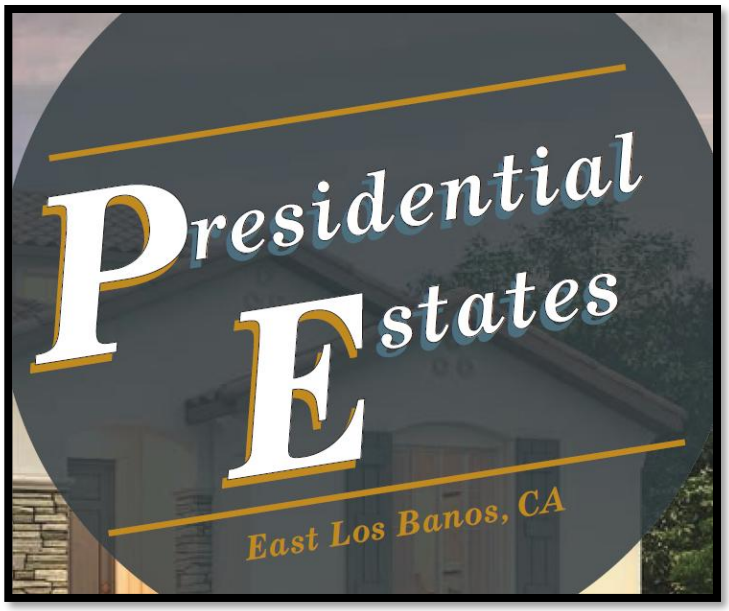

Public Review Draft Initial Study – Mitigated Negative Declaration

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prepared by
City of Los Banos
Community and Economic Development Department
520 J. Street
Los Banos, CA 93635

prepared with the assistance of
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139 S. Stockton Avenue
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August 2026

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INITIAL STUDY

1. PROJECT TITLE

Presidential Estates – ANX 2024-01, SP 2024-01, and VTTM 2024-01

2. LEAD AGENCY NAME AND ADDRESS

City of Los Banos
Community and Economic Development Department
520 J Street
Los Banos, California 93635

3. CONTACT PERSON AND PHONE NUMBER

Mr. Justin Ragunton
Assistant Planner
Community and Economic Development Department
(209) 827-7000
Justin.ragunton@losbanos.org

4. PROJECT LOCATION

The Proposed Project consists of 111.7-acres and is located adjacent to the City of Los Banos City limits, within the Merced County jurisdiction. The Proposed Project is bounded by existing commercial and industrial development along West Pacheco Boulevard to the north, Pioneer Road to the south, Mercey Springs Road to the east, and existing single-family residential development and South 11th Street to the west.

The Proposed Project's surrounding land uses are as follows:

North: Commercial Developments within the City of Los Banos

South: Agricultural lands

East: Single-family residences and Vacant Land

West: Los Banos High School and Single-family residences

Figure 1 - Location Map, and Figure 2 - Area Map, provides an illustration of the Proposed Project's location.

5. PROJECT SPONSOR'S NAME AND ADDRESS

Stonefield Communities
923 Pacheco Boulevard, Suite C
Los Banos, California 93635

6. EXISTING SETTING

The Project site has been historically utilized for agricultural purposes but currently consists primarily of undeveloped land. There are ranchette parcels with existing single-family residential units located along Mercey Springs Road within the eastern boundary of the Project site. These parcels are proposed as part of the annexation but remain unchanged as part of the Vesting Tentative Tract Map (VTTM) component of the Proposed Project. Urban development (primarily single-family development) has occurred on the north, east and west sides of the Project site, along with associated street and utility improvements. Topography of the site is relatively flat. There are trees located along an abandoned irrigation ditch as well as small vegetation located throughout the Project site. These trees and other vegetation may be removed as part of any future development/construction of the Project site.

Figure 1 – Regional Location Map

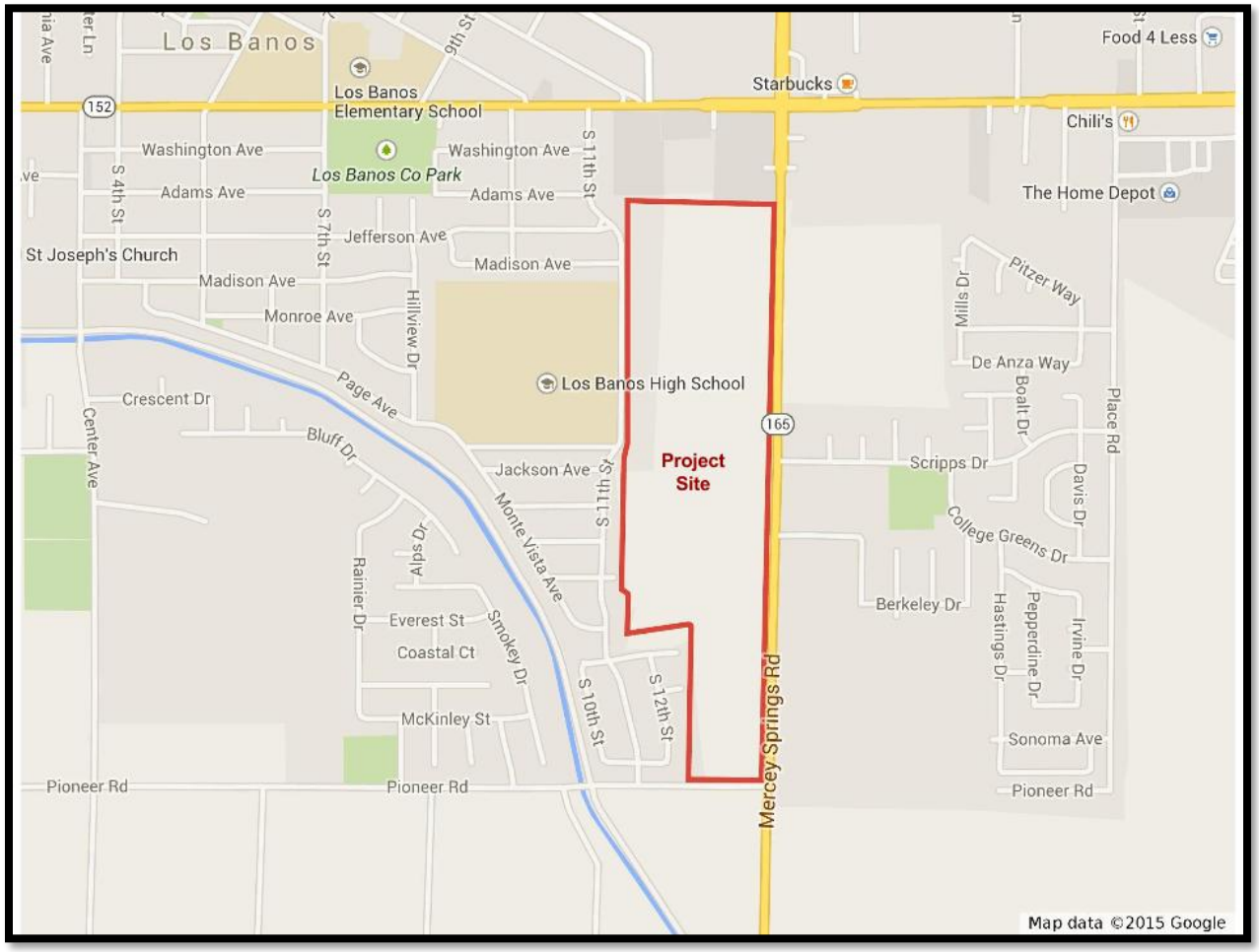


Figure 2 – Project Location Map

7. EXISTING GENERAL PLAN DESIGNATION

The Project site is designated for the following land uses under the City's General Plan 2042, dated October 2022:

- Low Density Residenital;
- Regional Commercial; and,
- High Density Residential.

Figure 3-2 (General Plan 2042 Land Use Designations) of the General Plan 2042 illustrates the Project site's land use designations.

8. EXISTING ZONING

The County of Merced currently has the project site designated as "Agricultural - (A)" in its General Plan. The County's zoning designation is listed as Single-Family Residential (R-1).

10. SURROUNDING LAND USES AND SETTING

Surrounding land uses include commercial and industrial uses to the north, existing agricultural and residential uses to the east, existing agricultural uses to the south, and residential uses and Los Banos High School to the west. Properties to the north have a General Plan Land Use Designation of Commercial and Industrial, properties to the east have a General Plan Land Use Designation of Low Density Residential, Commercial, High Density Residential and Neighborhood Commercial. Properties to the south have a General Plan Land Use Designation of Medium Density Residential and to the west, Low Density Residential and Civic/Institutional.

11. DESCRIPTION OF THE PROJECT

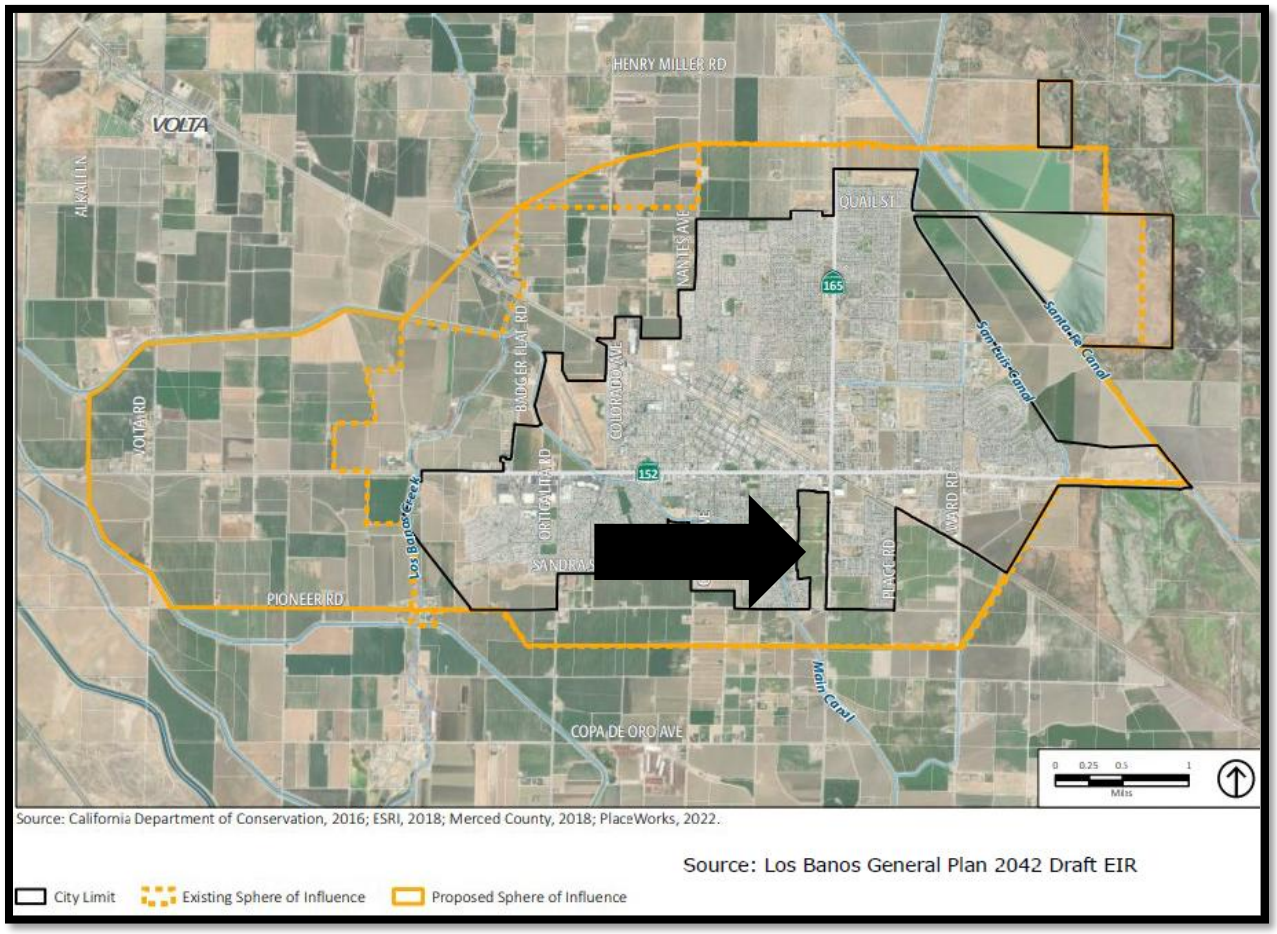
The Proposed Project consists of a Prezone, Annexation, Specific Plan, and Vesting Tentative Tract Map to allow for the development of 371 single-family residential units, up to 120 multi-family residential units, and 2.7 acres of commercial land on 111.7-acres of land located south of State Highway 152. The following Project Description is categorized into the following: Annexation and Prezone, Specific Plan, and Vesting Tentative Tract Map (VTTM).

<u>Annexation and Prezone:</u>

The Proposed Project will require annexation into the City of Los Banos. The proposed annexation includes the entire 111.7-acre Project site, and includes existing residences primarily located on Mercey Springs Road.

The Project site is located within the City's adopted Sphere of Influence, as illustrated below in Figure 3. The City's Municipal Services Review (MSR) was last updated in September 2025.

Figure 3 – Los Banos Sphere of Influence



Upon City Council consideration, the City of Los Banos, acting on behalf of the Applicant, will file an annexation request to the Merced Local Agency Formation Commission (LAFCo) for review and consideration. The proposed annexation boundary consists of the entire project site as described in this Initial Study. As shown below, upon Annexation the Proposed Project site will be Pre-Zoned as follows and as illustrated in Figure 4.

Table 1 – Prezoning Designations

Zone District	Acres
R-1	88.9
R-3	6.0
C-N	2.7

Figure 4 – Prezoning Map

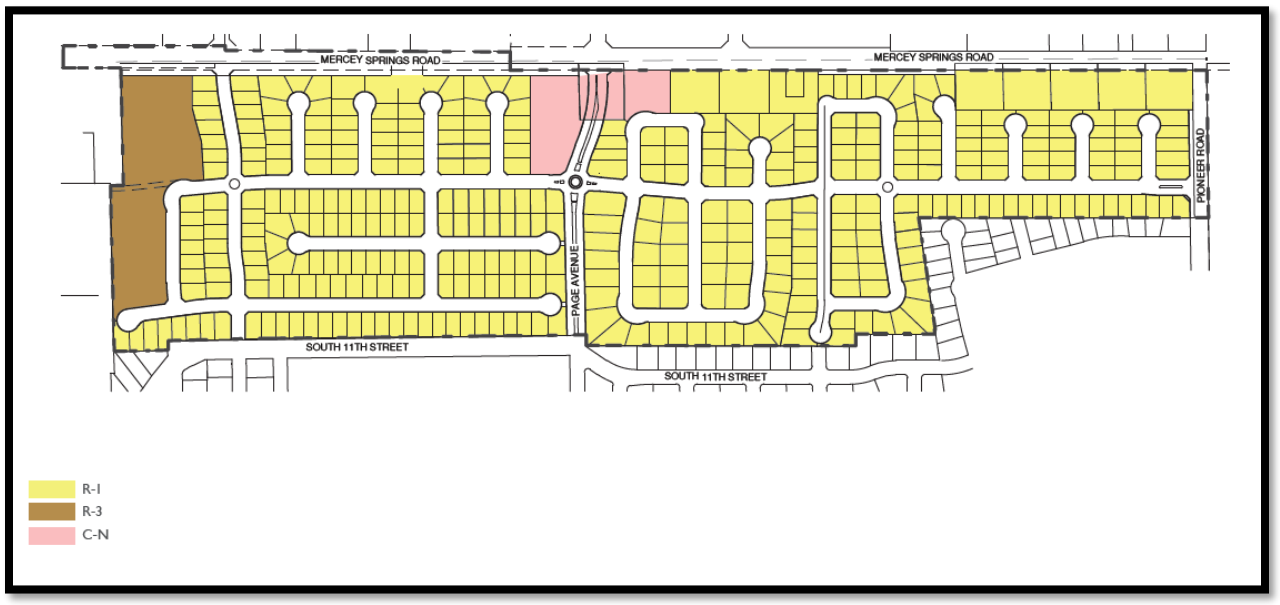
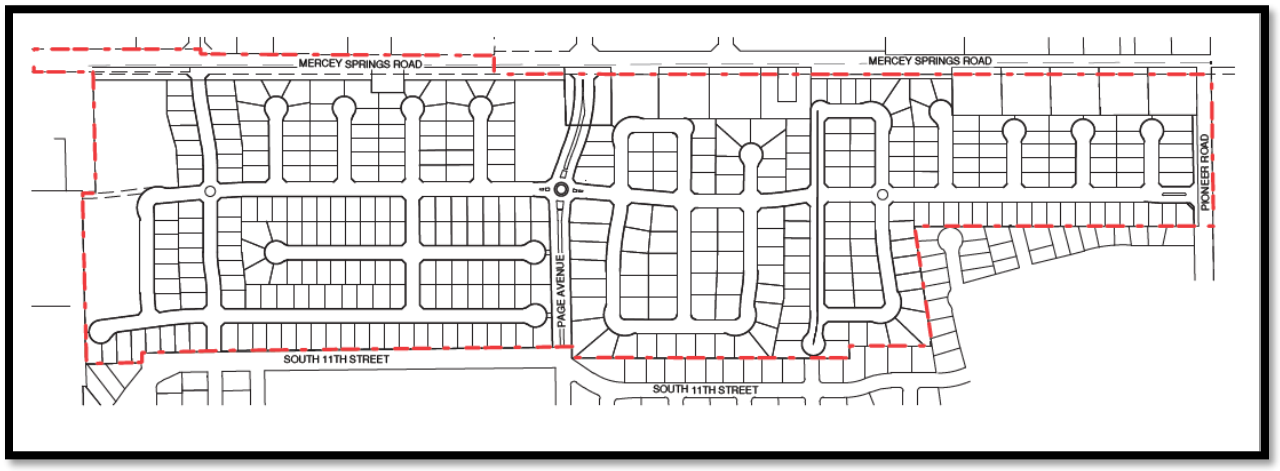


Figure 5 - Annexation Boundary Map



As part of the proposed annexation, the Project site will detach from the Central California Irrigation District boundary.

Specific Plan:

In conjunction with the prezone and annexation, the Proposed Project consists of a Specific Plan that serves as the guiding document for future development within the Project site. A copy of the proposed Specific Plan is included in this Initial Study as Appendix A.

The Specific Plan contains the following: Introduction, Development Plan, Development Standards, Public Services, Infrastructure, and Implementation.

At full build-out, the Proposed Project, under the Specific Plan, allows for the following land uses and development yield:

Table 2 – Land Use Summary

Land Use Designation	Acres	Total Units	Average Density	Population	Building Square Footage
Residential					
Low Density Residential (LDR)	88.9	371	4.17	964	-
High Density Residential (HDR)	6.0	120	20	312	-
Commercial					
Regional Commercial (RC)	2.7	-	-	-	50,000 square feet
Roadway Right-of-Way	14.1	-	-	-	-
Total	**111.7**	**491**	**-**	**1,276**	**50,000 square feet**

Primary access to the Proposed Project will be provided via the extensions and improvement of Madison Avenue, Page Avenue, both of which will connect to Mercey Springs Road. Mercey Springs Road and Pioneer Road are both designated as Arterial Streets, while Page Avenue is designated as a Collector Street. Street A, which runs north/south within the Project site, will be improved and ultimately connect to Pioneer Road. Roadway improvements to Mercey Springs Road, Pioneer Road, and internal roadways will be installed with development of the Proposed Project. Figure 2.5 (Street Sections) provided in Appendix A, provide illustrations of the proposed street sections and improvements. The Proposed Project also includes the installation of a round-a-bout at the intersection of Page Avenue and Mercey Springs Road.

Pedestrian circulation will be provided via maintaining and improving the existing pedestrian pathway for Page Avenue and a Class I bike lane to be installed on Pioneer Road along the Project site's frontage. The existing pedestrian pathway located on Page Avenue will be converted to a Class II bike and pedestrian trail.

Stormwater generated by the Proposed Project will be accommodated via connecting to the existing twenty-four (24) inch storm drain located within the Project site. Stormwater will then discharge into nearby storm drain basins, identified as CC-11 and CC-B1 in the City's Storm Drain

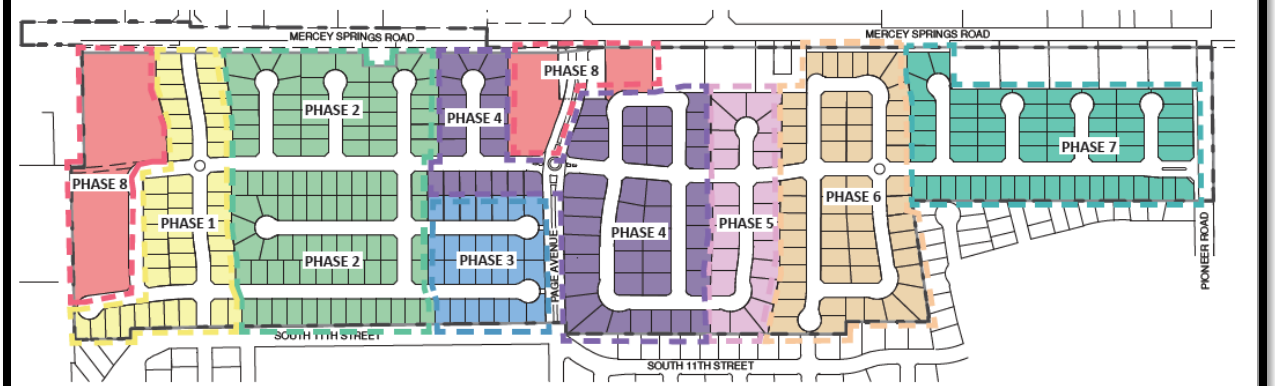
Master Plan. Domestic water will be provided by the City of Los Banos. The Proposed Project will extend the existing eighteen (18) inch water main located in Pioneer Road, and in Street A, a ten (10) inch water main will be installed. A twelve (12) inch water main currently located in Madison Avenue will be extended and connect to existing lines located in Mercey Springs Road. A 12-inch water main will also be installed in Page Avenue. Sanitary sewer will be provided by the City of Los Banos. The Proposed Project will connect to existing lines located in Mercey Springs Road, South 11th Street, Page Avenue, and Pioneer Road.

