveloped rd = Rural developed