Other improvements include perimeter wall treatment and the installation of a masonry wall, eight (8) feet in height, where the Proposed Project borders Mercey Springs Road and South 11th Street. The existing six (6) foot masonry wall located at the northern edge of the Project site will need to be improved and increased to 8 feet at such time as the multi-family residential parcel is developed.

While there are no parks proposed within the Project site, the Proposed Project will be required to adhere to Article 16 of the City's Municipal Code and pay an in-lieu fee of dedicating land for parks.

The Proposed Project will be developed in a total of eight (8) phases, as illustrated below in Figure 6. The phasing of the Proposed Project includes backbone infrastructure that will be required as each phase develops, which is described in detail in Appendix A.

Figure 6 – Preliminary Phasing Plan



PHASE	NO. OF LOTS	LOTS AREA (AC)	STREET AREA (AC)	TOTAL AREA (AC)
Phase 1	45	6.9	2.8	9.7
Phase 2	97	15.1	5.2	20.3
Phase 3	28	4.3	1.8	6.0
Phase 4	62	12.5	7.0	19.5
Phase 5	22	4.6	1.5	6.2
Phase 6	56	9.8	3.8	13.7
Phase 7	61	9.1	3.4	12.5
Phase 8		8.75 (6.00 HDR, 2.75 COMM)	1.0	9.7
TOTALS	371	71.2	26.4	97.6

Vesting Tentative Tract Map (VTTM):

The Proposed Project includes a VTTM, which will subdivide 100.6-acres of the 111.7-acre annexation boundary into 371 single-family residential lots, a Lot A, which consists of 6.0-acres set aside for future multi-family residential development, Lot B, a 315 square foot landscaped area, and Lots C and D, which consists of 2.7-acres of lands set aside for future commercial development.

The VTTM has been prepared in accordance with Article 15 of the City's Municipal Code.

A copy of the proposed VTTM is included in Appendix B of this Initial Study.

Development Agreement:

The Proposed Project also includes a Development Agreement between the Project Proponent and the City of Los Banos. The Development Agreement will memorialize Proposed Project components such as; validity of VTTM, phasing of backbone improvements, and reimbursable expenses. The Development Agreement will be prepared in accordance with city standard requirements.

12. REQUIRED APPROVALS

The Project Proponent is requesting the following development entitlements from the City of Los Banos and/or the Merced Local Agency Formation Commission (LAFCo):

- Approval of the Specific Plan;
- Approval of the Vesting Tentative Tract Map;
- Development Agreement;
- Prezone; and,
- Annexation.

13. OTHER PUBLIC AGENCIES WHOSE APPROVAL IS REQUIRED

The following approvals are required from other Public Agencies:

- Merced Local Agency Formation Commission (LAFCO) – Approval of Annexation
- San Joaquin Valley Air Pollution Control District – Rule 9510 Compliance (Air Impact Assessment)
- Caltrans, District 10 – Encroachment Permits to allow for improvement to Mercury Springs Road

14. HAVE CALIFORNIA NATIVE AMERICAN TRIBES TRADITIONALLY AND CULTURALLY AFFILIATED WITH THE PROJECT AREA REQUESTED CONSULTATION PURSUANT TO PUBLIC RESOURCES CODE SECTION 21080.3.1? IF SO, HAS CONSULTATION BEGUN?

In accordance with Public Resources Code Section 21080.3.1, the City has not received any requests for consultation.

14. 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.

	Aesthetics		Agriculture and Forestry Resources		Air Quality
	Biological Resources		Cultural Resources		Energy
	Geology and Soils		Greenhouse Gas Emissions Materials		Hazards and Hazardous
	Hydrology and Water Quality		Land Use and Planning		Mineral Resources
	Noise		Population and Housing		Public Services
	Recreation		Transportation/Traffic		Utilities and Service Systems
	Wildfire		Mandatory Findings of Significance		

15. LEAD AGENCY DETERMINATION:

On the basis of this Initial Study evaluation:

	I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
X	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. An ENVIRONMENTAL IMPACT REPORT 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 required.

Mr. Justin Ragunton, Assistant Planner	9-23-26 **Date**

SECTION 2.0 EVALUATION INSTRUCTIONS:

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 referenced 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 Section XVII, "Earlier Analyses," 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:

   a) Earlier Analysis Used. Identify and state where they are available for review.
   b) 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.
   c) Mitigation Measures. For effects that are "Less than Significant With Mitigation Measures Incorporated," describe the mitigation measures, which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

Pursuant to Section 15063(c)(3)(D) of the CEQA Guidelines, this Initial Study is tiered from the City's General Plan 2042 Environmental Impact Report (SCH No. 2022010254).

Both documents are available for review at the City of Los Banos Community Development Department, 520 J Street, Los Banos, CA 93635 or on the City of Los Banos website: http://www.losbanos.org/.

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.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The explanation of each issue should identify:
   a) The significance criteria or threshold, if any, used to evaluate each question; and
   b) The mitigation measure identified, if any, to reduce the impact to less than significance

INITIAL STUDY CHECKLIST

This section of the Initial Study incorporates the most current Appendix "G" Environmental Checklist Form, contained in the CEQA Guidelines.

1. AESTHETICS -- WOULD THE PROJECT:

	Potentially Significant Impact	***Less Than Significant with Mitigation Incorporation***	***Less Than Significant Impact***	***No Impact***
Except as provided in Public Resources Code Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?			X	
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?			X	
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 publicly accessible vantage points.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?			X	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			X	

IMPACT ANALYSIS

The following discussion is an analysis for criteria (a) and (b):

a. *Would the project have a substantial adverse effect on a scenic vista?*
b. *Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a State scenic highway?*

According to the City of Los Banos General Plan 2042 and Environmental Impact Report (EIR), the Proposed Project area is not considered a scenic vista. The Project site consists of open land and scattered single-family residences. The public views from the site to the west and north are of urban uses. To the east is a mixture of urban uses and open ground in the City, and to the south is open ground within the County. Development of the Proposed Project would be consistent with the development currently

existing or approved around the site. Therefore, the Proposed Project will have a **Less Than Significant Impact.**

The Proposed Project is located near the city limits of the City of Los Banos and is not located on a state designated highway. Based on a review of the California Department of Transportation website (http://www.dot.ca.gov/hq/LandArch/scenic/schwy.htm), the nearest state scenic highway is Interstate 5, between the Merced County line and San Joaquin County line. The Proposed Project is not located on or adjacent to Interstate 5 and therefore will have no impact to a state scenic highway. Therefore, the Proposed Project will have a **Less Than Significant Impact.**

c. *Would the project, 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 publicly accessible vantage points.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?*

The Proposed Project is comprised of 111.7-acres in Merced County, adjacent to the City of Los Banos and is currently surrounded by urban development that is within the City. The existing visual character of the Proposed Project is agricultural lands and scattered single-family ranchette style homes and its surroundings consist of single-family residential and commercial development. In addition, the City of Los Banos, through its General Plan, has designated the Proposed Project site for development consistent with land uses proposed by the Proposed Project. The Project site is surrounded by urban development, including residential, commercial, public/quasi-public land uses. The Proposed Project is consistent with the visual character of the surrounding urbanized area. Therefore, the Proposed Project will have a **Less Than Significant 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?*

With future development of urban uses, the Proposed Project will create a new source of light or glare in the area. All exterior lighting installed as a part of any future development of the site will be required to be designed in such a way as to minimize glare and light spill in order to preserve existing day-time/night-time views. In addition, the Proposed Project is surrounded by urban development with existing sources of light and glare, with the exception of the lands south of the Proposed Project, which still remains primarily agricultural. Lighting installed as part of the development of the Proposed Project will adhere to Article 33 (Outdoor Lighting) of the Los Banos Municipal Code. As such, this project will have a **Less Than Significant Impact.**

MITIGATION MEASURES:

Mitigation is not required for this topic.

2. AGRICULTURE AND FORESTRY RESOURCES: WOULD THE PROJECT:

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
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, as updated) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. 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 Forest Protocols adopted by the California Air Resources Board. Would the Project:				
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?			X	
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
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 Timberland Production (as defined by Government Code section 51104 (g))?				X
d) Result in the loss of forest land or conversion of forest land to non-forest use?				X
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?			X	

SETTING

The following is based upon a review of the City's General Plan 2042 Draft EIR and provides the existing setting on a regional and local basis for the City of Los Banos and the Project site.

Regional Agriculture

Agricultural commodities in Merced County grossed over $3.4 billion in 2020, a seven (7) percent increase from 2019. Milk has been the top-valued agricultural commodity in the county for over ten (10) years, with a 2020 value of over $1 billion. Other top valued crops in Merced County, in order of value, are almonds, chickens, sweet potatoes, cattle and calves, tomatoes, silage corn, miscellaneous vegetables, nursery products, and eggs.

Important Farmland

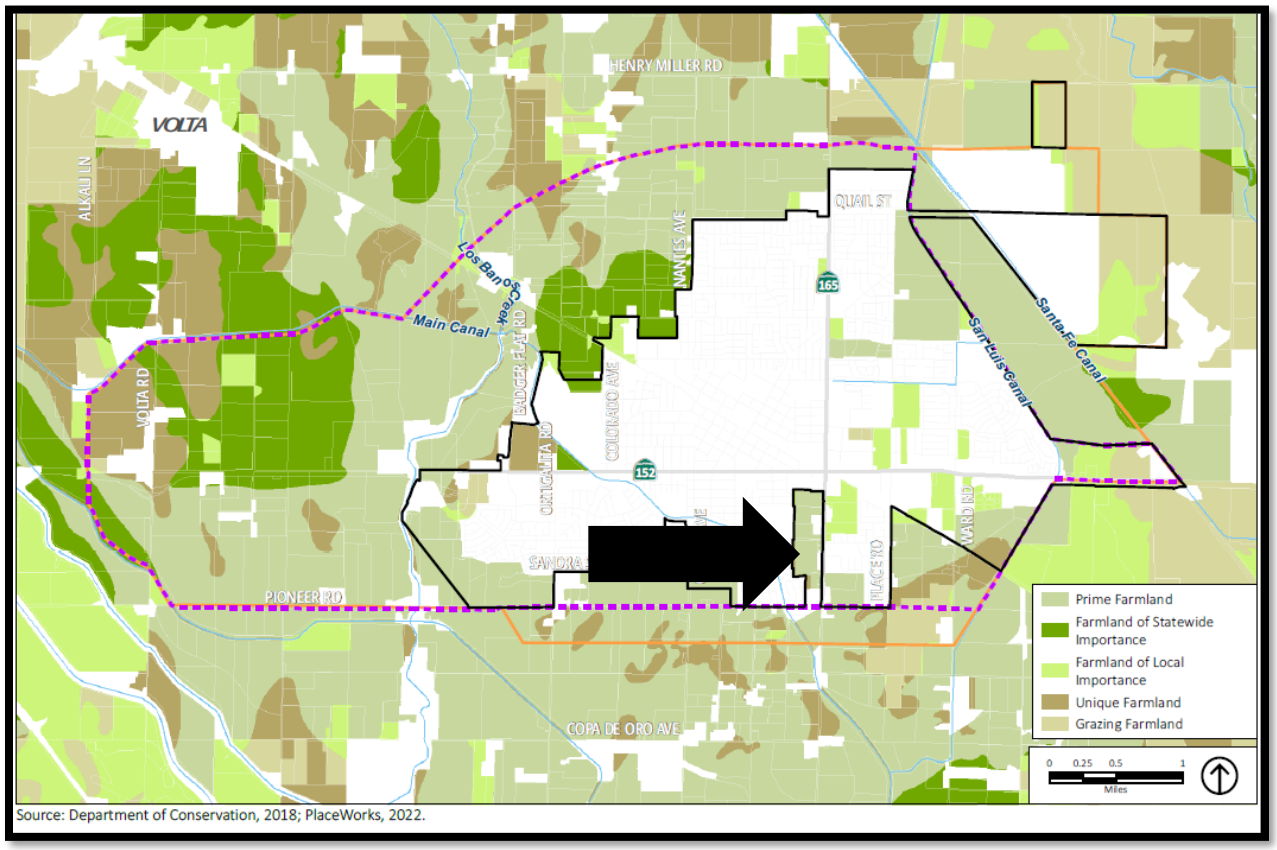
Land use for agricultural purposes can be found within the city limits and within the City's Sphere of Influence (SOI). Within the city limits and the SOI, the following farmland classifications can be found:

Table 3 – Agricultural Land Use Designations (in acres)

Farmland Classification	City Limit	SOI	Total
Prime Farmland	759	4,495	5,254
Farmland of Statewide Importance	32	1,285	1,317
Farmland of Local Importance	492	145	637
Unique Farmland	99	797	895
Grazing Land	356	174	530
Total	**1,737**	**6,896**	**8,633**

The Project site contains Prime Farmland, as illustrated below in Figure 7.

Figure 7 – Agriculture Working Farmlands



Williamson Act Contracts

There are active Willimson Act Contracts on both Prime and non-Prime Farmland within the General Plan 2042 Study Area. However, a review of Figure 4.2-2 (Williamson Act Lands) notes that the Project site does not contain an existing Williamson Act Contract.

Forestry Resources

There are no known forestry resources within the city limits or SOI.

IMPACT ANALYSIS

The following discussion is an analysis for criteria (a):

a. *Would the project convert Prime Farmland, Unique Farmland, 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?*

As illustrated above, the Project site consists of lands designated as Prime Farmland. As such, the Proposed Project will convert Prime Farmland to a non-agricultural use. The City's General Plan 2042 Draft EIR determined that implementation of the General Plan 2042 will result in the conversion of Prime Farmland, Farmland of Statewide Importance, or Unique Farmland to a non-agricultural use, and considered potential mitigation measures intended to mitigate the impact of converting Prime Farmland to a non-agricultural use. These measures are as follows:

- **Replacement of Agricultural Resources.** This measure would replace the existing agricultural use with the same use on other property that is not currently used for agricultural purposes. From a statewide perspective, the replacement of farmland means that there will be no net loss of farmland in the state. However, farmlands of concern would still be developed. There is limited undeveloped land within the City's SOI that is not currently designated as agricultural, restricting the amount of agricultural land that would be able to be replaced elsewhere in the area, and thus conversion of these lands would be insufficient to achieve no net loss. Moreover, even if adequate land could be identified to achieve no net loss, the challenge of creating the soil, irrigation, climatic, and economic conditions that are required for productive farmland are significant and there would be no guarantee that replacement land could be successfully farmed. In addition, replacing existing undeveloped areas with active agriculture could trigger a range of negative environmental impacts, including increased groundwater consumption, habitat destruction, erosion, air quality impacts, and herbicide and pesticide application. As such, the replacement of the existing agricultural uses on other properties within the City's SOI is infeasible.

- **Transfer of Development Rights.** Transferring development rights would involve purchasing or the right to develop land from a currently undeveloped piece of land and transferring those rights to farmland within the city. This option is also infeasible because there would still be a net loss of Farmland. Even if Farmland were preserved elsewhere in Merced County, the Important Farmland in the city would be developed, resulting in a net loss of Farmland. Therefore, for these reasons outlined previously and still in this paragraph, it would not prevent significant impacts from occurring in the city and would not be an effective CEQA mitigation measure, nor is this mitigation measure feasible from an economic perspective within this region.

- **Relocation of Prime Farmland Topsoil.** This measure would remove the top 12 to 18 inches of topsoil from affected areas and haul this soil to a farm site or several farm sites that have lower quality soils. The Prime Farmland, Farmland of Statewide Importance, or Unique Farmland soils may assist in increasing crop yield at the relocated site. This measure would have its own environmental impacts, including increased truck traffic on local roadways from both hauling soil off-site and replacement soil onsite; increased diesel truck emissions; construction noise; and increased duration of construction. The relocation of prime farmland soils on another active farm would increase other environmental impacts and is therefore considered infeasible.

Although the above mitigation measures were deemed to be infeasible, the General Plan 2042 provides policies that are applicable to the Proposed Project and its impact on Prime Farmland. One policy specifically applies to the Proposed Project, and states as follows:
Policy P-P7.6. Require applicants of annexation proposals that would result in the conversion of 50 or more acres of Prime Farmland, Farmland of Statewide Importance, or Unique Farmland to do the following:

- Prepare an inventory of vacant land within the city limit zoned for similar uses as the proposed annexation, and an analysis of probably build-out time for that quantity of vacant land given past development rates. When the inventory includes vacant land to support more than 12 years of development (10-year inventory plus an additional two years to account for annexation processes), the applicant shall demonstrate to the City's satisfaction why the existing vacant land within the city limits is not suitable for the proposed development.

- Prepare a phasing timeline that prioritizes development of lands with lesser farmland value, lands immediately adjacent to existing development within the city, lands with prior disturbance of farmland, lands that do not encroach beyond major barriers into areas of farmland not already partially developed, and/or lands that do not require cancellation or non-renewal of a Williamson Act contract.

- Use major land features as boundaries, including roads, canals, creeks, or highways plan lines, so that annexation boundaries are physically separated from remaining agricultural land beyond the annexation areas, when appropriate.

The Proposed Project consists of an annexation request of 50-acres or more, and as such, Policy P-P7.6 applies.

The Developer and/or Project Proponent is required to adhere to Policy P-P7.6 as identified above. As illustrated above, the Developer and/or Project Proponent will be required to inventory vacant land within the city limits zoned for similar uses, analyze the build-out time for that quantity of vacant land given past developments, and provide a phasing timeline of the Proposed Project that prioritizes developments of lands with lesser farm values.

<u>Policy P-P7.6 Compliance</u>:

a) Inventory of Vacant Land –

In order to conduct an inventory of vacant land within the City limits available for primarily residential development, City staff reviewed the City's Draft 2024-2032 Housing Element. Based on this review, the City has available approximately 316.31 acres of realistic capacity available within its City limits for

residential development. This acreage of realistic capacity results in the following availability of potential housing units:

Table 4 – Los Banos Residential Inventory

Zoning District	Acreage	Total Units
R-1	131.43	676
R-2	87.81	1,248
R-3	36.40	760
R-C	9.08	133
Total	**316.31**	**2,805**

Based on the table above, and according to the City's Draft 2024-2032 Housing Element, Los Banos currently has a land inventory to accommodate a total of 2,805 residential units.

b) Phasing Timeline –

Within the city limits, the following residential subdivisions are currently entitled and/or under construction; Villages V Subdivision, Sunrise Ranch, and Northpointe. The table below presents the development phasing for these residential subdivisions:

Table 5 – Entitled and/or Projects Under Construction

Project Name	Number of Lots	Phasing Timeline
Villages V Subdivision	271	Three (3) years
Sunrise Ranch	197	One (1) year
Northpointe	543	Ten (10) or more years
Total	1,011	

According to the City's General Plan Land Resources Amendment, the Villages V Subdivision is located on Farmland of Local Importance.

The Sunrise Ranch Project is located on lands considered to be Farmland of Local Importance, as described in the Sunrise Ranch Initial Study/Negative Declaration prepared in October 2018 (http://www.losbanos.org/wp-content/uploads/2018/10/NOI_MNDSunriseRanch_TTM_no2017-03_good.pdf).

According to the Villa Burano Environmental Impact Report (EIR), dated June 28, 2006, the Northpointe Project is located on land considered to be Prime Farmland. The Villa Burano EIR concluded that impacts to Agricultural Resources were considered to be Significant and Unavoidable.

The Proposed Project consists of a total of 491 residential units (both single-family and multi-family residential). Assuming fifty (50) single-family residential homes are built per year, the Proposed

Project anticipates a build-out timeline of seven (7) to eight (8) years. Development of the multi-family residential component is unknown at this time and based on market demand.

c) Major Land Feature Boundary -

As noted previously, the Proposed Project is bounded by existing development and roadways on all four (4) sides of the project site. The Proposed Project is bounded by existing commercial and industrial development and SR 152/Pacheco Boulevard to the north, Pioneer Road to the south, Mercey Springs Road (SR 165) to the east, and existing single-family residential development and South 11th Street to the west. The Proposed Project is bounded by the City's existing City limits to the north, east, and west. Pioneer Road is located south of the Proposed Project and represents a major land feature boundary to the Proposed Project.

In addition, the Proposed Project is required to adhere to the Policies of the General Plan 2042. Ultimately, the agricultural impacts associated with the General Plan 2042 were determined to be significant and unavoidable, and as discussed above, a Findings of Fact and Statement of Overriding Consideration was adopted by the city.

As noted above, the Proposed Project is located within the City's adopted Urban Growth Boundary as defined in the General Plan 2042. As such, the loss of Prime Farmland is significant and unavoidable, consistent with the certified General Plan 2042 EIR and the associated Statement of Overriding Considerations adopted as part of the General Plan Land Resources Element. The Proposed Project implements the City's General Plan 2042, which will result in the loss of lands identified as Important Farmland. However, this loss of Prime Farmland has been previously evaluated in the General Plan 2042 EIR and as noted above, the impact is significant and unavoidable.

For the purposes of this Initial Study, the impacts to the loss of Important Farmland is considered to be **Less Than Significant.**

The following discussion is an analysis for criteria (b), (c), (d) and (e):

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

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 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?

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

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?

According to the City's General Plan 2042 Draft EIR and the Merced County Geographical Information Systems (GIS), the parcels located within the Proposed Project Site do not have an active Williamson Act Contract. Therefore, the Proposed Project will have **No Impact**.

The Proposed Project is located on existing agricultural land and is bounded by primarily urban and residential uses. The Project site is located within Merced County and is zoned for agricultural residential uses as A-R, Agricultural Residential. The Proposed Project includes an Annexation and Prezoning into the City of Los Banos. The zoning districts being proposed as a part of the Proposed Project's prezoning are consistent with the General Plan 2042 land use designations of the Project site. The Project site is not identified or zoned as forest land or timber land. Therefore, the Proposed Project will have **No Impact.**

The Proposed Project is not located near forest land as defined in *Public Resources Code Section 12220(g) and* has a land use designation for urban uses in the City of Los Banos General Plan; therefore, it will not conflict with any forest land uses, nor result in the loss of forest land or conversion of forest land to non-forest use. The Proposed Project will have **No Impact**.

The Proposed Project is bounded by urban uses to the north, east, and west. The Proposed Project area has a land use designation for Urban Uses as denoted in the General Plan 2042. The Proposed Project is within the Sphere of Influence of the City of Los Banos; and therefore, has been planned for eventual annexation into the City of Los Banos with transition from Agricultural Uses to Urban Uses. The Proposed Project will have a **Less Than Significant Impact**.

MITIGATION MEASURES:

Mitigation is not required for this topic.

3. AIR QUALITY -- WOULD THE PROJECT:

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied on to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?		X		
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?		X		
c) Expose sensitive receptors to substantial pollutant concentrations?			X	
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?			X	

SETTING

The Proposed Project is located in west Merced County, which is a portion of the San Joaquin Valley Air Basin (SJVAB). Air quality management under the federal and state Clean Air Acts is the responsibility of the San Joaquin Valley Air Pollution Control District (SJVAPCD).

The federal and state governments have adopted Ambient Air Quality Standards (AAQS) for the primary air pollutants of concern, known as "criteria" air pollutants. Air quality is managed by the SJVAPCD to attain these standards. Primary standards are established to protect the public health; secondary standards are established to protect the public welfare. The attainment status of the SJVAB for Merced County with respect to the applicable AAQS are shown in the following table.

The SJVAB is considered non-attainment for ozone and particulate matter (PM10 and PM2.5), because the AAQS for the pollutants are sometimes exceeded. The SJVAB is Attainment/Unclassified for carbon monoxide, but select areas, not including the City of Los Banos, are required to abide by adopted carbon monoxide maintenance plans.

The California Air Resources Board (CARB) through the Air Toxics Program is responsible for the identification and control of exposure to air toxics, and notification of people that are subject to significant air toxic exposure. A principal air toxin is diesel particulate matter, which is a component of diesel engine exhaust.

The SJVAPCD has adopted regulations establishing control over air pollutant emissions associated with land development and related activities. These regulations include:

Regulation VIII (Fugitive Dust Rules)
Rule 4101 (Visible Emissions)
Rule 9510 (Indirect Source Review)

SAN JOAQUIN VALLEY FEDERAL AND STATE AAQS ATTAINMENT STATUS

Pollutant	Designation / Classification	
	Federal Standards[a]	State Standards[b]
Ozone, 1-hour	No federal standard[f]	Nonattainment / Severe
Ozone, 8-hour	Nonattainment / Extreme[e]	Nonattainment
PM10	Attainment[c]	Nonattainment
PM2.5	Nonattainment[d]	Nonattainment
Carbon Monoxide	Attainment / Unclassified	Attainment / Unclassified
Nitrogen Dioxide	Attainment / Unclassified	Attainment
Sulfur Dioxide	Attainment / Unclassified	Attainment
Lead (particulate)	No designation	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

[a]See 40 CFR Part 81
[b]See CCR Title 17 Sections 60200-60210
[c]On September 25, 2008, EPA redesignated the San Joaquin Valley to Attainment for the PM10 National AAQS and approved the PM10 Maintenance Plan
[d]The SJV is designated nonattainment for the 1997 PM2.5 NAAQS. EPA designated the SJV as nonattainment for the 2006 PM2.5 on November 13, 2009 (effective December 14, 2009).
[e]Though the SJV was initially classified as serious nonattainment for the 1997 8-hour ozone standard, EPA approved reclassification of the SJV to extreme nonattainment in the Federal Register on May, 2010 (effective June 4, 2010.
[f]Effective June 15, 2005, the EPA revoked the federal 1-hour ozone standard, including associated designations and classifications. EPA has previously classified the SJV 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.

The SJVAPCD has adopted a CEQA impact analysis guideline titled *Guide for Assessing and Mitigating Air Quality Impacts* (GAMAQI). The GAMAQI is utilized in the following air quality impact analysis where applicable. The GAMAQI establishes impact significance thresholds for the non-attainment pollutant PM10 and precursors to the non-attainment pollutant ozone: reactive organic gases (ROG) and oxides of nitrogen (NOx).

ROG 10 tons/year
NOx 10 tons/year
PM10 15 tons/year

For a typical development project, the need to perform an ambient air quality analysis is determined on a case-by-case basis, depending on the project size, unless exempt under the District's limit of fifty (50) dwelling units. Potentially significant emissions related to the construction and operation of land development projects are subject to regulation under SJVAPCD Rule 9510 Indirect Sources. Development associated with the Proposed Project will exceed the thresholds, triggering the requirements of Rule 9510. Therefore, the Project Proponent will be required to comply with Rule 9510 and conduct an Indirect Source Review (ISR) process with SJVAPCD.

The Proposed Project construction will be subject to SJVAPCD rules related to control of construction emission, including the various rules comprising Regulation VIII. The application of these rules to the Proposed Project will further limit the potential air quality effects of the Proposed Project. The Proposed Project will generate small amounts of new on-road traffic and associated ROG, NOx and PM emissions during project operation.

The SJVAPCD regulations that are potentially applicable to the Proposed Project are summarized below.

Regulation VIII (Fugitive Dust PM_{10} Prohibitions)
Rules 8011-8081 are designed to reduce PM_{10} emissions (predominantly dust/dirt) generated by human activity, including construction and demolition activities, road construction, bulk materials storage, paved and unpaved roads, carryout and track out, landfill operations, etc.

Rule 4101 (Visible Emissions)
This rule prohibits emissions of visible air contaminants to the atmosphere and applies to any source operation that emits or may emit air contaminants.

Rule 4601 (Architectural Coating)
This rule sets limits on the volatile organic compounds, a component of ROG, allowed in various paints and other coatings.

Rule 9410 (Employer Based Trip Generation)
Rule 9410 was adopted in 2009. The purpose of Rule 9410 is to reduce vehicle miles traveled (VMT) from private vehicles used by employees to commute to and from their worksites, which in turn would reduce emissions of NOx, volatile organic compounds (a component of ozone), and particulate matter. Employers are required to implement an Employer Trip Reduction Implementation Plan (ETRIP) for each worksite with 100 or more eligible employees to meet applicable targets specified in the rule. An ETRIP for each worksite must be submitted to the SJVAPCD, and the ETRIP must be updated annually. Annual reporting includes the results of the

commute verification for the previous calendar year along with the measures implemented as outlined in the ETRIP and, if necessary, any updates to the ETRIP.

Rule 9510 (Indirect Source Review)

Rule 9510, also known as Indirect Source Review, was adopted in 2005. This rule is intended to reduce or mitigate construction and operational emissions of NO_x and PM_{10} generated by new development, either directly and/or by payment of off-site mitigation fees. Construction emissions of NO_x and PM_{10} must be reduced by 20% and 45% respectfully. Operational emissions of NO_x and PM_{10} must be reduced by 33.3% and 50% respectfully. Rule 9510 applies to single-family residential, multi-family residential and commercial projects over a certain unit or square footage threshold.

IMPACT ANALYSIS

a. Would the project conflict with or obstruct implementation of the applicable air quality plan?

The City of Los Banos is located within the San Joaquin Valley Air Basin. The air quality impacts for the Proposed Project have been analyzed within the General Plan EIR. General Plan Policy "POSR-I-48" requires the implementation of Best Management Practices to reduce air pollutant emissions due to construction work and/or operation of equipment. Because implementation of the Proposed Project has the potential to exceed emissions thresholds, implementation of the Proposed Project may result in the generation of air quality impacts. The Project Proponent received Rule 9510 approval from the SJVACPD on July 18, 2025. The Rule 9510 approval documents are included in Appendix C of this Initial Study. In this approval, the SJVAPCD incorporated emission reduction measures. These measures are intended to reduce construction and operational emissions generated by the Proposed Project and are provided below in Mitigation Measures 3-1 through 3-4. The Proposed Project is determined to have a **Less Than Significant Impact with Mitigation Incorporated**.

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?

The SJVAPCD has established CEQA Small Project Analysis Level (SPAL) screening thresholds, which are based on District New Source Review (NSR) offset requirements for stationary sources. Projects that fit the land use descriptions and are less than the project sizes provided are deemed to have a less than significant impact on air quality due to criteria pollutant emissions and as such are excluded from quantifying criteria pollutant emissions for CEQA purposes. In addition, the SPAL screening thresholds include trips/day thresholds for specific land uses.

Project size thresholds are as follows:

- Single-Family Residential Projects – 390 Units
- Apartments, Low Rise – 590 Units
- Regional Shopping Center < 57,000 sq. ft. – 11,000 sq. ft.

Trips/day thresholds are as follows:

- Residential Housing – 1,453 trips/day
- Commercial – 1,673 trips/day

As discussed in the Project Description (Section 11), the Proposed Project includes the following components:

Residential

- 371 single-family residential units on approximately 97 acres (2-6 units/acre).
- 120 multi-family residential units on approximately 5.4 acres (20-30 units/acre).

Commercial

- 3.2 acres of commercial land uses. For the purposes of this Initial Study and CalEEMod Analysis, the Proposed Project assumes a Floor Area Ratio (FAR) of 0.25 to calculate estimated commercial square footage, consistent with the City's General Plan 2042 FAR for buildout estimates of 0.6. As such, the estimated commercial square footage is 70,567 square feet of commercial uses.

Parks and Open Space

- 18,600 square feet of park land.

As stated above, the Proposed Project will include 371 single-family residential units and 120 multi-family residential units. Both land uses are below the SJVAPCD thresholds for Single-Family and Apartments, Low Rise uses (i.e. 390 units and 590 units, respectfully). The Proposed Project includes 70,567 sq. ft. of commercial uses (specific uses are unknown at this time) and exceeds the SJVAPCD threshold of 11,000 sq. ft. for regional shopping centers.

The SJVAPCD has adopted CEQA impact analysis guidelines titled *Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI).* The GAMAQI is utilized in the following quality impact analysis where applicable. The GAMAQI establishes impact significance thresholds for the non-attainment pollutant PM10 and precursors to the non-attainment pollutant ozone: reactive organic gases (ROG) and oxides of nitrogen (NO_x).

The following are the SJVAPCD thresholds:

CO	100 tons/year
ROG	10 tons/year
NO_X	10 tons/year
PM10	15 tons/year
PM2.5	15 tons/year
SO_X	27 tons/year

Air quality impacts are evaluated using the California Emissions Estimator Model (CalEEMod) for the proposed construction and operational emissions. CalEEMod 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 pollutant and greenhouse gas (GHG) emissions associated with both construction and operations from a variety of land use projects.

Construction Emissions

Construction of the Proposed Project would generate temporary criteria for pollutant emissions primarily due to the operation of construction equipment and truck trips. Estimated emissions associated with the demolition of an existing single-family residence and accessory structures are included in the demolition phase of the Proposed Project. Site preparation and grading typically generate the greatest amount of emissions due to the use of grading equipment and soil hauling. The construction emissions do not exceed the SJVAPCD threshold of 100 tons/year of CO, 10 tons/year of ROG and NO_X 15 tons/year of PM10 and PM2.5 and 27 tons/year of SO_X.

Even for projects that would not generate construction emissions exceeding these thresholds, SJVAPCD requires implementation of Mitigation Measures, such as Regulation VIII Fugitive PM10 Prohibitions, which requires a Dust Control Plan to be prepared and implemented (soil stabilization, watering, dust mitigation, etc.). Therefore, the Proposed Project will have a **Less Than Significant Impact**

Operational Emissions

As described in the GAMAQI, and in the Small Project Analysis Level, if a Proposed Project is below a threshold of 390 single-family residential units, and 590 multi-family units (defined as Apartments, Low Rise in GAMAQI), the Proposed Project's operational impacts for criteria pollutants would not be potentially significant and a detailed air quality assessment is not needed.

As shown above, the Proposed Project air quality impacts as it relates to operational impacts exceed the Air District's Thresholds of Significance for NO_x. The Proposed Project is subject to the Air District's Rule 9510. District Rule 9510 (Indirect Source Review) is intended to reduce a project's impact on air quality through project design elements or mitigation by payments of applicable off-site mitigation fees. Compliance with Rule 9510 will reduce construction exhaust NOx and PM10 by 20 percent and 45 percent, respectfully.

The Project Proponent received Rule 9510 approval from the SJVACPD on July 18, 2025. In this approval, the SJVAPCD incorporated emission reduction measures. These measures are intended to reduce construction and operational emissions generated by the Proposed Project and are provided below in Mitigation Measures 3-1 through 3-4. The Proposed Project is determined to have a **Less Than Significant Impact with Mitigation Incorporated**.

c. Would the project expose sensitive receptors to substantial pollutant concentrations?

As stated in the City's General Plan 2042 Draft Environmental Impact Report (EIR), some receptors are considered more sensitive than others to air pollutants. The reason for greater than average sensitivity includes pre-existing health problems, proximity to emissions source, or duration of exposure to air pollutants. Land uses such as schools, children's day care centers, hospitals, and convalescent homes are considered to be more sensitive than the general public to poor air quality because the population groups associated with these uses have increased susceptibility to respiratory distress and other air quality-related health problems. Residential areas are considered more sensitive to air quality conditions than commercial and industrial areas, because people generally spend longer periods of time at their residences, resulting in greater exposure to ambient air quality conditions.

As discussed in the Project Description, the project site is bounded by commercial and industrial uses to the north, existing agricultural/residential uses and Mercey Springs Elementary School to the east, existing agricultural uses to the south and Los Banos High School to the west. Sensitive uses adjacent to the project site include the following:

- Residential uses to the east, south and west;
- Mercey Springs Elementary School to the east;
- New Bethany Residential Care and Skilled Nursing Community to the east; and
- Los Banos High School to the west.

The Proposed Project will result in short-term air quality impacts resulting from construction activities and not involve long-term operation of any stationary diesel engine or other major on-site stationary source of Toxic Air Contaminants (TAC). Construction activities have the potential to generate emissions related to the number and types of equipment typically associated with construction. Off-road heavy-duty diesel equipment used for site grading, paving, and other construction activities result in the generation of TACs. However, construction is temporary and occurs over a relatively short duration in comparison to the operational lifetime of the Proposed Project. Because health risks associated with exposure to any TACs are correlated with high concentrations over a long period of exposure (e.g., over a 70-year lifetime), the temporary, intermittent construction-related TAC emissions would not be expected to cause any health risks to nearby sensitive receptors.

The development of the Proposed Project is required to adhere to the City's General Plan Policies and Actions, which require Best Management Practices to be included in the construction of the Proposed Project. Furthermore, the developer will be required to adhere to the SJVAPCD's Rules and Regulations as it relates to construction related emissions, dust control, heavy equipment emissions, etc. Therefore, the Proposed Project will have a **Less Than Significant Impact**.

d. Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

The Proposed Project will result in short-term air quality impacts resulting from construction activity. However, projects of this nature and scope do not generally result in other emissions such as odors that will adversely affect a substantial number of people. Therefore, the Proposed Project will have a **Less Than Significant Impact.**

MITIGATION MEASURES:

The following mitigation measures shall be incorporated into the Proposed Project:

Mitigation Measure 3-1

For each Project phase, the Developer and/or Project Proponent shall maintain records of total hours of operation of all construction equipment, greater than 50 horsepower, operated on site. Within 30-days of completing construction of each project phase, submit to the District a summary report of total hours of operation, by equipment type, equipment model year and horsepower.

Mitigation Measure 3-2

For each project phase, the Developer and/or Project Proponent shall maintain all records of on-site construction and for a period of ten years following either the end of construction or the issuance of the first certificate of occupancy, whichever is later. Records shall be made available for District inspection upon request.

Mitigation Measure 3-3

For each project phase, the Developer and/or Project Proponent shall maintain records of the construction start and end dates and the date of issuance of the first certificate of occupancy, if applicable.

Mitigation Measure 3-4

The Developer and/or Project Proponent shall ensure that the Project will result in solar panel installation with a total power output of 1,484 KW.

4. BIOLOGICAL RESOURCES -- WOULD THE PROJECT:

	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 and Game or U.S. Fish and Wildlife Service?			X	
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 U.S. Fish and Wildlife Service?			X	
c) Have a substantial adverse effect on state or federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?			X	
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?			X	
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?			X	
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?				X

SETTING

The City's Parks, Open Space, and Conservation Element of the General Plan 2042 contains goals, policies, and actions that require local planning and development decisions to consider impacts to biological resources, including special-status species, on project-by-project basis. These goals, policies, and actions relate to preserving mature trees and other native vegetation, controlling and eradicating non-native invasive species, participating in regional habitat restoration efforts, and conforming with State and federal regulations related to special-status species, wetlands, and other jurisdictional waters. Implementation of the following goals, policies, and actions would work to reduce general impacts to sensitive habitats and species within the General Plan 2042 study area, including the Proposed Project.

Goal P-6. Protect and restore biological resources of Los Banos.

Policy P-P6.1. Protect species that are federally or state listed as rare, threatened, endangered, or sensitive.

Policy P-P6.2. Require assessments of biological resources prior to approval of any development within 300-feet of any creek, wetlands, sensitive habitat areas, or areas of potential special-status species. Protect sensitive habitat areas and special-status species in the following order: (1) avoidance, (2) on-site mitigation, and (3) off-site mitigation.

Policy P-P6.3. Review development proposals in accordance with applicable federal and state laws protecting special-status species and jurisdictional wetlands and use the California Natural Diversity Database and field reconnaissance, where necessary, to confirm habitat value, to assist in identifying potential conflicts with sensitive habitats or special-status species and establishing appropriate mitigation and monitoring requirements.

Policy P-P6.5. Require project applicants to avoid nests or native birds in active use, in compliance with state and federal regulations. For new development sites where nesting birds may be present, initiate vegetation clearing and construction outside the bird nesting season (March 1 through August 31) or conduct preconstruction surveys by a qualified biologist in advance of any disturbance. If active nests are encountered, establish appropriate buffer zones based on recommendations by a qualified biologist and maintain the buffer zones until any young birds have successfully left the nest.

Action P-A6.1. Develop buffer zones around Los Banos Creek corridor and the grassland wetland areas to the east and enhance groundwater recharge and minimize impacts to habitat species.

IMPACT ANALYSIS

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 in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service?*
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, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?*
c. *Would the project have a substantial adverse effect on state or federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?*
d. *Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native residents or migratory wildlife corridors, or impede the use of native wildlife nursery sites?*

Based on a review of the City's General Plan 2042 and General Plan 2042 EIR, the Project site is located in an area not known to contain species identified as candidate, sensitive, or special-status. The General Plan 2042 notes that these types of species are likely to be found within the Los Banos Creek corridor or grasslands located north and east of the City limits. According to the General Plan 2042 EIR, the Project site is not located within 300-feet of a creek, wetlands, sensitive habitat areas, or areas of potential special-status species. In addition, the Proposed Project will be required to comply with General Plan 2042 Policy P-P6.5 should construction occur between March 1st and August 31st and prepare the applicable pre-construction surveys prepared by a qualified biologist in the event the Project site contains nesting birds that are considered to be candidate, sensitive, or special-status.

Based on the above analysis, the Proposed Project will have a **Less Than Significant Impact**.

e. *Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?*

As noted previously, the Proposed Project is consistent with the City's General Plan 2042. The Proposed Project will be required to adhere to the policies of General Plan 2042 as they are applicable to the protection of biological resources, including tree preservation. In addition, the Proposed Project will be required to comply with Title 10, Parks and Recreation and Chapter 1, Trees, Shrubs, and Plants of the Los Banos Municipal Code. Therefore, the Proposed Project will have a **Less Than Significant Impact**.

f. Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

As evaluated and noted in the City's General Plan 2042 and EIR, the City of Los Banos, including the Proposed Project site, is not located within an adopted Habitat Conservation Plan or Natural Community Plan. Therefore, the Proposed Project will have **No Impact.**

MITIGATION MEASURES:

Mitigation is not required for this topic.

5. 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 '15064.5?			X	
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to '15064.5?			X	
c) Disturb any human remains, including those interred outside of formal cemeteries?		X		

IMPACT ANALYSIS

a. Would the project cause a substantial cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

Based on a review of the City's General Plan 2042 EIR, there are thirteen (13) historic resource sites within the City's Planning Area, primarily in the downtown area. None of these sites include the Proposed Project. As such, there are no historic resources or sites as defined by Section 15064.5 of the Government Code within the Proposed Project area. Therefore, the Proposed Project will have a **Less Than Significant Impact.**

b. Would the project cause a substantial adverse chance in the significance of an archaeological resource as defined in §15064.5?

Based on a review of the City's General Plan 2042 and EIR, *"there are seventeen recorded prehistoric archaeological sites and two historic archaeological sites within the Planning Area. Features of the prehistoric archaeological sites include prehistoric villages, occupational sites containing tools and milling equipment, burial grounds, and human skull fragments. The General Plan identifies the Los Banos Creek area as a highly sensitive area for potential archaeological sites."* The Proposed Project is not located within the Los Banos Creek area, and therefore, potential impacts to archaeological resources are considered to be minimal. Therefore, the Proposed Project will have a **Less Than Significant Impact.**

c. Would the project disturb any human remains, including those interred outside of dedicated cemeteries?

It is not anticipated that the Proposed Project will disturb any human remains. However, future development and construction of the Proposed Project site, human remains may be identified, particularly during activities requiring ground disturbance (i.e. grading, trench digging, etc.). As such, the Proposed Project shall incorporate Mitigation Measure No. 5-1, specified below, in accordance with Section 15064.5(e) of the CEQA Guidelines, to reduce any potentially significant impacts to a level of **Less Than Significant with Mitigation Incorporated**.

MITIGATION MEASURES:

The following mitigation measure shall be incorporated into the Proposed Project:

Mitigation Measure 5-1:

In the event of the accidental discovery or recognition of any human remains in any location other than a dedicated cemetery, the following steps shall be taken:

1. There shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until;
    a) The coroner of the County in which the remains are discovered must be contacted to determine that no investigation of the cause of death is required; and,
    b) If the coroner determines the remains to be Native American:
        1. The coroner shall contact the Native American Heritage Commission within 24 hours.
        2. The Native American Heritage Commission shall identify the person or persons it believes to be the most likely descended from the deceased Native American.
        3. The most likely descendent may make recommendations 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.

6. 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?			X	
b) Conflict with or obstruct a State or local plan for renewable energy or energy efficiency?			X	

IMPACT ANALYSIS

The following discussion is an analysis for criteria (a) and (b):

a. *Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?*
b. *Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?*

The Energy Efficiency Standards for Residential and Nonresidential Buildings, as specified in Title 24, Part 6, of the California Code of Regulations (Title 24), was established in 1978 in response to a legislative mandate to reduce California's energy consumption. Title 24 is updated approximately every three (3) years, and the 2016 Title 24 went into effect on January 1, 2017. The City has adopted the 2025 versions of both the California Energy Code and CALGreen.

The California Green Buildings Standards Code (CALGreen) establishes mandatory green building standards for buildings in California. CALGreen was developed to reduce Greenhouse Gas (GHG) emission from buildings, promote environmentally responsible and healthier places to live and work, reduce energy and water consumption, and respond to environmental directives. The most recent update to CALGreen went into effect January 1, 2026, and covers five (5) categories: planning and design, energy efficiency, water efficiency and conservation, material and resource efficiency, and indoor environmental quality. In addition, the California Building Code 2025 update became effective on January 1, 2026, and requires all new homes under three (3) stories high install solar panels and that solar systems be sized to net out the annual kilowatt-hour energy usage of the dwelling. This requirement extends to both single-family and multi-family developments under three (3) stories in height. The Proposed Project will be required to adhere to the new California Building Code requirements including the installation of rooftop solar systems. This mandate will ensure that unnecessary wastefulness of energy resources is limited.

The anticipated construction schedule assumes that the Proposed Project would be building over a period of five (5) to ten (10) years, depending on the construction of the multi-family residential and commercial

components of the Proposed Project. Construction would require site preparation, grading, paving, architectural coating, and trenching. The majority of the site is vacant and requires the demolition of one (1) single-family residential structure and accessory structures. Implementation of the General Plan 2042 Policies and Implementation Actions would reduce energy waste from construction. Therefore, the Proposed Project would not consume energy in a manner that is wasteful, inefficient, or unnecessary. Therefore, the Proposed Project will have a **Less Than Significant Impact**.

MITIGATION MEASURES:

Mitigation is not required for this topic.

7. GEOLOGY AND SOILS -- WOULD THE PROJECT:

	Potentially Significant Impact	*Less Than Significant with Mitigation*	*Less Than Significant Impact*	*No Impact*
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:			X	
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.			X	
ii) Strong seismic ground shaking?			X	
iii) Seismic-related ground failure, including liquefaction?			X	
iv) Landslides?			X	
b) Result in substantial soil erosion or the loss of topsoil?			X	
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?			X	
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1944), creating substantial direct or indirect risks to life or property?			X	
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?			X	
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			X	

The following analysis is based upon the City's General Plan 2042 EIR as well as the Geotechnical Investigation, dated October 11, 2024, prepared by North American Technical Services. This Geotechnical Investigation report is included in Appendix D of this Initial Study.

IMPACT ANALYSIS

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

ii. Strong seismic ground shaking?

iii. Seismic-related ground failure, including liquefaction?

iv. Landslides?

According to the General Plan 2042 Draft EIR, "no active faults are mapped and zoned under the Alquist-Priolo Zoning Act within the Project site. Therefore, the Project site would not experience surface rupture in the event of an earthquake.

The General Plan 2042 Draft EIR also states that impacts due to ground shaking, including liquefaction, are less than significant due to the seismic design of buildings that are governed by the California Building Code (CBC). All structures built within the Proposed Project will be required to comply with the CBC. Therefore, impacts due to ground shaking are considered to be less than significant.

Marginally stable slopes may be subject to landslides caused by earthquakes. The landslide hazard depends on many factors, including existing slope stability, shaking potential, and presence of existing landslides. Given the topography of the site is relatively flat, in addition to the determination that the potential for landslides is less than significant, the Proposed Project will have a less than significant impact for the risk of landslides.

Based on the analysis above, the Proposed Project will have a **Less Than Significant Impact**.

b. Would the project result in substantial soil erosion or the loss of topsoil?

The existing topography of the Project site is relatively flat, with little to no slope. The Proposed Project will require grading activities as part of the development and construction process, and these grading activities will be based upon a Grading Plan that will be reviewed and approved by the City prior to any grading activities. This review process ensures that the Proposed Project will not result in substantial soil erosion or loss of topsoil. Therefore, the Proposed Project will have a **Less Than Significant Impact**.

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?

Based on the Proposed Project's Geotechnical Investigation, landslides are not mapped at or near the Project site and were not observed during field exploration. Seismic induced landslides are not anticipated to occur.

Liquefaction occurs when saturated fine grained sands or silts lose their physical strength during earthquake induced shaking. This is due to loss of point-to-point grain contact and the transfer of normal stress to the pore water. Liquefaction potential varies with water level, soil type, material gradation, relative density, and probably intensity and duration during ground shaking. Seismic settlement can occur with or without liquefaction. The California Geological Survey (CGS) has designated certain areas in California as potential liquefaction hazard zones. The Project site is not designated as a liquefaction hazard zone by the CGS. Based on a review of the Proposed Project's Geotechnical Investigation, the potential for an on or off-site landslide, lateral spreading, subsidence, liquefaction or collapse is relatively low. Therefore, the Proposed Project will have a **Less Than Significant Impact**.

d. Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1944), creating substantial direct or indirect risks to life or property?

Based on a review of the Proposed Project's Geotechnical Investigation (Appendix D), some of the soils encountered within the depth of influence (11.5-feet) are described as stiff to hard low plastic clay. Lab testing of these soils indicates that they have a Liquid Limit (LL) of 25 to 26 and Plastic Index (PI) of 10 to 13. Therefore, the soils located within the Project site are expected to have a low expansive potential. The Geotechnical Investigation recommends the over-excavation of soils within one (1) foot below the base of the proposed footings be required. This requirement will be reflected in the Proposed Project's Conditions of Approval. Therefore, the Proposed Project will have a **Less Than Significant 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?

The Proposed Project will connect to City services, including domestic wastewater. The Proposed Project will not utilize the use of septic tanks or alternative wastewater disposal systems. Therefore, the Proposed Project will have a **Less Than Significant Impact**.

f. Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

The Proposed Project is consistent with the City's General Plan 2042. Based on a review of Section 4.7 of the General Plan 2042 Draft EIR, there are no known unique geologic features within the Project site. However, geologic formations within the Project site have the potential to contain unique paleontological

resources. The Proposed Project is required to comply with the federal Paleontological Resources Preservation Act, which limits the collection of vertebrae fossils and other rare and scientifically significant fossils to qualified researchers who have obtained a permit from the applicable state and/or federal agency. Ground disturbance activities associated with the Proposed Project such as grading and excavating could uncover fossilized remains that have not been recorded. In these cases, implementation protocols of the Society of Vertebrae Paleontology standards will ensure the protection of unique paleontological resources during construction of the Proposed Project.

Based on the above analysis, the Proposed Project will have a **Less Than Significant Impact**.

MITIGATION MEASURES:

Mitigation is not required for this topic.

8. GREENHOUSE GAS EMISSIONS -- WOULD THE PROJECT:

	Potentially Significant Impact	*Less Than Significant with Mitigation*	*Less Than Significant Impact*	*No Impact*
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?				X
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			X	

SETTING:

Human-generated emissions greenhouse gases (GHGs) are understood to be an important cause of global climate change, which is a subject of increasing scientific, public concern, and government action. Atmospheric concentrations of GHGs that trap heat in the earth's atmosphere and lead to a variety of effects, including increasing temperature, changes in patterns and intensity of weather and various secondary effects resulting from those changes, including potential effects on public health and safety.

California AB 32 identifies global climate change as a "serious threat to the economic well-being, public health, natural resources and the environment of California." As a result, global climate change is an issue that needs to be considered under CEQA.

GHGs include carbon dioxide (CO2), the most abundant GHG, as well as methane, nitrous oxide and other gases, each of which have GHG potential that is several times that of CO2. GHG emissions result from combustion of carbon-based fuels; major GHG sources in California include transportation (40.7%), electric power generation (20.5%), industrial (20.5%), agriculture and forestry (8.3%) and others (8.3%).

The State of California is actively engaged in developing and implementing strategies for reducing GHG emissions. State programs for GHG reduction include a regional cap-and-trade program, new industrial and emission control technologies, alternative energy generation technologies, advanced energy conservation in lighting, heating, cooling and ventilation, reduced-carbon fuels, hybrid and electric vehicles, and other methods of improving vehicle mileage reduction programs. Using these and other strategies, the State's Global Climate Change Scoping Plan, adopted in December 2008, proposes to achieve a 29% reduction in projected business-as-usual emission levels for 2020.

The City of Los Banos General Plan 2042 and EIR include policies and mitigation measures that reduce the impact level that is less than significant. Policies P-P12.1 through P-P12.5 and Action P-A12.1 of the City's General Plan 2042 include measures that upon implementation, help reduce the amount of greenhouse gases generated per capita in the City.

The SJVAPCD adopted a Climate Change Action Plan in 2008 and issued guidance for development project compliance with the plan in 2009. The guidance adopted an approach that relies on the use of Best Performance Standards to reduce GHG emissions. Projects implementing Best Performance Standards would be determined to have a less than cumulatively significant impact. For projects not implementing Best Performance Standards, demonstration of a 29% reduction in GHG emissions from business-as-usual conditions is required to determine that a project would have a less than cumulatively significant impact.

REGULATORY SETTING

California Air Resources Board (CARB) is responsible for the coordination and oversight of State and local air pollution control programs in California. California has numerous regulations aimed at reducing the state's GHG emissions. These initiatives are summarized below:

Assembly Bill 1943

Assembly Bill (AB) 1943 (2002), California's Advanced Clean Cars program (referred to as "Pavley"), requires CARB to develop and adopt regulations to achieve "the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles." On June 30, 2009, U.S. EPA granted the waiver of Clean Air Act preemption to California for its greenhouse gas emission standards for motor vehicles beginning with the 2009 model year. Pavley I took effect for model years starting in 2009 to 2016 and Pavley II, which is now referred to as "LEV (Low Emission Vehicle) III GHG" will cover 2017 to 2025. Fleet average emission standards would reach 22 percent reduction from 2009 levels by 2012 and 30 percent by 2016. The Advanced Clean Cars program coordinates the goals of the Low Emission Vehicles (LEV), Zero Emissions Vehicles (ZEV), and Clean Fuels Outlet programs and would provide major reductions in GHG emissions. By 2025, when rules will be fully implemented, new automobiles will emit 34 percent fewer GHGs and 75 percent fewer smog-forming emissions from their model year 2016 levels.

Executive Order S-3-05

In 2005, the governor issued Executive Order (EO) S-3-05, establishing statewide GHG emissions reduction targets. EO S-3-05 provides that by 2010, emissions shall be reduced to 2000 levels; by 2020, emissions shall be reduced to 1990 levels; and by 2050, emissions shall be reduced to 80 percent below 1990 levels (California Environmental Protection Agency [CalEPA]). In response to EO S-3-05, CalEPA created the Climate Action Team (CAT), which in March 2006 published the Climate Action Team Report (the "2006 CAT Report") (CalEPA 2006). The 2006 CAT Report identified a recommended list of strategies that the state could pursue to reduce GHG emissions. These are strategies that could be implemented by various state agencies to ensure that the emission reduction targets in EO S-3-05 are met and can be met with existing authority of the state agencies. The strategies include the reduction of passenger and light duty truck emissions, the reduction of idling times for diesel trucks, an overhaul of shipping technology/infrastructure, increased use of alternative fuels, increased recycling, and landfill methane capture, etc. In April 2015 the governor issued EO B-30-15, calling for a new target of 40 percent below 1990 levels by 2030.

Assembly Bill 32

California's major initiative for reducing GHG emissions is outlined in Assembly Bill 32 (AB 32), the "California Global Warming Solutions Act of 2006," signed into law in 2006. AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020 (essentially a 15 percent reduction below 2005 emission levels; the same requirement as under S-3-05) and requires CARB to prepare a Scoping Plan that outlines the main State strategies for reducing GHGs to meet the 2020 deadline. In addition, AB 32 requires CARB to adopt regulations to require reporting and verification of statewide GHG emissions. California is on track to meet or exceed the current target of reducing GHG emission to 1990 levels by 2020, as established by AB 32.

Senate Bill 97

Senate Bill (SB) 97, signed in August 2007, acknowledges that climate change is an environmental issue that requires analysis in California Environmental Quality Act (CEQA) documents. In March 2010, the California Resources Agency (Resources Agency) adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted guidelines give lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts.

CARB Resolution 07-54

CARB Resolution 07-54 establishes 25,000 MT of GHG emissions as the threshold for identifying the largest stationary emission sources in California for purposes of requiring the annual reporting of emissions. This threshold is just over 0.005 percent of California's total inventory of GHG emissions for 2004.

Senate Bill 375

Senate Bill (SB) 375, signed into law in September 2008, builds on AB 32 by requiring CARB to develop regional GHG reduction targets to be achieved from the automobile and light truck sectors for 2020 and 2035; these regional targets will help achieve the goals of AB 32 and the Scoping Plan through changed land use patterns and improved transportation systems. The Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG) adopted a Sustainable Community Strategies in July 2013 that meets greenhouse gas reduction targets. The *Plan Bay Area* is the SCS document for the Bay Area, which is an integrated long-range plan that discusses climate protection, housing, healthy and safe communities, open space and agricultural preservation, equitable access, economic vitality, and transportation system effectiveness within the San Francisco Bay Area. The document is updated every four years and most recently, the update, *Plan Bay Area 2040,* was adopted on July 26, 2017.

Executive Order S-13-08

Executive Order S-13-08 indicates that "climate change in California during the next century is expected to shift precipitation patterns, accelerate sea level rise and increase temperatures, thereby posing a serious threat to California's economy, to the health and welfare of tis population and to its natural resources." Pursuant to the requirements in the order, the 2009 California Climate Adaptation Strategy (California Natural Resources Agency 2009) was adopted, which is the "…first statewide, multi-sector, region-specific, and information-based climate change adaption strategy in the United States." Objectives

include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research.

Senate Bill 2X
In April 2011, the governor signed SB2X requiring California to generate 33 percent of its electricity from renewable energy by 2020.

Senate Bill 32
On September 8, 2016, the governor signed Senate Bill 32 (SB 32) into law, which requires the State to further reduce GHGs to 40 percent below 1990 levels by 2030. SB 32 is an extension of AB 32. The other provisions of AB 32 remain unchanged. CARB adopted the 2017 Climate Change Scoping Plan Update on December 14, 2017, to achieve California's 2030 greenhouse gas target.

IMPACT ANALYSIS

a. *Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?*
b. *Would the project conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?*

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors. Therefore, the cumulative global emissions of GHGs, contributing to global climate change could be attributed to every nation, region, and city, and virtually every individual on Earth. The Proposed Project's GHG emissions are at a micro-scale relative to global emissions but could result in a cumulatively considerable incremental contribution to a significant cumulative macro-scale impact.

Implementation of the Proposed Project would contribute to the increase of GHG emissions that are associated with global climate change. Emissions of GHG attributed to future development would be primarily associated with increases in CO2 and other GHG pollutants, including CH4 and N2O, from mobile sources and utility usage. It should be noted that construction-related GHG emissions are a one-time release and are, therefore, not typically expected to generate a significant contribution to global climate change, as global climate change is inherently a cumulative effect that occurs over a long period of time.

As part of the Air Quality analysis (Section 3), a CalEEMod Analysis (Appendix D) was prepared to estimate the Proposed Project's air quality impacts associated with construction and operation. As stated above, construction is a one-time release while operation impacts occur over a period of time. As illustrated in the CalEEMod Analysis, the estimated maximum of CO2e per year of construction is 734.55 metric tons of GHG emissions, which would cease when the construction of the Proposed Project is complete. The Proposed Project operations are estimated to generate approximately 12,025.92 metric tons CO2e per year when project features and measures to reduce GHG are not considered.

The long-term operational GHG emissions estimate for buildout of the Proposed Project incorporates the potential area source and vehicle emissions, and emissions associated with utility and water usage, and wastewater and solid waste generation. The modeling included mitigation inputs including the following:

Traffic Mitigation

- Increase Transit Accessibility in the Project Area (minimum distance to transit stops is 0.1 miles)
- Improve Pedestrian Network so that the Project Area connects to offsite pedestrian networks
- Implement School Bus Program to Achieve 45% ridership

Energy Mitigation

- Exceed Title 24 by 15%
- Install High Efficiency Lighting
- Install High Efficiency Appliances

Area Mitigation

- Use low VOC Paint – Residential Interior and Exterior
- Use low VOC Paint – Non-Residential Interior and Exterior
- Use low VOC Paint – Parking
- Use Only Natural Gas Hearths

Water Mitigation

- Install Low-Flow Bathroom Faucet
- Install Low-Flow Kitchen Faucet
- Install Low-Flow Toilet
- Install Low-Flow Shower
- Use Water-Efficient Irrigation Systems

When such features and measures are considered, the estimated Proposed Project operational emissions are approximately 8,263.42 CO2e, a decrease of approximately 31.28% from "business-as-usual" (unmitigated) levels.

As stated previously, short-term construction GHG emissions are a one-time release of GHGs and are not expected to significantly contribute to global climate change over the lifetime of the Proposed Project. Construction GHG emissions from the Proposed Project do not impede local GHG reduction efforts, or violate GHG reduction goals set by AB 32, as required by Public Resources Code, Section 21082.2. Additionally, Mitigation Measure 3-1 requires the Project Applicant to coordinate with SJVAPCD as it relates to the requirements of District Rule 9510, which is intended to reduce construction related

emissions. Therefore, cumulatively these construction emissions would not generate a significant contribution to global climate change.

With the implementation of the following Mitigation Measure and the Mitigation Measures presented in Section 3: *Air Quality*, the overall annual GHG emissions associated with the Proposed Project would be reduced by 31.3 percent relative to the BAU scenario, consistent with applicable standards and thresholds of a 29 percent reduction. Because the Proposed Project would meet the 29 percent minimum reduction threshold, the Proposed Project would be consistent with the GHG reduction percentage sought by the State's Scoping Plan.

In addition, California Code of Regulations (CCR) Title 24, Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. Since then, Title 24 has been amended with recognition that energy efficient buildings require less electricity and reduce fuel consumption, which in turn decreases GHG emissions. The current Title 24 standards were adopted in response to the requirements of AB 32. Specifically, new development projects within California, after January 1, 2011, are subject to the mandatory planning and design, energy efficiency, water efficiency and conservation, material conservation and resources efficiency, and environmental quality measures of the California Green Building Standards (CALGreen) Code (California Code of Regulations, Title 24, Part 11).

Therefore, impacts related to GHG emissions and global climate change would be considered **Less Than Significant with Mitigation Incorporated** with the implementation of Mitigation Measure 8-1, described below.

MITIGATION MEASURES:

The following mitigation measure shall be incorporated into the Proposed Project:

Mitigation Measure 8-1:

Along with the Mitigation Measure contained in Section 3: *Air Quality*, the Project Applicant shall institute the following mitigation measure during construction and operation of the Proposed Project to reduce Greenhouse Gas Emissions and Energy Consumption.

- Increase transit accessibility in the Project Area by ensuring a minimum distance of 0.1 miles to transit stops.
- Ensure that the pedestrian network within the Project Area connects to offsite pedestrian networks.
- Exceed Title 24 by 15% through verified compliance with CALGreen Tier 1 efficiency requirements.
- Install high efficiency lighting and appliances within all units and commercial buildings.
- Install low-flow faucets, toilets, and showers as applicable.
- Use water-efficient irrigation systems throughout the Plan Area.

9. 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?		X		
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment?			X	
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?		X		
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 to the public or the environment?				X
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?			X	
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?				X

IMPACT ANALYSIS

a. Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

The project site is surrounded by existing urban uses on the north, east, and west. The Proposed Project consists of a General Plan Amendment, Annexation and Prezone, Specific Plan, and Vesting Tentative Tract Map. It is not anticipated that the Proposed Project will include the transport, use, or disposal of

hazardous materials. Furthermore, future commercial land uses will be required to adhere to the City's General Plan 2042, City Ordinances and Policies and Implementation Actions as it relates to the handling and transportation of hazardous materials. Such Policies and Implementation Actions include the following:

Policy S-3 Protect Los Banos' ecosystem and residents from harm resulting from the improper production, use, storage, disposal, or transportation of hazardous materials.

Implementing Action S-A3.1 Coordinate enforcement of the Hazardous Material Disclosure Program with the Merced County Health Department to identify facilities producing, using, or storing hazardous materials.

Implementing Action S-A3.2 Promote the reduction, recycling, and safe disposal of household hazardous wastes through public education and awareness.

Implementing Action S-A3.3 Review, update, and implement the City's Hazardous Material Plan on a continual basis. This will include preparing guidelines on transporting hazardous material and the need for coordination with the California Highway Patrol.

The project site has historically been utilized for agricultural purposes, and as such, there may be hazardous materials within the soil. Therefore, prior to the issuance of a demolition permit to remove any structures on the project site, the Project Applicant and/or Project Proponent shall prepare and submit to the City a Phase I/Environmental Site Assessment (ESA). The recommendations of the Phase I/ESA shall be incorporated into the subsequent Proposed Project, as necessary. Therefore, the Proposed Project will have a **Less Than Significant Impact With Mitigation Incorporated**. *(Refer to Mitigation Measure 5-1, below)*

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?

Development of the Proposed Project area will comply with all federal, state, and local policies and regulations related to the construction of the Proposed Project. Therefore, the Proposed Project will have a **Less Than Significant Impact.**

c. Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?

The Proposed Project is located less than one-quarter mile of Los Banos High School, which is located at 1966 South 11th Street, west of the project site as well as Mercey Springs Elementary School, which is

located at 1900 Mercey Springs Road to the east. As indicated above, the Proposed Project includes the annexation of 111.7 acres of land for the purposes of development of residential (single-family and multi-family uses) and commercial uses. The Proposed Project includes the demolition of structures on the site which may have been built with hazardous materials (primarily asbestos and lead paint). To protect construction works and the environment, Mitigation Measure 5-1 is included which requires the Project Applicant and/or Project Proponent to prepare and submit to the City a Phase I/Environmental Site Assessment (ESA) prior to the issuance of a demolition permit to remove any structures on the project site.

If found, the hazardous materials are to be removed by an accredited inspector in accordance with the EPA and CalOSHA. Therefore, the Proposed Project will have a **Less Than Significant Impact With Mitigation Incorporated**. ***(Refer to Mitigation Measure 9-1, below)***

d. Would the project be located on a site 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?

Table 7-2 of the City's General Plan 2042 provides a list of hazardous sites within the City of Los Banos. Based on a review of Table 7-2, the Proposed Project is not located on a site identified as hazardous. Therefore, the Proposed Project will have **No Impact**.

The following discussion is an analysis for criteria (e) and (f):

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?

f. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

The Los Banos Municipal Airport is located within the City of Los Banos. The Los Banos Municipal Airport is a general aviation facility with a single paved runway 3,800 feet in length. According to the Merced County Airport Land Use Compatibility Plan, adopted June 21, 2012, the Proposed Project is located outside of the airport's "Airport Influence Area." Therefore, the Proposed Project will have a **Less Than Significant Impact.**

The Proposed Project is not located within the vicinity of any documented or known private airstrips. Therefore, the Proposed Project will have **No Impact.**

g. Would the project expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

The Proposed Project is located within a pocket of an urban area and is surrounded by existing City of Los Banos development on the north, east, and west sides. As such, no wild land exists within or adjacent to the Proposed Project. Therefore, the Proposed Project will have a **Less Than Significant Impact**.

MITIGATION MEASURES:

The following mitigation measure shall be incorporated into the Proposed Project:

Mitigation Measure 9-1:

Prior to the issuance of a demolition permit to remove any structures on the project site, the Project Applicant and/or Project Proponent shall prepare and submit to the City a Phase I/Environmental Site Assessment (ESA). The recommendations of the Phase I/ESA shall be incorporated into the Proposed Project, as deemed necessary by City staff.

10. HYDROLOGY AND WATER QUALITY -- Would the project:

	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 substantially degrade surface or groundwater quality?			X	
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?			X	
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:			X	
i) Result in substantial on- or offsite erosion or siltation;			X	
ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;			X	
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			X	
iv) Impede or redirect flood flows?			X	
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?			X	
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?			X	

IMPACT ANALYSIS

The following discussion is an analysis for criteria (a) and (c):

a. Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

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 on- or offsite erosion or siltation;*
    ii. *Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;*
    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*
    iv. *Impede or redirect flood flows?*

The Proposed Project is 111.7 acres in size and the topography is relatively flat. The project site is located 15.87 miles west of the San Joaquin River. According to the City's General Plan 2042 Environmental Impact Report (EIR), the City of Los Banos is located in the Delta-Mendota Groundwater Basin of the San Joaquin River Hydrologic Region.

The project site is not located in a flood hazard zone (i.e. a 100-year flood zone) as identified by the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map Number 06047C0850C. The construction of the site improvements (i.e. construction of roads, parking area for multi-family and commercial uses, and the buildings) will reduce absorption rates and increase surface water runoff. Final storm drainage designs will be required to comply with City standards and will be reviewed and approved by the City Engineer for each portion of the Proposed Project (i.e. residential and commercial). Any increased runoff shall be mitigated as required by the Public Works Department. The improvement plans for stormwater will be required to adhere to the City's Storm Water Management Plan.

The Proposed Project requires a National Pollutant Discharge Elimination System (NPDES) permit, issued by the Regional Water Quality Control Board (RWQCB), and compliance with Best Management Practices (BMPs) during construction and operation of the Proposed Project. The Proposed Project shall incorporate Low Impact Development Standards (LID) design parameters, as well as include a Storm Water Pollution Prevention Plan (SWPPP) to reduce the discharge of pollutants to the maximum extent feasible.

Compliance with the applicable City ordinances and General Plan 2042 requirements for construction activities would ensure that construction of the Proposed Project does not result in significant impacts to water quality and does not result in a violation of any water quality standards. Therefore, with the compliance of the Regional Water Quality Control Board requirements, BMPs, and the City's regulatory policies pertaining to stormwater runoff, the Proposed Project will have a **Less Than Significant Impact**.

b. *Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?*

According to the City's General Plan 2042, the Project site is identified as being designated for development of various residential and commercial land uses. Domestic water serving the Proposed Project will be provided by the City of Los Banos. The Proposed Project will connect to the City's domestic water system via a system of water lines installed in Mercey Springs Road and Pioneer Road and then routing throughout the Proposed Project to service the individual lots. The City's General Plan 2042 EIR states that the City's 2020 Urban Water Management Plan (UWMP) determined that adequate water supply can be provided with the buildout of the General Plan 2042.

As previously noted, the Project site is within the City's Sphere of Influence and Planning Area. The Proposed Project will increase the water demand, as the Proposed Project is required to connect to City services once annexed, including potable water. However, it is not anticipated that the Proposed Project will substantially decrease groundwater supplies or interfere substantially with groundwater recharge. The Developer and/or Project Proponent is required to install the water system to serve the subdivision and multi-family and commercial components per City Standards and pay applicable Public Facility Fees for the expansion of the water system, as necessary. Therefore, the Proposed Project will have a **Less Than Significant Impact**.

d. Would the project, In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

The Proposed Project is not located within a 100-year flood hazard area, a floodway or otherwise placed in an area that would interfere with flood flows. The project site is located 15.87 miles west of the San Joaquin River and 4.5 miles from the 100-year flood boundary (located at the Los Banos Wildlife Area to the north).

No enclosed surface water bodies, which might be subject to potential seiches, are located in the project site vicinity. Based on its location, inland from coastal areas, the project site would not be subject to tsunami effects. The project site is not located in an area susceptible to mudflows. Therefore, the Proposed Project will have a **Less Than Significant Impact**.

e. Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

The Proposed Project will connect to the City of Los Banos domestic water system once annexed and developed which does not include the development of any new wells. The Proposed Project will not conflict with or obstruct implementation of a water quality control or sustainability groundwater management plan. The Project Developer will be required to pay Public Facility Fees, and those fees will be used to improve the water system per the City's General Plan 2042 and the Water Master Plan. Therefore, the Proposed Project will have a **Less Than Significant Impact**.

MITIGATION MEASURES:

There are no mitigation measures for this topic.

11. LAND USE AND PLANNING - Would the project:

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
a) Physically divide an established community?			X	
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?			X	

IMPACT ANALYSIS

a. Would the project physically divide an established community?

The Proposed Project is located adjacent to the City of Los Banos, which is an urbanized City located along the Interstate 5 corridor. Specifically, the Proposed Project is located in a pocket surrounded by existing City development on the north, east, and west sides of the project site. Subsequent development shall connect to existing streets and services within the City. Therefore, the Proposed Project would not physically divide the established community and would have a **Less Than Significant Impact.**

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?

The Proposed Project is consistent with the land use designations of the adopted General Plan 2042. In addition, the Proposed Project will be required to comply with the development standards contained in the City's Zoning Ordinance, unless otherwise specified in the Specific Plan (Appendix A). Therefore, the Proposed Project will have a **Less Than Significant Impact**.

MITIGATION MEASURES:

Mitigation is not required for this topic.

12. MINERAL RESOURCES -- WOULD THE PROJECT:

	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?			X	
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?			X	

IMPACT ANALYSIS

The following discussion is an analysis for criteria (a) and (b):

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?*
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 land use plan?*

The Proposed Project is consistent with the City's General Plan 2042. Based on a review of the General Plan 2042 Draft EIR, there are no known significant mineral resources within the EIR Study Area, which includes the Project site. The General Plan 2042 Draft EIR further notes that historically, no mineral resources have been identified and exploited. The General Plan 2042 Draft EIR concluded that impacts to mineral resources were found not to be significant.

Therefore, the Proposed Project will have a **Less Than Significant Impact**.

MITIGATION MEASURES:

Mitigation is not required for this topic.

13. 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 in other applicable standards of other agencies?		X		
b) Generation of excessive ground borne vibration or ground borne noise levels?			X	
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, would the project expose people residing or working in the project area to excessive noise levels?				X

The Environmental Noise and Vibration Assessment, dated September 25, 2025, prepared by Bollard Acoustical Consultants, Inc., is attached to this Initial Study as Appendix E. In addition, page references provided below are in reference to pages in the Environmental Noise and Vibration Assessment found in Appendix E.

Criteria for Acceptable Noise and Vibration Exposure

FEDERAL

Standards for acceptable noise and vibration exposure in the City of Los Banos are contained within the City's General Plan and /or within the City's Municipal Code. The criteria which are applicable to this project are reproduced below.

FEDERAL TRANSIT ADMINISTRATION (FTA)

Although no standardized criteria have been developed for assessing construction noise impacts, The Federal Transit Administration's *Transit Noise and Vibration Impact Assessment Manual* contains guidance for use in assessing potential noise associated with project construction.

Where local noise ordinances provide guidance with respect to construction noise, they typically relate to nuisance and hours of allowed activity, and sometimes specify limits in terms of maximum levels, but are generally not practical for assessing the impact of a construction project. The following guidelines can be

considered reasonable criteria for assessment: construction noise levels of 90 dBA L_{eq} and 80 dBA L_{eq}[1] at residential land uses during daytime and nighttime hours, respectively. If these criteria are exceeded, there may be adverse community reaction.

State of California

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Appendix G of the CEQA Guidelines asks whether the project would result in any of the following to determine whether a significant noise or vibration impact would occur:

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 other applicable standards of other agencies; or

B. Generation of excessive ground borne vibration or ground borne noise levels; or

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, the project exposes people residing or working in the project area to excessive noise levels.

It should be noted that audibility is not a test of significance according to CEQA. As indicated in the Appendix G criteria listed above; to be considered significant, noise associated with a project must either exceed established standards or be an excessive or substantial increase in noise levels.

CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS)

The City of Los Banos does not currently have adopted standards for ground borne vibration. As a result, the vibration impact criteria developed by the California Department of Transportation (Caltrans) was applied to the project. The Caltrans guidance criteria for building structure and vibration annoyance are presented in Tables 6 and 7, respectively.

Table 6 - Caltrans Guidance for Building Structure Vibration Criteria

Structure and Condition	Limiting PPV (in/sec)
Historic and some old buildings	0.5
Residential structures	0.5
New residential structures	1.0
Industrial buildings	2.0
Bridges	2.0
PPV = Peak Particle Velocity	

Source: 2020 Caltrans Transportation and Construction Vibration Guidance Manual, Table 14

Table 7 - Caltrans Guidance for Vibration Annoyance Potential Criteria

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Severe/very disturbing	2.0	0.4 to 3.6
Strongly perceptible	0.9	0.1
Distinctly perceptible	0.24	0.035
Barely/slightly perceptible	0.035	0.012

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent sources include pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers and vibratory compaction equipment.

PPV = Peak Particle Velocity

Source: 2020 Caltrans Transportation and Construction Vibration Guidance Manual, Tables 4 & 6

LOCAL

LOS BANOS GENERAL PLAN 2042

The Safety and Noise Element of the Los Banos General Plan 2042 provides policies and implements actions to ensure that City residents are not subjected to noise beyond acceptable levels. Specific General Plan policies and implementing actions of relevance to the CEQA evaluation for the project are reproduced below.

Policy S-P8.1 Use the community noise level exposure standards, shown in Figure 7-10 (Figure 8 of this Initial Study), as review criteria for new land uses.

Policy S-P8.2 Require a noise study and mitigation measures for all projects that have noise exposure greater than "normally acceptable" levels based on Table 7-3 (not reproduced in this document). Require that new multi-family and single-family housing projects, hotels, and motels exposed to a Community Noise Equivalent Level (CNEL) of 60 dB or greater have a detailed acoustic analysis describing how the project will provide an interior CNEL of 45 dB or less, pursuant to Title 24, Part 2, of the California Code of Regulations. These measures may include, but are not limited to, the following actions:

- Screen and control noise sources, such as parking and loading facilities, outdoor activities and mechanical equipment;
- Increase setbacks for noise sources from adjacent dwellings;
- Install fences, walls, and landscaping that serve as noise buffers;
- Used forced-air mechanical ventilation and soundproofing materials and double-glazed windows, or a combination thereof; and
- Control hours of operation, including deliveries and trash pickup, to minimize noise impacts.

Policy S-P8.3 Promote the use of noise attenuation measures to improve the acoustic environment inside residences where existing single-family residential development is located on an arterial street.

Policy S-P8.4 Discourage sound walls, except along freeways, unless they are needed as a measure of last resort. In all other instances, permit sound walls only upon finding that alternative noise attenuation measures are not available. As an alternative to sound walls, use "quiet pavement" such as rubberized asphalt or open-grade asphalt concrete overlays. Roadway noise reduction of up to 6-7 dBA compared to conventional asphalt overlay may be possible, but the effective lifespan of such pavement should be considered.

Policy S-P8.5 Protect especially sensitive uses, including schools, hospitals, and senior care facilities, from excessive noise.

Policy S-P8.6 Require the use of Best Available Control Technology (BACT) to minimize noise from all stationary sources as well as mobile/temporary sources, such as operation of construction equipment.

Action S-A8.1 Prohibit long-term (traffic) noise increases above the following at existing sensitive receptor property lines, or new uses that generate noise levels at a sensitive receptor property line:

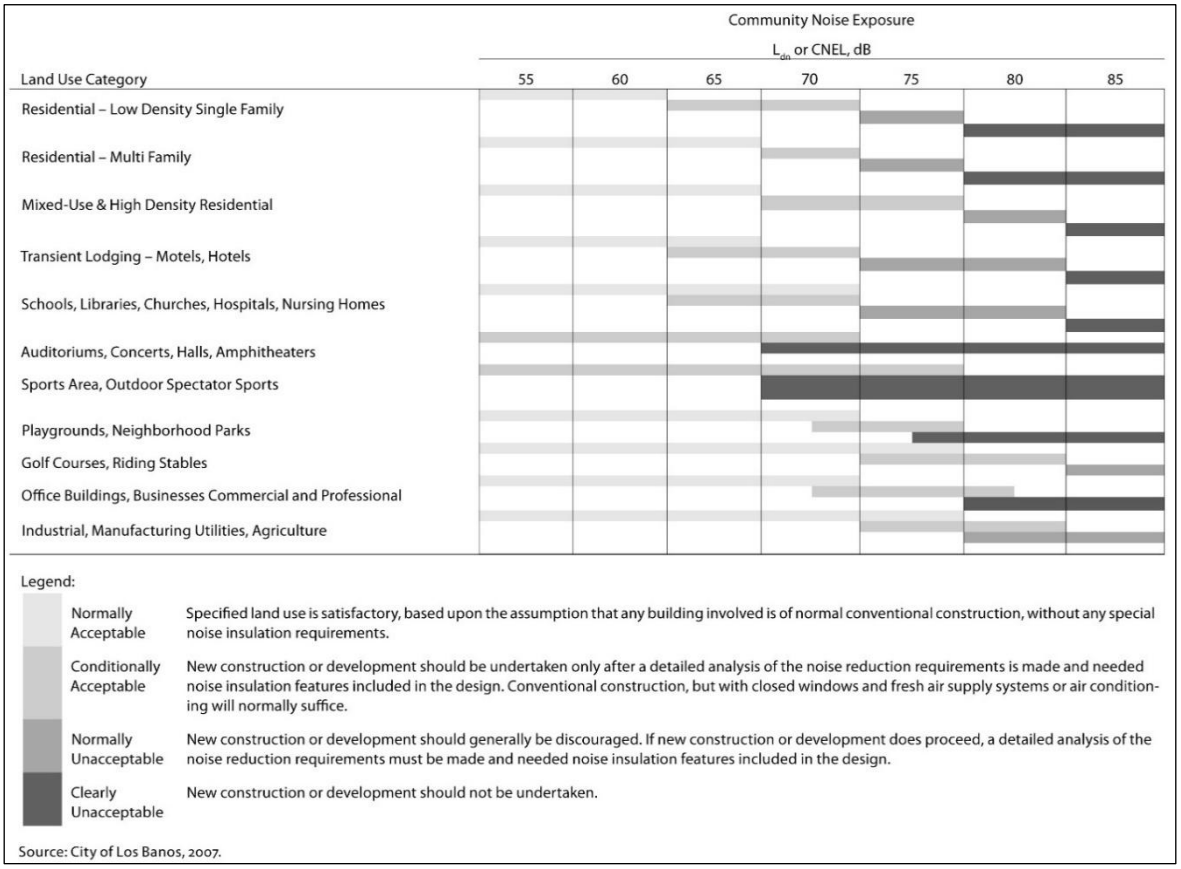
- Greater than 1.5 dBA CNEL increase for ambient noise environments of 65 dBA CNEL and higher;
- Greater than 3 dBA CNEL increase for ambient noise environments of 60 dBA CNEL to 64 dB CNEL; and
- Greater than 5 dBA CNEL increase for ambient noise environments of less than 60 dBA CNEL.

For projects that exceed these noise increases due to project-generated traffic noise, a "fair share" fund shall be considered where projects exceeding these increases pay into a fund for roadway improvements (e.g., repaving with quiet pavement to reduce traffic noise levels).

Action S-A8.2 Work with the Los Banos Airport to minimize noise impacts of flight operations on existing noise-sensitive development.

Action S-A8.3 The City shall establish and adopt a list of construction best management practices to be implemented during the construction phase and incorporated into Los Banos Municipal Code Article 27, Noise Control, to protect noise sensitive receptors (e.g., residences, schools, and hospitals) from the temporary effects of construction noise. The City of Los Banos Building Department shall verify that construction best management practices, as appropriate, are on the demolition, grading, and construction plans prior to issuance of demolition, grading and/or building permits.

Figure 8 - Land Use Compatibility Guidelines for Community Noise Environments



LOS BANOS MUNICIPAL CODE

The provisions of the Los Banos Municipal Code of relevance to the CEQA evaluation for the project are reproduced below.

9-3.2704 Exterior Noise Standards

(a) It is unlawful for any person at any location within the City to create any noise, or to allow the creation of any noise, on property owned, leased, occupied, or otherwise controlled by such person which noise causes the exterior noise level, when measured on any other property, to exceed the noise level standards set forth in the following table:

Table 8 - Receiving Land Use

Noise Metric	Cumulative Number of Minutes in Any One-Hour Time Period	Residential, Schools, Hospitals, Churches, Libraries	
		Daytime (7 AM to 10 PM)	Nighttime (10 PM to 7 AM)
L_{50}	30	55	45
L_{25}	15	60	50
L_{08}	5	65	55
L_{02}	1	70	60
L_{max}	0	75	65

(b) In the event the measured ambient noise level without the alleged offensive source in operation exceeds an applicable noise level standard in the table set forth in subsection (a) of this section, the applicable standard or standards shall be adjusted so as to equal the ambient noise level.

(c) Each of the noise level standards specified in the table set forth in subsection (a) of this section shall be reduced by five dB for pure tone noises, noises consisting of primary of speech or music, or for recurring impulsive noises.

9-3.2706 Noise source exemptions.

The following activities shall be exempted from the provisions of this chapter:

(a) Activities conducted in public parks, public playgrounds, and public or private school grounds, including, but not limited to, school athletics, school entertainment, or civic events;

(c) Noise sources associated with construction provided such activities do not take place before 7:00 a.m. or after 9:00 p.m. on any day, except Saturday or Sunday, or before 8:00 a.m. or after 5:00 p.m. on Saturday or Sunday;

(d) Noise sources associated with the maintenance of residential property provided such activities take place between the hours of 7:00 a.m. and 9:00 p.m. on any day, except Saturday or Sunday, or between the hours of 8:00 a.m. and 9:00 p.m. on Saturday or Sunday;

(e) Noise sources associated with the collection of waste or garbage from property devoted to commercial or industrial uses;

(f) Noise sources associated with existing food processing, agricultural packing, dairy or other industrial or commercial operations provided the noise levels generated by such operations do not exceed current levels. Any new construction or expansion (but not the repair or replacement of existing equipment) of such operations shall not exceed the exterior noise level standards set forth in Section 9-3.2704 of this article.

IMPACT ANALYSIS

a. Would the project result in the 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 in other applicable standards of other agencies?

b. Would the project result in the Generation of excessive ground borne vibration or ground borne noise levels?

Increases in Existing Traffic Noise Levels due to the Project

The FHWA Traffic Noise Model (FHWA-RD-77-108) was used to quantify increases in existing traffic noise levels at the existing sensitive land uses nearest to the project area roadway network. The FHWA Model predicts hourly L_{eq} values for free-flowing traffic conditions. Estimates of the hourly distribution of traffic for a typical 24-hour period were used to develop DNL values from L_{eq} values.

Traffic data in the form of peak hour intersection turning movements were obtained from traffic impact analysis prepared by the project transportation consultant (Fehr & Peers). Those data were converted to Average Daily Traffic (ADT) segment volumes by applying a factor of 5 to the sum of AM and PM peak hour conditions. Other inputs were derived from published Caltrans truck data, BAC observations, and file data for similar roadways. Appendices E and F contain the FHWA Model inputs for Existing No Project and Existing Plus Project conditions, respectively. The Existing No Project and Existing Plus Project traffic noise levels at the distances representing the nearest existing sensitive land uses to the roadway segments analyzed within the project roadway network are summarized in Table 7. Table 7 also shows the thresholds for determination of a significant traffic noise increase, whether the roadway segment contains sensitive uses, and whether significant noise impacts are identified for each segment. A significant impact would be identified only along segments where the project-related traffic noise level increase would exceed applicable significance threshold and where sensitive receptors are present along the roadway segment.

It should be noted that the FHWA Model does not account for non-traffic ambient noise sources such as nearby wildlife or other anthropogenic noise sources within an area. Consideration of such sources typically results in higher ambient noise levels (i.e., existing no project) than those predicted by the FHWA Model alone.

As shown in Appendix E, project-generated traffic noise level increases would not result in significant noise impacts at existing noise-sensitive receptors located along the project area roadway network in the Existing No Project vs. Existing Plus Project conditions analysis. As a result, the Proposed Project will have a ***Less Than Significant***.

Project Commercial Operations Noise at Existing Sensitive Uses

According to the project site plans, a 1.9-acre lot and a 0.8-acre lot adjacent to Mercey Springs Road are proposed to be developed for neighborhood commercial land uses (Lots C and D in Figure 2). Per the Los Banos General Plan, areas zoned as neighborhood commercial are intended to provide small-scale office space or retail stores that are accessible by pedestrians and automobiles. These commercial uses would bring the possibility of noise impacts associated with operations of roof-mounted air handling units associated with building heating, ventilation and air-conditioning (HVAC), refuse collection, and truck deliveries. The nearest existing sensitive use to proposed commercial Lot C is located approximately 160 feet to the northeast (property line of a single-family residence across Mercey Springs Road). The closest existing sensitive use to proposed commercial Lot D is located approximately 100 feet to the east (property line of Mercey Springs Elementary School).

Section 9-3.2704(b) of the City of Los Banos Municipal Code states if measured ambient noise levels exceed the established noise level limits, the applicable standard shall be adjusted so as to equal the measured ambient noise level. The ambient noise data presented in Table 1 indicate that average measured hourly noise levels at Site LT-1, located approximately 50 feet from the centerline of Mercey Springs Road, were elevated during the entire monitoring period (daytime and nighttime). The measured elevated noise levels are believed to be primarily attributed to traffic.

The property boundary for Mercey Springs Elementary School is located approximately 50 feet from the centerline of Mercey Springs Road – the same distance to the roadway as Site LT-1. Based on the measured elevated ambient noise level environment adjacent to Mercey Springs Road, it is expected that noise levels associated with future commercial operations within proposed Lots C and D would be below the ambient noise level environment at the nearest existing sensitive uses (i.e., residences and Mercey Springs Elementary School) – which would satisfy the noise level criteria identified in Section 9-3.2704(b) of the City of Los Banos Municipal Code. Based on the analysis above, the Proposed Project will have a ***less than significant***.

On-Site Construction Activity Noise Generation

During project construction, heavy equipment would be used for demolition of existing structures, grading, excavation, paving, and building construction. These activities would increase ambient noise levels in the immediate project vicinity. Construction noise levels generated at the project site would vary depending on the type and amount of equipment in use at any time, the location where that equipment is operating, and how well the equipment is maintained. Noise exposure at existing, off-site, sensitive receptors would also vary depending on the proximity of equipment activities to the receptor, the degree of shielding present between the construction equipment and receptor (i.e., soundwalls), etc.

Table 9 provides the range of maximum noise levels for equipment commonly used in general construction projects at full-power operation at distance of 50 feet. Not all of these construction activities would be required of this project.

Table 9 - Maximum Reference Noise Levels for Common Construction Equipment

Equipment Description	Maximum Noise Level at 50 Feet (dBA)
Air Compressor	80
Backhoe	80
Ballast Equalizer	82
Ballast Tamper	83
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Crane, Mobile	83
Dozer	85
Generator	82
Grader	85
Impact Wrench	85
Jack Hammer	88
Loader	80
Paver	85
Pneumatic Tool	85
Pump	77
Rail Saw	90
Saw	76
Scarifier	83
Scraper	85
Shovel	82
Spike Driver	77
Tie Cutter	84
Tie Inserter	85
Truck	84

Source: 2018 Federal Transit Administration Noise and Vibration Impact Assessment Manual, Table 7-1

The nearest existing sensitive receptors to the project site have been identified as residences located to the west. The distances from these residences to the most significant sources of on-site construction would vary depending on the phase of construction. For a general assessment of potential construction noise impacts, the FTA recommends utilizing the noise emission levels shown in Table 8, adjusting those levels for the percentage of the hour the equipment would be operating, correcting for distance by assuming mobile equipment operates at the center of the project, and considering ground effects where appropriate.

For this project, there will be periods of time when the construction equipment is located closer to existing residences than the effective center of the project site, so calculating construction noise from the center of the site is not considered appropriate for this evaluation. However, because the noisiest construction equipment tends to be mobile (i.e. earthmoving equipment), calculating construction noise levels using the closest point of construction activity to existing residences is also not considered appropriate. For this evaluation, a distance of 50 feet was conservatively assumed for the construction noise evaluation distance.

After correction for usage and multiple equipment operating concurrently, project construction noise was calculated using the Federal Highway Administration's Roadway Construction Noise Model (RCNM), to be approximately 85 dBA L_{eq}. The RCNM analysis conservatively assumed concurrent operation of a dozer, front loader, compactor, backhoe, and grader at a distance of 50 feet from the nearest residence. While an estimated construction noise level of 85 dBA L_{eq} would be considered satisfactory relative to FTA noise standards during daytime hours, this level would be considered excessive during nighttime hours.

Section 9-3.2706(c) of the City of Los Banos Municipal Code exempts noise sources associated with construction provided such activities do not take place before 7:00 a.m. or after 9:00 p.m. on any day, except Saturday or Sunday, or before 8:00 a.m. or after 5:00 p.m. on Saturday or Sunday. Provided construction activities within the project area occur pursuant to the Municipal Code Section 9-3.2706(c), project construction activities would be exempt, and this impact would be identified as less than significant. However, if construction activities are proposed during the hours not exempted by the Municipal Code, noise levels generated by construction activities could result in annoyance at nearby existing residential uses. As a result, the Proposed Project will have a **potentially significant impact**.

To reduce the potentially significant impact to a level of less than significant, the following mitigation measure will be incorporated into the Proposed Project:

Mitigation Measure 13 -1:

The following measures shall be incorporated into the project on-site construction operations:

- Noise-generating construction activities within the project area shall occur pursuant to the hours and days exempted in Section 9-3.2706(c) of the Los Banos Municipal Code.
- All noise-producing project equipment and vehicles using internal-combustion engines shall be equipped with manufacturers-recommended mufflers and be maintained in good working condition.
- All mobile or fixed noise-producing equipment used on the project site that are regulated for noise output by a federal, state, or local agency shall comply with such regulations while in the course of project activity.
- Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be located as far as practicable from existing residences.

- In the event that unusual circumstances or emergencies prevent certain project construction activities from complying with Section 9-3.2706(c) of the Los Banos Municipal Code, then a noise control plan shall be developed to ensure that sufficient mitigation is implemented during project construction to ensure adverse noise impacts are avoided.

On-Site Project Construction Vibration Levels

During on-site construction of the Proposed Project, heavy equipment would be used for grading, excavation, paving, and building construction, which would generate localized vibration in the immediate vicinity of the construction. The nearest existing sensitive structures have been identified as newer engineered residential structures (not highly susceptible to damage by vibration), located as close as 30 feet from where construction activities could potentially occur within the Project site.

Table 10 includes the range of vibration levels for equipment commonly used in general construction projects at a distance of 25 feet. Table 10 data also include projected equipment vibration levels at the aforementioned existing nearby residential structures located approximately 20 feet away.

Table 10 - Reference and Projected Vibration Source Amplitudes for Typical Construction Equipment

Equipment	Reference PPV at 25 Feet (in/sec)	Projected PPV at 30 Feet (in/sec)
Hoe ram	0.089	0.068
Large bulldozer	0.089	0.068
Caisson drilling	0.089	0.068
Loaded trucks	0.076	0.058
Jackhammer	0.035	0.027
Small bulldozer	0.003	0.002
PPV = Peak Particle Velocity		

Source: 2018 FTA Transit Noise and Vibration Impact Assessment Manual (Table 7-4) and BAC calculations

Table 10 data indicates that vibration levels generated from construction activities within the Project site at the nearest existing residences located approximately 30 feet away are predicted to be well below the Caltrans threshold for damage to residential structures of 0.5 in/sec PPV. In addition, the projected transient equipment vibration levels in Table 10 would also be below the Caltrans threshold of 0.9 in/sec PPV for "strongly perceptible" human response shown in Table 10 (vibration annoyance potential threshold criteria).

Because vibration levels due to proposed project construction are predicted to be satisfactory relative to the applicable Caltrans ground borne impact vibration criteria at the nearest existing residences to

Proposed Project construction (approximately 30 feet away), the Proposed Project will have a ***less than significant***.

NOISE IMPACTS UPON THE PROJECT

The California Supreme Court issued an opinion in *California Building Industry Association v. Bay Area Air Quality Management District (2015)* holding that CEQA is primarily concerned with the impacts of a project on the environment and generally does not require agencies to analyze the impact of existing conditions on a project's future users or residents. Nevertheless, the City of Los Banos has policies that address existing/future conditions affecting the proposed project, which are discussed in the following sections. The following section includes analyses of future traffic noise exposure at proposed residential uses within the project area and recommended improvement measures to ensure consistency with applicable City of Los Banos noise requirements.

Future Exterior Traffic Noise Levels at Proposed Residences

Single-Family Residential Lots

The FHWA Traffic Noise Model (FHWA-RD-77-108) was used with future traffic data to predict future exterior traffic noise levels at the proposed single-family residential lots of the development. Future (Cumulative Plus Project) traffic data in the form of AM and PM peak hour intersection turning movements were obtained from the traffic impact analysis prepared by the project transportation consultant (Fehr & Peers). Those data were converted to Average Daily Traffic (ADT) segment volumes by applying a factor of 5 to the sum of AM and PM peak hour conditions. Other inputs were derived from published Caltrans truck data, BAC observations, and file data for similar roadways. Using the provided site plans (for scaling distances), future traffic noise levels were predicted at the closest single-family residential outdoor activity areas (i.e., backyards) of the development and the results from that analysis are provided in Table 11.

Table 11 - Predicted Future Exterior Traffic Noise Levels – Single-Family Residential Lots[1]

Roadway	Receiver Description	Predicted Future DNL (dB)[3]
Mercey Springs Road (North of Scripps Rd)	Nearest Backyards	68
	Nearest 1st Floor Exterior Facades	67
	Nearest 2nd Floor Exterior Facades	69
Mercey Springs Road (South of Scripps Rd)	Nearest Backyards	68
	Nearest 1st Floor Exterior Facades	67
	Nearest 2nd Floor Exterior Facades	69
Pioneer Road	Nearest Backyards	66
	Nearest 1st Floor Exterior Facades	65
	Nearest 2nd Floor Exterior Facades	67

[1] A complete listing of FHWA Model inputs and results are provided in Appendix I.
[2] Distances measured from said location to the roadway centerlines.
[3] A +3 dB offset was applied at 2nd floor exterior facades to account for reduced ground absorption of sound at elevated locations.

Source: BAC 2025

The Los Banos General Plan establishes a normally acceptable exterior noise level standard of 60 dB DNL/CNEL for single-family residential uses affected by transportation noise sources. As shown in Table 11, future Mercey Springs Road and Pioneer Road traffic noise level exposure is predicted to exceed the General Plan 60 dB DNL exterior noise level standard at the outdoor areas (backyards) of the residences proposed nearest to the roadways.

To reduce future Mercey Springs Road and Pioneer Road traffic noise level exposure to a state of compliance with the General Plan 60 dB DNL exterior noise level standard at the closest proposed single-family residential lots to the roadways, the following specific improvement measure is recommended for the Proposed Project:

1. The construction of traffic noise barriers ranging from 6-feet to 8-feet in height along Mercey Springs Road and Pioneer Road at the locations illustrated in Figures 6 and 7 of Appendix E.

   The traffic noise barriers can take the form of earthen berms, solid walls, or a combination of the two. Appropriate materials for noise walls include precast concrete or masonry block. Other materials may be acceptable provided they have a density of approximately 4 pounds per square foot. The recommended barrier height range is consistent with traffic noise barrier heights currently constructed for newer residential developments within the project vicinity along Mercey Springs Road and Pioneer Road.

   Grading plans were not available at the time of preparing this environmental analysis. As a result, the recommended barrier heights indicated in Figures 6 and 7 of Appendix E assume that the

difference in elevation between the roadways and proposed adjacent single-family residential outdoor areas are within ± 2 feet. Should differences in elevations be greater than ± 2 feet at those locations, an additional analysis would be warranted. Nonetheless, the barriers heights shown in Figures 6 and 7 of Appendix E are relative to outdoor area/pad *or* roadway elevation, whichever is greater.

Multi-Family Residential Lot

According to the project site plans, the Proposed Project proposes the development of multi-family residential uses (apartments) along the north and northeast project property boundary. Although the project site plans contain the general location of the proposed multi-family residential lot, the specific locations of the residences and common outdoor activity areas are currently not known. The Los Banos General Plan establishes a normally acceptable exterior noise level standard of 65 dB DNL for multi-family residential uses affected by transportation noise sources.

The FHWA Traffic Noise Model (FHWA-RD-77-108) was used with future traffic data to predict future exterior traffic noise levels at the proposed multi-family residential lot of the development (Lot A). The results from that analysis indicate that the future Mercey Springs Road exterior traffic noise level is predicted to be 65 dB DNL at a distance of approximately 130 feet from the centerline of the roadway. Thus, future Mercey Springs Road traffic noise exposure would exceed the Los Banos General Plan 65 dB DNL exterior noise level standard should the common outdoor activity area(s) of the proposed multi-family residential lot be located within 130 feet from the centerline of Mercey Springs Road.

To satisfy the Los Banos General Plan 65 dB DNL exterior noise level standard at the common outdoor activity area(s) of the proposed multi-family residential lot (Lot A), implementation of one of the following two specific measures is recommended for the project site design:

1. Ensure that the common outdoor area(s) of the proposed multi-family residential lot maintains a minimum setback distance of 130 feet from the centerline of Mercey Springs Road.
   OR
2. Should the common outdoor area(s) of the proposed multi-family residential lot be proposed within 130 feet from the centerline of Mercey Springs Road, ensure that the placement and orientation of proposed structures completely shield the common outdoor area(s) from view of the roadway.

Future Interior Traffic Noise Levels at Proposed Residences

Single-Family Residential Lots

Standard residential construction (stucco siding, STC-27 windows, door weather-stripping, exterior wall insulation, composition plywood roof), *typically* results in an exterior to interior noise reduction of approximately 25 dB with windows closed and approximately 15 dB with open windows. Therefore,

provided that future traffic noise levels do not exceed 70 dB DNL at exterior building facades of proposed single-family residences, standard construction would normally be adequate to comply with the Los Banos General Plan 45 dB DNL/CNEL interior noise level standard.

After construction of the noise barriers required to satisfy the Los Banos General Plan 60 dB DNL exterior noise level standard (as recommended in the previous discussion), future traffic noise levels are predicted to be approximately 60 dB DNL or less at the first-floor facades of single-family residences constructed nearest to Mercey Springs Road and Pioneer Road. To achieve compliance with the General Plan 45 dB DNL interior noise level standard within first-floor rooms, a building facade noise reduction of at least 15 dB would be required of the first-floor exterior wall construction.

Due to reduced ground absorption at elevated positions, second-floor traffic noise levels are predicted to be approximately 2 dB higher than first-floor levels. In addition, second-floor facades would not be shielded by the recommended noise barriers. As a result, future traffic noise level exposure at the second floor building facades of the residences proposed nearest to Mercey Springs Road and Pioneer Road is predicted to range from 67 dB DNL to 69 dB DNL (Table 10). Therefore, a building facade noise reduction of at least 24 dB would be required of the upper-floor exterior wall construction.

Based on the above-identified exterior to interior noise reduction typically achieved with standard residential construction, standard residential construction practices are expected to be adequate for both first and second-floor facades of the single-family residences constructed adjacent to Mercey Springs Road and Pioneer Road. Nonetheless, mechanical ventilation (air conditioning) should be provided for all residences of this development to allow the occupants to close doors and windows as desired to achieve compliance with the applicable interior noise level criteria. *However*, should a greater margin of safety be desired, the Proposed Project design could include the following specific building improvement measure:

1. All second-floor bedroom windows of single-family residences identified in Figures 6 and 7 of Appendix E from which Mercey Springs Road would be visible should be upgraded to a minimum STC rating of 32.

Multi-Family Residential Lot

According to the FHWA Model, future Mercey Springs Road exterior traffic noise level is predicted to be 65 dB DNL at a distance of approximately 100 feet from the centerline of the roadway. Due to reduced ground absorption at elevated positions, upper-level traffic noise levels from Mercey Springs Road are expected to approach 70 dB DNL at this same distance. To satisfy the General Plan 45 dB DNL interior noise level standard within all floors of residences closest to Mercey Springs Road, a minimum noise reduction of at least 25 dB would be required of the building facades.

As mentioned previously, standard residential construction (wood or stucco siding, STC-27 windows, door weather-stripping, exterior wall insulation, composition plywood roof), results in an exterior to interior noise level reduction of at least 25 dB with windows closed and approximately 15 dB with windows open.

Therefore, predicted interior traffic noise levels within the residences of the multi-family residential lot proposed a minimum of 100 feet from the centerline of Mercey Springs Road would satisfy the General Plan 45 dB DNL interior noise level standard without the need for additional mitigation measures. However, if residences of the multi-family residential lot are proposed within 100 feet from the centerline of Mercey Springs Road, future interior traffic noise levels from this roadway could exceed the General Plan 45 dB DNL interior noise level standard at the upper-levels of proposed residences (apartments). As mentioned previously, mechanical ventilation (air conditioning) should be provided for all residences within this development to allow the occupants to close doors and windows as desired for additional acoustic isolation.

To satisfy the Los Banos General Plan 45 dB DNL interior noise level standard within the interior areas of the proposed multi-family residences (apartments), implementation of the following specific measure is recommended for the project site design:

1. Should the building facades of the residences within the proposed multi-family residential lot adjacent to Mercey Springs Road be proposed within 100 feet of the roadway centerline, all upper-floor bedroom windows of the residences located within that setback distance should be upgraded to minimum rating of STC 32.

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, would the project expose people residing or working in the project area to excessive noise levels?

The Proposed Project is not located within the vicinity of a private airstrip, an airport land use plan, or within two (2) miles of a public airport. Therefore, the Proposed Project will have **No Impact**.

MITIGATION MEASURES:

The following mitigation measures shall be incorporated into the Proposed Project:

Mitigation Measure 13 - 1**:**

The following measures shall be incorporated into the project on-site construction operations:

- Noise-generating construction activities within the project area shall occur pursuant to the hours and days exempted in Section 9-3.2706(c) of the Los Banos Municipal Code.
- All noise-producing project equipment and vehicles using internal-combustion engines shall be equipped with manufacturers-recommended mufflers and be maintained in good working condition.
- All mobile or fixed noise-producing equipment used on the project site that are regulated for noise output by a federal, state, or local agency shall comply with such regulations while in the course of project activity.

- Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be located as far as practicable from existing residences.
- In the event that unusual circumstances or emergencies prevent certain project construction activities from complying with Section 9-3.2706(c) of the Los Banos Municipal Code, then a noise control plan shall be developed to ensure that sufficient mitigation is implemented during project construction to ensure adverse noise impacts are avoided.

Mitigation Measure 13-2:

All second-floor bedroom windows of single-family residences identified in Figures 6 and 7 of Appendix E from which Mercey Springs Road would be visible shall be upgraded to a minimum STC rating of 32.

Mitigation Measure 13-3:

To satisfy the Los Banos General Plan 65 dB DNL exterior noise level standard at the common outdoor activity area(s) of the proposed multi-family residential lot (Lot A), implementation of one of the following two specific measures is recommended for the project site design:

d. Ensure that the common outdoor area(s) of the proposed multi-family residential lot maintains a minimum setback distance of 130 feet from the centerline of Mercey Springs Road.

OR

e. Should the common outdoor area(s) of the proposed multi-family residential lot be proposed within 130 feet from the centerline of Mercey Springs Road, ensure that the placement and orientation of proposed structures completely shield the common outdoor area(s) from view of the roadway.

14. POPULATION AND HOUSING -- Would the project:

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
a) Induce substantial 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)?			X	
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?			X	

Impact Analysis

The following discussion is an analysis for criteria (a) and (b):

a. *Would the project induce substantial population in one area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?*
b. *Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?*

The Proposed Project ultimately consists of the development of 371 single-family residential lots and up to 120 multi-family residential units for a density of 20 du/ac, all of which are consistent with the City's General Plan 2042. The City's General Plan 2042 EIR determined that impacts to Population and Housing as a result of the General Plan 2042's buildout were less than significant.

The majority of the Proposed Project site is vacant, and the development of the single-family, multi-family and commercial uses will not result in the displacement of existing housing or number of people located on the project site. The project site is within the City's Sphere of Influence and Planning Area and is designated for residential and commercial land uses. Furthermore, the project site is adjacent to the City limits on three (3) sides: north, east and west.

Therefore, the Proposed Project will have a **Less Than Significant Impact**.

MITIGATION MEASURES:

Mitigation is not required for this topic.

15. PUBLIC SERVICES

	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, or the 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:			X	
a) Fire protection?			X	
b) Police protection?			X	
c) Schools?			X	
d) Parks?			X	
e) Other public facilities?			X	

IMPACT ANALYSIS

a. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the 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 fire protection?

New developments in the city and the proposed Sphere of influence (SOI), including the Proposed Project, will be served by LBFD. A significant impact to the LBFD would result if, in order for the LBFD to adequately serve the area, increased demand in the city limit and SOI would require the construction of new facilities or the expansion of existing facilities, the construction or operation of which would cause significant environmental impacts. LBFD has indicated that existing stations would be inadequate to accommodate future needs.

The General Plan 2042 Land Use (LU) Element, Safety and Noise (S) Element, and Public Facilities and Services (PFS) Element contain goals, policies, and actions that require local planning and development decisions to consider and mitigate impacts that potential future development could have on fire protection service facilities. The following goals, policies, and actions would serve to reduce impacts on

fire protection service facilities and services within the City's General Plan 2042 EIR Study Area, which includes the Proposed Project.

- **Goal LU-1.** Provide for orderly, well-planned, and balanced development.
  - **Policy LU-P1.2.** Maintain a well-defined compact urban form, with a defined urban growth boundary and development intensities on land designated for urban uses.
  - **Policy LU-P1.3.** Require that any land requested to be annexed be contiguous with the existing city limits, within the Urban Growth Boundary, and within the Sphere of Influence.
  - **Policy LU-P1.5.1** Prior to annexation, the City must find that adequate police, fire, and other public safety services can be provided.
  - **Policy LU P1.6.** Require that new development projects include full mitigation of impacts to City-funded services and infrastructure, including parks and recreational services, police and fire services, and City-owned infrastructure, both on- and-off-site.
  - **Policy LU-P1.7.** Ensure that new development provides for infrastructure, schools, parks, neighborhood shops, and community facilities in close proximity to residents.
  - **Policy LU-P1.8.** Require areas annexed to the City to be served by City utilities. Prohibit new wells and septic systems to serve urban development within the city limits. Conversely, do not provide utility services, water, and sanitary sewer, to new development outside of the city limits unless annexation is approved. Prior to annexation, the City must find that adequate water supply and services and wastewater treatment and disposal capacity can be provided. Existing water supplies must remain with the land and be transferred to the City upon annexation approval.
  - **Policy LUP1.9.** Coordinate land use planning efforts between City departments and with local institutions and regional agencies.
  - **Policy LU-1.11** Monitor growth rates to ensure they do not overburden the City's infrastructure and services or exceed the amounts analyzed in the General Plan Environmental Impact Report.

- **Goal LU-2.** Foster neighborhoods with exceptional amenities and design, broad-based opportunity, and a shared sense of identity.
  - **Policy LU-P2.5.** Require new developments and infill projects to include space for civic and institutional uses, to be maintained through capital projects, such as parks and open spaces, police and fire services, water and sanitary facilities, infrastructure, and other City services.
  - **Policy LU-P2.11.** Locate a diverse range of civic, institutional, and community land uses in close proximity to neighborhoods, where feasible.
- **Goal LU-3.** Provide a clear process for annexation proposals that ensure the proposals meet the requirements and needs of the Los Banos community.
  - **Policy LU-P3.1.** Annexation proposals are required to meet the following basic requirements:
    a. **Location.** Require that any land requested to be annexed be contiguous with the existing City limits, within the Urban Growth Boundary, and at least 75 percent within the Sphere of Influence.
    b. **Consistency.** Require that any land requested to be annexed is consistent with the policies of the City's General Plan and all appropriate City development standards.

c. **Timing of Development.** Require lands outside, but adjacent to, the current city limits to annex to the City of Los Banos prior to approval of new development.
d. **Utilities.** Require areas annexed to the City to be served by City limits. Prohibit new wells and septic systems to serve urban development within the city limits. Conversely, do not provide City utility services, water, and sanitary sewer to new development outside of the city limits unless annexation is approved. Prior to annexation, the City must find that adequate water supply and service and wastewater treatment and disposal capacity can be provided. Existing water supplies must remain with the land and transferred to the City upon annexation approval.
e. **Public Safety**. Prior to annexation, the City must find that adequate police, fire, and other public safety services can be provided.
f. **Mitigation.** Require that new development projects include full mitigation of impacts to parks and recreational services, police and fire services, and public infrastructure, both on- and off-site.

- **Goal S-4.** Protect Los Banos' residents and businesses from potential wildfire and structural fire hazards through data-driven decision-making and community planning efforts.
  - **Policy S-P4.1** Maintain a five- to six-minute response standard for fire service within 1.5-mile radius of a fire station.
  - **Policy S-P4.2.** Require adequate firefighting infrastructure and access for emergency vehicles in all new developments, including adequate street width, vertical clearance on new streets, high-visibility street signs in all conditions, and minimum water pressure necessary for sustained fire suppression.
  - **Policy S-P4.3.** Ensure Fire Department personnel are trained in wildfire prevention, response, and evacuation procedures.
  - **Action S-A4.1.** Assess the manpower, facility, and equipment needs of police and fire services as the city undergoes expansion to provide all residents with an optimal level of protection.
  - **Action S-A2.** Maintain mutual aid agreements with Merced, CAL FIRE, and nearby cities.

- **Goal S-6.** Minimize the risk of personal injury, property damage, and environmental damage from both natural and human-made disasters and improve natural disaster response capabilities through a variety of emergency preparedness measures.
  - **Action S6-P6.1.** Increase the resilience of important or critical-use structures (such as hospitals, schools, fire, police, cooling centers, and public assembly facilities, substations, and utilities) affect Los Banos.
  - **Action S-A6.1.** Continue to participate in County-led efforts to regularly update and implement the Merced County Multi-jurisdictional Hazard Mitigation Plan (MJHMP), consistent with guidelines of the Federal Emergency Management Agency (FEMA) and the Disaster Act of 2000.
  - **Action S-A6.2.** Work with owners and operators of critical use facilities (i.e., hospitals, police stations, public assembly facilities, transportation services) to ensure that they can provide alternate sources of electricity, water, and sewage in the event that regular utilities are interrupted in a disaster.

- **Action S-A6.3.** Maintain and improve current early-warning systems and response facilities (Local Emergency Operations Center, National Warning Systems, civil preparedness radio systems, etc..).
- **Action S-A6.4.** Coordinate regular emergency drills with City and County emergency service providers.
- **Action S-A6.5.** Collaborate, and exchange information with other local, state, and federal agencies and with utility service providers in activities related to terrorism prevention and response.

- **Goal PFS-3.** Ensure a resilient supply of fresh, safe water to serve existing and future needs of the city.
  - **Policy PFS-P3.3.** Require new development to document that water supply capacity, quality, and infrastructure are in place prior to approval of new development.

The Proposed Project is consistent with the above goals and policies of the General Plan 2042. In addition, while the Proposed Project will increase demand for fire protection services, the Project Proponent will be required to pay the applicable impact fees for fire protection services. Therefore, the Proposed Project will have a **Less Than Significant Impact**.

b. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the 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 police protection?

The Proposed Project will be served by the Los Banos Police Department (LBPD). A significant impact will result in increased demand if the Proposed Project will require the construction of new facilities or the expansion of existing facilities in order for the LBPD to adequately serve the Proposed Project, the construction or operation of which would cause significant environmental impacts.

The General Plan 2042 Land Use (LU) Element, Safety and Noise (S) Element, and Public Facilities and Services (PFS) Element contain goals, policies, and actions that require local planning and development decisions to consider and mitigate impacts that potential future development could have on police facilities. The goals, policies, and actions listed in impact discussion PS-1 to minimize impacts to fire protection services, would also help reduce impacts to LBPD facilities and services in the EIR Study Area.

- **Goal S-5.** Maintain and enhance the City's capacity for law enforcement.
  - **Policy S-P5.1.1.** Promote crime prevention strategies and provide high level of response to incidents. Reduce crime in Los Banos through a comprehensive strategy that includes rapid response to calls and regular patrols in neighborhoods with above-average crime rates.
  - **Action S-A5.1.** Support public education programs involving crime prevention and safety issues.
  - **Action S-A5.2.** Maintain mutual aid agreements with Merced County, neighboring law enforcement agencies, and the California Highway Patrol.

In addition, the Proposed Project will be required to comply with City's Building Code (LBMC, Title 8, Chapter 1) and pay their fair share of the cost associated with expanded police services and facilities in

accordance with payment of development impact fees as outlined in Section 4.14.2.1, *Environmental Setting.* The payment of fees would be based on the fees that are adopted at the time the Proposed Project is approved.

Therefore, the Proposed Project will have a **Less Than Significant Impact**.

c. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the 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 schools?

The 2024 LBUSD School Facility Fee Justification Report uses student generation rates to calculate enrollment forecasts of 0.491 elementary students per new residence, 0.131 junior high school students per new residence, and 0.207 high school students per new residents. Based on these rates, the Proposed Project is anticipated to generate the following number of students: 241 elementary students, 65 junior high school students, and 101 high school students.

Based on Table 4.14-2 of the General Plan 2042 EIR, *Los Banos Unified School District Student Enrollment and School Capacity,* LBUSD currently has capacity for an additional 1,312 elementary school students, 180 junior high school students, and 802 high school students. The Proposed Project will result in more students, but that increase can be accommodated by existing capacity.

Moreover, the General Plan 2042 Land Use (LU) Element and Public Facilities and Services (PFS) Element contain goals, policies, and actions that require local planning and development decisions to consider and mitigate impacts that potential future development could have on school facilities. The goals, policies, and actions listed in impact discussion PS-1 to minimize impacts to fire protection services, would also serve to reduce impacts to LBUSD facilities in the EIR Study Area. Specifically, Goal LU-1 is supported by Policies LU-P1.5 and LU-P1.7 aimed at providing for orderly, well-planned, and balanced development that includes ensuring that adequate infrastructure and public services are available prior to approval of potential future development. Goal LU-3 includes requirements for future annexation, which requires that adequate mitigation for public services be provided prior to annexation approval. Additionally, the following goals, policies, and actions would also serve to reduce impacts to LBUSD facilities and services.

- **Goal LU-2.** Foster neighborhoods with exceptional amenities and design, broad-based opportunity, and a shared sense of identity.
  - **Policy LU-P2.12.** Ensure new neighborhoods are designed to incorporate appropriate public and community facilities, such as schools, childcare, community centers, parks, houses of worship, and/or libraries.

- **Goal PFS-1.** Help create jobs and improve job quality for existing and future Los Banos residents.
  - **Policy PFS-P1.1.** Ensure adequate elementary school sites are reserved in new subdivisions, consistent with the Land Use Diagram and State law.

- **Policy PFS-P1.2.** Require that elementary schools be located close to residential neighborhoods, and away from major streets to avoid vehicular traffic and noise.
- **Policy PFS-P1.3.** Maintain a close, collaborative relationship with Los Banos Unified School District on all matters of mutual interest.

The Proposed Project is consistent with the above goals and policies of the General Plan 2042. In addition, the Proposed Project has been reviewed by the LBUSD. Based on correspondence from the LBUSD, dated April 15, 2025, the Proposed Project is subject to the mitigation agreement between the Project Proponent and the LBUSD, which requires the Proposed Project to pay school impact fees in accordance with the mitigation agreement. Payment of these fees constitutes full mitigation for impacts to school facilities created as a result of the Proposed Project.

Therefore, the Proposed Project will have a **Less Than Significant Impact**.

d. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the 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 parks?

The Proposed Project does not consist of the development of new recreational facilities, nor will it necessitate the construction or expansion of existing recreational facilities. As noted above, development of the site will be required to pay the applicable Park In-Lieu Fees at the time of building permit issuance. The intent of the Park In-Lieu fee is to offset any potential impacts to public services and facilities, including parks and recreational facilities, as a result of new developments. Therefore, the Proposed Project will have a **Less Than Significant Impact.**

e. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the 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 other public services?

The General Plan 2042 Land Use (LU) Element and the Public Facilities and Services (PFS) Element contain goals, policies, and actions that require local planning and development decisions to consider and mitigate impacts that potential future development could have on library facilities. The goals, policies, and actions listed in impact discussion PS-1 to minimize impacts to fire protection services, would also serve to reduce impacts to library facilities in the EIR Study Area. Specifically, Goal LU-1 is supported by Policy LU-P1.7 aimed at providing for orderly, well-planned, and balanced development that includes ensuring that adequate infrastructure and public services are available prior to approval of potential future development. Goal LU-3 includes requirements for future annexation approval. Additionally, the following goals, policies, and actions would also serve to reduce impacts on library facilities and services in the EIR Study Area.

- **Goal PFS-2.** Provide public and cultural facilities that contribute to Los Banos' positive image, enhance community identity, and meet the civic and social needs of residents.
  - **Policy PFS-P2.3.** Require new development to pay its fair share of costs of expanding library services to maintain current service levels.
  - **Policy PFS-P2.7.** Encourage internet providers to improve access to reliable, fast, affordable internet in Los Banos.
  - **Action PFS-A1.1.** Work with the Los Banos Branch of the Merced County Library to create either a new large library facility or several satellite branches to serve additional population in Los Banos.

The Proposed Project is consistent with the above goals and policies of the General Plan 2042. In addition, as building permits within the Proposed Project are issued, the Project Proponent will be required to pay the applicable impact fees. Payment of these fees offsets potential impacts on governmental facilities within the City of Los Banos.

Therefore, the Proposed Project will have a **Less Than Significant Impact.**

MITIGATION MEASURES:

Mitigation is not required for this topic.

16. RECREATION

	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?			X	
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?			X	

IMPACT ANALYSIS

The following discussion is an analysis for criteria (a) and (b):

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 accelerated?

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?

The Proposed Project will result in an increase in the use of existing park facilities in the city. All future development of the site will be required to pay the applicable Park In-Lieu fees, which include park facilities, at the time of building permit issuance. This Park In-Lieu is intended to offset impacts of new development to public services, including parks and recreation facilities. Therefore, the Proposed Project will have a **Less Than Significant Impact.**

The Proposed Project does not consist of the development of new recreational facilities, nor will it necessitate the construction or expansion of existing recreational facilities. As noted above, development of the site will be required to pay the applicable Park In-Lieu Fees at the time of building permit issuance. The intent of the Park In-Lieu fee is to offset any potential impacts to public services and facilities, including parks and recreational facilities as a result of new development. Therefore, the Proposed Project will have a **Less Than Significant Impact.**

MITIGATION MEASURES:

Mitigation is not required for this topic.

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

IMPACT ANALYSIS

The following discussion is an analysis for criteria (a) and (b):

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

The General Plan 2042 Circulation Element contains goals, policies, and actions that require local planning and development decisions to consider and mitigate impacts that potential future development could have on Los Banos' transportation system. The following goals, policies, and actions would serve to reduce impacts on transportation facilities within the City's General Plan 2042 EIR Study Area, which includes the Proposed Project.

- **Goal C-2.** Make efficient use of existing transportation facilities and, through coordinated land use planning, strive to improve accessibility to shops, schools, parks, and employment centers for all users, and reduce total vehicle miles traveled per household to minimize vehicle emissions and save energy.
  - **Policy C-P2.1.** Develop and manage the roadway system to obtain segments at level of service (LOS) C and intersections at LOS D or better for two-hour peak periods (a.m. and p.m.) on all major roadways and intersections in Los Banos.
  - **Policy C-P2.2.** Require traffic impact studies for all proposed new developments that will generate significant amounts of traffic (100 or more peak-hour trips).
  - **Policy C-P2.5.** Achieve State-mandated reductions in vehicle miles traveled (VMT) by requiring development and transportation projects to meet specific VMT metrics. In the event a proposed

project does not meet these metrics, require measures to reduce the additional VMT associated with the project, consistent with the City's adopted thresholds

- **Policy C-P2.6.** Reduce vehicle miles traveled (VMT) through measures such as improvements to public transportation and carpooling and offering safe routes for pedestrians and bicyclists.

- **Goal C-4.** Promote bicycling and walking as alternatives to the automobile.
  - **Policy C-P2.2.** Develop bicycle lanes, routes, and paths consistent with the Los Banos Bicycle-Pedestrian Plan.

The Pioneer Road Complete Streets Plan contains objectives to reduce impacts on Pioneer Road, which serves as the southern boundary of the Proposed Project. The Plan calls for Pioneer Road between 11th Street and Mercey Springs Road to be widened to the south to accommodate two through lanes and a landscaped median.

The Proposed Project is consistent with the above goals, policies, and objectives of the General Plan 2042 and the Pioneer Road Complete Streets Plan, as discussed below.

Roadway Facilities

The Proposed Project is bounded by 11th Street to the west, Mercey Springs Road (SR 165) to the east, and Pioneer Road to the south. Access to the Project site is provided via new street connections on Madison Avenue and Page Avenue between Mercey Springs Road and 11th Street, and from Pioneer Road with a north-south roadway connecting to Madison Avenue. The extension of Page Avenue from 11th Street to Mercey Springs Road is consistent with the planned roadway improvements in the City's General Plan 2042. Pioneer Road will be widened to two lanes between 11th Street and Mercey Springs Road and will include the installation of a landscaped median. The Pioneer Road improvements are consistent with the objectives in the City's Pioneer Road Complete Streets Plan.

Vehicle trips generated by the Proposed Project were estimated using the trip rates published in the Institute of Engineers' (ITE) Trip Generation Manual, 11th Edition for "Single-Family Detached Housing", "Low-Rise Multifamily Housing", and "Strip Retail Plaza". The Proposed Project would generate 5,186 daily trips, including 329 AM peak hour trips, and 522 PM peak hour trips. As analyzed in the Transportation Impact Analysis (TIA) prepared by Fehr & Peers, included as Appendix F, the Proposed Project does not introduce incompatible uses to the existing roadway system and access points for the Proposed Project are sufficient for vehicle queuing.

The Proposed Project is expected to worsen the worst approach delay from level of service (LOS) D to LOS E at the Pioneer Road/11th Street intersection during the AM peak hour due to the addition of project trips. The Proposed Project will also worsen the worst movement LOS D to LOS E during the AM and PM peak hours at the Pioneer Road/Mercey Springs Road (SR 165) intersection. The Proposed Project will have a substantial adverse impact at these intersections, as the City's standard is LOS D. The implementation of Mitigation Measures 17-3 and 17-4 will improve the intersection operations and

reduce the average intersection delay at both intersections. As such, the Proposed Project will have a **Less Than Significant Impact with Mitigation Incorporated** on the existing roadway network.

Transit Facilities

The Proposed Project is not located along a transit route or near an existing or planned transit facility. The Los Banos Commuter passes north of the Project site on Pacheco Boulevard (SR 152). The route does not contain a bus stop near the Project site. The Proposed Project is not anticipated to significantly increase the ridership on the existing transit facilities. Therefore, the Proposed Project will neither conflict with existing nor planned transit facilities. The Proposed Project will have a **Less Than Significant Impact** the existing transit facilities.

Bicycle and Pedestrian Facilities

A Class I bike path is proposed along the Proposed Project's boundary on Pioneer Road, which is aligned with the City's proposed Class I path for the entirety of Pioneer Road, per the Pioneer Road Complete Streets Plan. The Proposed Project includes the construction of a Class II bike lane along Page Avenue from 11th Street to Mercey Springs Road (SR 165), which would remove the currently existing Class I path. This removal of the Class I bicycle path will impact the existing bicycle facilities and conflict with the City's General Plan 2042 and Bicycle-Pedestrian Plan, causing a significant impact. Implementation of Mitigation Measure 17-2 would result in the Proposed Project having a **Less Than Significant Impact with Mitigation Incorporated** on bicycle facilities.

There are no existing sidewalks on 11th Street, Pioneer Road, or Mercey Springs along the Proposed Project boundaries. As stated in the Project Description, pedestrian facilities are proposed throughout the Project site. New pedestrian facilities would connect to the existing facilities in the Project Vicinity and would not conflict with any pedestrian plans or programs. Therefore, the Proposed Project will have a **Less Than Significant Impact** on pedestrian facilities.

b. *Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?*

Transportation impacts related to the Proposed Project were evaluated for compliance both with applicable regulatory documents and environmental significance as defined in the California Environmental Quality Act (CEQA). Generally, a traffic study includes a quantitative analysis of vehicle miles traveled (VMT) generated by a Proposed Project. California Senate Bill (SB) 743 is intended to reduce greenhouse gas emissions and particulates, encourage infill development and a diversity of uses instead of sprawl, and promote multi-modal transportation networks.

For the City of Los Banos, the Merced County Association of Governments (MCAG) 2022 VMT Guidelines were used to evaluate changes in VMT due to land use developments. The Transportation Impact Analysis used the screening guidelines and significance thresholds that are contained in the MCAG VMT Guidelines.

VMT Analysis

MCAG's VMT Thresholds and Implementation Guidelines include the following screening criteria for

identifying projects that can be presumed to have a less than significant impact:

- Project Located in a Transit Priority Area/High Quality Transit Corridor (within 0.5 miles of a transit stop)
- Project is Local-serving Retail of less than 50,000 square feet
- Project is a redevelopment project
- Project has a High Level of Affordable Housing Units
- Project is a Low Trip Generator (Less than 1,000 average daily trips for projects consistent with the General Plan and 500 average daily trips for projects not consistent with the General Plan)
- Project is an Institutional/Government and Public Service Use
- Project is a public, school, day care, local park, college or other local supporting land uses
- Project is located in a Low VMT Zone

The retail component of the Proposed Project meets one of the screening criteria detailed in the MCAG's VMT standards to identify projects that can be presumed to have a less than significant impact. The retail component will be less than 50,000 square feet in size. Thus, the VMT impact for the retail component of the Proposed Project will be less than significant.

As noted in the TIA, the Proposed Project's home-based VMT per resident is 15.7, which is above the threshold by 13.4%. Based on the VMT reduction results, implementation of Mitigation Measure 17-1 is anticipated to reduce the home-based VMT per resident generated by 13.4% which does not exceed the 13.6 Threshold. Therefore, the Proposed Project will have a **Less Than Significant Impact with Mitigation Incorporated**.

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)?*

Construction of the Proposed Project would involve movement of construction equipment onto and from the site and in-street construction to provide new sewer and water lines and storm drain improvements. These activities would be routine but potential traffic hazards. Contractors are required to provide traffic safety control as warranted. The Proposed Project would not create any traffic hazards on existing streets. Therefore, the Proposed Project will have a **Less Than Significant Impact**.

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

As illustrated in the Presidential Estate East Area Plan (Appendix A), the Proposed Project will include the construction of new roadways and extension of Scripps Drive and Page Avenue, which would accommodate emergency vehicles. The Proposed Project includes a Planned Development community which will be accessed via the extension of Scripps Drive. Therefore, the Proposed Project will have a **Less Than Significant Impact.**

MITIGATION MEASURES:

The following mitigation measures shall be incorporated into the Proposed Project:

Mitigation Measures 17-1:

The Proposed Project must implement a Transportation and Parking Demand Management (TDM) Plan with the strategies listed in Table 7 (Recommended Residential Project VMT Mitigation Measures) of the Presidential Estates East Transportation Impact Analysis Report. These measures shall be designed to achieve a minimum 13.4% reduction in VMT, consistent with the analysis' findings. The trip reduction strategies include:

A. *Unbundle Parking*: Separate parking costs from property costs (i.e., the purchase or rent of parking spaces are separate from the housing cost) for the multifamily apartment units.
B. *Pedestrian Network Improvement*: Include sidewalks along 11th Street between Jefferson Avenue and Page Avenue and Mercey Springs Road (SR 165) between 13th Street and Scripps Drive.
C. *Construct Bike Facility*: Retain the proposed Class I bike path along Pioneer Road from 11th Street to Mercey Springs Road (SR 165) and revise the proposed Class II bike plan to preserve the existing Class I bike path along the north side of Page Avenue from 11th Street to Mercey Springs Road (SR 165).
D. *Extend Transit Network Coverage*: Coordinate with the local transit agency for the Los Banos Commuter route, Transit Joint Powers Authority for Merced County, for the expansion of the local transit network.
E. *Community-Based Travel Planning*: Provide tenants with community-based travel planning.
F. *Conventional Car Share Program*: Provide access to shared vehicles for tenants.
G. *Limit Residential Parking Supply*: Reduce the total parking supply available at the residential site and prohibit on-street parking.

Mitigation Measures 17-2:

The final site plan for the Project shall implement Mitigation Measure 17-1 and illustrate a Class I path along the north side of Page Avenue. Implementing this mitigation measure would not disrupt or interfere with the existing bicycle facility and provide a continuous flow to the pedestrian hybrid beacon located on Scripps Road/Mercey Springs Road (SR 165).

Mitigation Measures 17-3:

Replace the side-street stop control with a signal at the Pioneer Road/11th Street intersection to reduce the average intersection delay to approximately 13 seconds (LOS B) during the AM peak hour.

Mitigation Measures 17-4:

Replace the side-street stop control with a two-lane roundabout at the Pioneer Road/Mercey Springs Road (SR 165) intersection to reduce the average intersection delay to approximately 8 seconds (LOS A) and 9 seconds (LOS A), during the AM and PM peak hours, respectively. The roundabout will need to be built in the Near-Term and consistent with the Pioneer Road Complete Streets Plan.

18. 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)?			X	
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?			X	

Effective July 1, 2015, Assembly Bill 52 (AB 52) amended CEQA to mandate consultation with California Native American tribes during the CEQA process to determine whether or not the Proposed Project may have a significant impact on a Tribal Cultural Resource. Section 21073 of the Public Resources Code defines California Native American tribes as "a Native American tribe located in California that is on the contact list maintained by the Native American Heritage Commission for the purposes of Chapter 905 of the Statutes of 2004." This includes both federally and non-federally recognized tribes. Section 21074(a) of the Public Resource Code defines Tribal Cultural Resources for the purpose of CEQA as:

1) Sites, features, places, cultural landscapes (geographically defined in terms of the size and scope), 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; and/or
b. included in a local register of historical resources as defined in subdivision (k) of Section 5020.1; and/or

c. 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 Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

Because criteria A and B also meet the definition of a Historical Resource under CEQA (see Section 5 of this document), a Tribal Cultural Resource may also require additional (and separate) consideration as a Historical Resource. Tribal Cultural Resources may or may not exhibit archaeological, cultural, or physical indicators.

Recognizing that California tribes are experts in their Tribal Cultural Resources and heritage, AB 52 requires that CEQA lead agencies carry out consultation with tribes at the commencement of the CEQA process to identify Tribal Cultural Resources. Furthermore, because a significant effect on a Tribal Cultural Resource is considered a significant impact on the environment under CEQA, consultation is required to develop appropriate avoidance, impact minimization, and mitigation measures. Consultation is concluded when either the lead agency and tribes agree to appropriate mitigation measures to mitigate or avoid a significant effect, if a significant effect exists, or when a party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached, whereby the lead agency uses its best judgement in requiring mitigation measures that avoid or minimize impact to the greatest extent feasible.

IMPACT ANALYSIS

a. *Would the project cause a significant 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:*
    1. *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)?*
    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 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?*

The Proposed Project is consistent with the General Plan 2042. Based on a review of Section 4.5.1.3 of the General Plan 2042 Draft EIR, historic cultural resources generally include buildings, roads, trails, bridges, canals, and railroads usually associated with the time period beginning with the first Euro-American contact. Within the EIR Study Area, the General Plan 2042 Draft EIR noted the following historic cultural resources within the City of Los Banos:

- Los Banos, the settlement;
- Los Banos Creek (the site of the original town in the southwestern portion of the EIR Study Area);
- Bridge #39-200, the Delta Mendota Canal Bridge;

- The Old Bank Building/Bank of Los Banos Building at 836 6th Street;
- The Church of St. Joseph at 1109 K Street;
- Fegundo's Barn at 20180 South Mercey Springs Road;
- 65918 State Route 153, 637 State Route 152;
- Los Banos, Los Banos Park at 803 East Pacheco Boulevard; and,
- Canal Farm Inn at 1460 East Pacheco Boulevard.

None of the sites listed above are located within the Project site.

During the preparation of the General Plan 2042 EIR, the City issued tribal consultation requests to the following: Amah Mutsun Tribal Band, North Valley Yokuts Tribe, Southern Sierra Miwuk Tribe, and the Torres Martinez Desert Cahuuilla Indians Tribe. The City did not receive any responses to these requests.

The General Plan 2042 EIR concluded that impacts associated with Tribal Cultural Resources are less than significant. Therefore, because the Proposed Project is consistent with the General Plan 2042, the impact is determined to be **Less Than Significant**.

MITIGATION MEASURES:

Mitigation is not required for this topic.

19. 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 construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunication facilities, the construction or relocation of which could cause significant environmental effects?			X	
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?			X	
c) Result in a determination by the wastewater treatment provider that 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?			X	
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?			X	
e) Comply with Federal, State, and local management and reduction statutes and regulations related to solid waste?			X	

IMPACT ANALYSIS

a. *Would the project require or result in the relocation or construction of construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunication facilities, the construction or relocation of which could cause significant environmental effects?*
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?*

c. Would the project result in a determination by the wastewater treatment provider that 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?

Wastewater services within the City are provided by the City of Los Banos, Public Works Department. The City's most recently prepared Wastewater Collection System Master Plan describes the City's wastewater capacity as 4.9 million gallons per day ("mgd"). Current flows through the City's wastewater system are approximately 3.5 mgd based on information provided in the City's Municipal Services Review (MSR), leaving the City with current wastewater capacity of over 2.5 mgd. In addition, a review of the MSR shows that at General Plan 2042 buildout, wastewater is expected to be generated at 4.57 mgd. The Proposed Project is located within the General Plan 2042 and is included as part of the General Plan 2042's build out for wastewater collection. Therefore, the City has adequate capacity to serve the proposed addition of 491 dwelling units, and 2.70 acres of commercial uses for the Proposed Project.

The Proposed Project will need to connect to the City's existing sanitary sewer system. The Specific Plan submitted by the applicant identifies the Project site (at full buildout) as generating an estimated 170,000 gallons per day (gpd) of wastewater with a peak flow of no more than 510,000 gpd. As noted in the Area Plan, the City's Wastewater Treatment Plant (WWTP) has a combination of current capacity and future expansion capacity to serve the future needs of the entire buildout of the City's General Plan area, which includes the project site. Furthermore, according to City Public Works staff, the City has sufficient capacity to accommodate any wastewater needs and will not exceed any treatment requirements imposed by the Regional Water Quality Control Board. Therefore, the Proposed Project will have a **Less Than Significant Impact.**

The Proposed Project will connect to the City's existing storm drainage system. The Area Plan does identify the appropriate infrastructure needed to connect the project site to the City of Los Banos "Central City" drainage system. The Central City subbasin is currently the largest subbasin in the City. The Central City drainage facilities collect the storm flows throughout the subbasin and convey them to the B Street pump station, near the intersection of Mercey Springs Road and B Street. There are also areas within this subbasin that drain to the wastewater collection system. There are currently no detention basins within this subbasin. Detention for this subbasin occurs within the streets and pipelines, for example, the large 66-inch diameter storm drain in Santa Rita Avenue. This pipeline runs north along Santa Rita Avenue from G Street to B Street and then runs east to the B Street pump station. The B Street pump station has a capacity of 53 cfs and discharges to the B Street drainage channel that flows by gravity into the GWD San Luis Canal.

The Specific Plan also discusses that development within the Proposed Project will feature appropriate Low Impact Development standards to treat storm water before it is discharged into the City's system. The Proposed Project will include the extension of City storm drainage infrastructure throughout the project area. All future development, including the design and installation of the proposal's storm drainage system, will be done in accordance with the City's Drainage Design Manual. Therefore, the Proposed Project will have a **Less Than Significant Impact.**

Potable water services within the City are provided by the City of Los Banos, Public Works Department Water Services. The City is located within the Delta Mendota Subbasin (groundwater basin) and extracts its water supply from groundwater aquifers via a series of thirteen (13) municipal water wells with most of the wells concentrated in the southwest area of the City. The Proposed Project In addition to the thirteen (13) water wells, the City also has an elevated storage tank with a capacity of 100,000 gallons, and a 5-million-gallon surface mounted storage tank equipped with four (4) booster pumps, which are utilized to pump additional water during high demand periods. City water users total approximately 12,730 connections, split between residential, commercial and industrial land uses. According to the City's Water Master Plan (2010), it is anticipated that the City has sufficient groundwater supply to provide potable water services to meet the expected future demands based on the buildout assumptions made in the 2042 General Plan. Therefore, the Proposed Project will have a **Less Than Significant Impact.**

The following discussion is an analysis for criteria (d) and (e):

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?

e. Would the project comply with Federal, State, and local management and reduction statutes and regulations related to solid waste?

Solid waste in the City of Los Banos is managed by the Merced County Association of Governments. The majority of the City's solid waste is taken to Billy Wright Landfill, and additional waste is taken to Highway 59 Landfill. The City's General Plan 2042 EIR determined that there are sufficient options for expansion or relocation of services to meet the demand created by future growth in the City of Los Banos. As noted previously, the Proposed Project is consistent with the General Plan 2042, and as a result, consistent with the determinations made in the General Plan 2042 EIR. Therefore, the Proposed Project will have a **Less Than Significant Impact.**

The Proposed Project will comply with all Federal, State, and local statutes and regulations related to solid waste. Therefore, the Proposed Project will have a **Less Than Significant Impact.**

MITIGATION MEASURES:

Mitigation is not required for this topic.

20. WILDFIRE -- Would the project:

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
If located in or near State responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?				X
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?				X
c) Require the installation or maintenance 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?				X
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?				X

IMPACT ANALYSIS

The following discussion is an analysis for criteria (a), (b), (c), and (d):

a. *Would the project substantially impair an adopted emergency response plan or emergency evacuation plan?*
b. *Would the project, 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?*
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?*
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 slope instability, or drainage changes?*

The Proposed Project is consistent with the adopted policies of the General Plan 2042. The General Plan 2042 EIR states that *"CAL FIRE has determined that the EIR Study Area possesses little to no wildfire risk and no impact would occur pursuant to the standards in the CEQA Guidelines identified in Section 4.17.2, Standards of Significance."*

The Proposed Project is located within the EIR Study Area and is consistent with the General Plan 2042. Furthermore, the Proposed Project will comply with Goals and Policies stated in Section 4.17.3 of the General Plan 2042 EIR. Therefore, the Proposed Project will have **No Impact**.

MITIGATION MEASURES:

Mitigation is not required for this topic.

21. MANDATORY FINDINGS OF SIGNIFICANCE --

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
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?			X	
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)?			X	
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?		X		

IMPACT ANALYSIS

a. Does the project have the potential to substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, 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?

Finding (a) is checked as "Less Than Significant Impact" on the basis of the Proposed Project's potential impacts on biological resources, as described in Section 3.0-IV of this Initial Study. The analysis contained in this Initial Study determined the impact to Biological Resources was **Less Than Significant**.

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 the connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

As described in this Initial Study, the potential environmental effects of the Proposed Project will either be less than significant or will have no impact at all. Where the Proposed Project involves potentially significant impacts, these impacts would have a **Less Than Significant Impact** with mitigation measures incorporated.

The potential environmental impacts identified in this Initial Study have been considered in conjunction with each other as to their potential to generate other potentially significant impacts. The various potential environmental impacts of the Proposed Project will not combine to generate any potentially significant cumulative impacts.

The City of Los Banos General Plan 2042 and EIR comprehensively account for ongoing and foreseeable urban development within the City's "Planning Area" and the cumulative environmental impacts of planned development. Future urban development in the City of Los Banos includes the provision of roads, utilities, schools, and recreational facilities needed to serve City residents and visitors as their demands for urban services increase over time.

The Proposed Project will contribute to planned urban development in the City of Los Banos, by annexing an area identified in the General Plan as being appropriate for residential uses. The potential environmental impacts associated with the Proposed Project represent a portion of the environmental consequences of the planned growth and development permitted by the General Plan 2042. The Proposed Project may involve a minor addition to the potential environmental impacts identified in the General Plan 2042 EIR, but the Proposed Project will not result in any substantial contribution to any of the significant cumulative impacts identified in the General Plan 2042 EIR.

c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

The Proposed Project includes the demolition of existing structures on the project site, which could potentially be hazardous to construction workers and the area. With the implementation of Mitigation Measure 5-1, the Project Proponent is to prepare a Phase 1 Environmental Site Assessment (ESA) prior to the issuance of a demolition permit. The Proposed Project is required to institute mitigation measures during construction and operation of the Proposed Project to reduce Greenhouse Gas Emission (Mitigation Measure 8-1). The implementation of Mitigation Measure 8-1 will reduce GHG impacts to less than significant. As discussed in Section 13, Noise, the Proposed Project may have potential adverse impacts on human beings as it relates to noise. However, Mitigation Measures 13-1 through 13-8 will ensure that potential noise impacts as a result of the Proposed Project will be reduced to a less than significant impact.

As such, this impact will be **Less Than Significant with Mitigation Incorporated**.

REFERENCES

In accordance with Section 15063(a)(3) of the CEQA Guidelines, the following expert opinion, technical studies, and substantial evidence has been referenced and/or cited in the discussion included in the Initial Study Checklist:

City of Los Banos General Plan 2042, dated October 2022.

City of Los Banos General Plan 2042 Environmental Impact Report (EIR), dated October 2022.

City of Los Banos 2024-2032 Draft Housing Element, dated October 2025

City of Los Banos Municipal Services Review, dated September 2025

City of Los Banos Zoning Ordinance.

City of Los Banos Noise Control Ordinance, Article 27.

City of Los Banos Water Plan, dated March 2010.

Merced County Airport Land Use Compatibility Plan, adopted June 21, 2012, prepared by the Merced County Airport Land Use Commission.

Noise Analysis, dated February 6, 2020, prepared by Bollard Acoustical Consultants, Inc.

California Department of Transportation Online Database of State Scenic Highways (www.dot.ca.gov/hq/LandArch/scenic/cahisys.htm).

California Department of Conservation Farmland Mapping and Monitoring Program, published October 2007.

Guide for Assessing and Mitigating Air Quality Impacts, adopted March 19, 2015, by the San Joaquin Valley Air Pollution Control District.

Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA, dated December 17, 2009, prepared by the San Joaquin Valley Air Pollution Control District.

Flood Insurance Rate Map (FIRM) No. 06047C0850G, dated December 12, 2008, prepared by the Federal Emergency Management Association (FEMA).

State of California, Department of Finance, *E-5 Population and Housing Estimates for Cities, Counties and the State – January 1, 2011-2019.* Sacramento, California, May 2019.

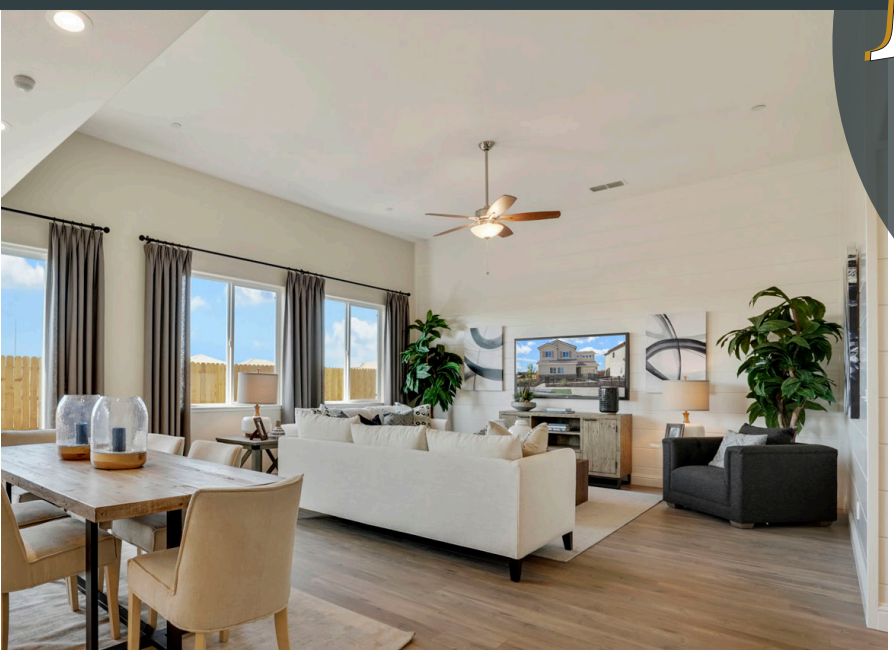
Transportation Impact Analysis Report, September 2025, prepared by Fehr & Peers.

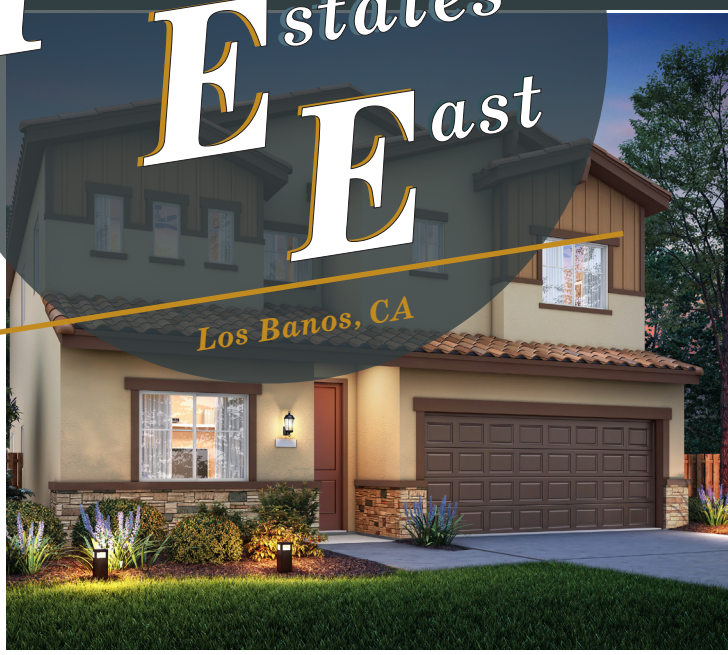
Appendix A

Presidential Estates Specific Plan

Presidential Estates East

Los Banos, CA





STONEFIELD HOME

SPECIFIC PLAN

August 2026

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Applicant:

Stonefield Home
923 East Pacheco Blvd., Suite C
Los Banos, CA 93635
209.826.6200

Engineer:

Engineering/Surveying/Planning/Landscape Architecture

Westwood
1165 Scenic Drive, Suite A
Modesto, CA 95350
209.571.1765

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EXECUTIVE SUMMARY

The Presidential Estates East Specific Plan details planning, infrastructure and design for a future low, medium and high residential community within Los Banos. This document will lay out planning and design guidelines that set a part Presidential Estates East as its own neighborhood within Los Banos.

With a total annexation acreage of 111.7 acres, Presidential Estates East offers a variety of housing types including single family homes (371 dwellings units) on lots ranging between 6,000 to 8,400 square feet, high density apartments of approximately 120 units, and opportunity for retail and work spaces that encourage pedestrian oriented living on 100.6 acres. This Specific Plan document details out those 100.6 acres of development, using existing and relevant Los Banos planning documents including the Los Banos General Plan 2042 as the basis of design.

The development of this new neighborhood will incorporate traditional elements found within typical Central Valley communities including a network of interconnected streets, street lined trees, various architectural styles and an emphasis upon pedestrian scale and access. There will be a focus on local history and site context surrounding the City of Los Banos to better foster community inclusion and form neighborhood identity.

Development and design standards laid out in this document are intended to provide a framework for any improvements within Presidential Estates East. These standards are intended to complement established City standards. Where there may be discrepancies or undefined standards, the development shall follow City standards. The framework aims to reinforce the vision for the Presidential Estates East community thus creating a holistic character and quality. Building parcels, architecture, utilities, and landscape architecture within the development will be discussed in detail.

Careful planning and implementation of the overall development is required to minimize the impact of construction to the surrounding areas, including the wetlands. All roads, site grading and utilities will be installed with this in mind.

Various financing options can be employed to implement the construction of the Presidential Estates East project. All on-site improvements and funding for all mitigation measures must be funded by the project and all mitigation measures fall upon the developer with potential reimbursement as specified in the Development Agreement. The developer shall work together with the City to create a plan to fund future maintenance and operations. These costs cannot be passed on to existing residents in the area.

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CHAPTER 1

INTRODUCTION

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1. INTRODUCTION

Presidential Estates East is a neighborhood community consisting of mainly residential homes with a mix of commercial spaces that support economic vitality. This document seeks to create a consistent neighborhood concept within the development that integrates its rich local history and its unique geographic location while providing a livable pedestrian-oriented environment. By outlining specific goals and standards, the plan facilitates a clear vision for development, addressing the unique needs and aspirations of the community while aligning with the overarching objectives of the Los Banos General Plan 2042.

Presidential Estates East is located within the City of Los Banos just west Highway 165. The City of Los Banos adopted the Los Banos General Plan 2042 with the intention of developing and integrating land west of Highway 165 to increase community, economic and other benefits within the City. This project includes annexation of 111.7 acres of land as part of the effort to accomplish that goal; see Figure 1.1 for annexation extents. Of those 111.7 acres, 100.6 acres shall be rezoned and developed into new residential and commercial properties, supporting the city's effort to increase housing and economic opportunities. The Los Banos General Plan 2042 broadly outlines future development of the City where residents to build healthy neighborhoods through diversification of land use to ensure residents have easy access to an array of amenities. Presidential Estates East is intended to ultimately promote a well balanced community that enhances the quality of life for residents in Los Banos.

RELATIONSHIP TO LOS BANOS GENERAL PLAN 2042

Development and design standards laid out in this document are intended to provide a framework for any improvements within Presidential Estates East. The framework aims seeks to reinforce the vision for the Presidential Estates East community by building upon policies and goals found within the General Plan.

Economic Development: By creating spaces for local businesses and integrating compatible land-uses, the neighborhood commercial buildings will bring about a variety of retail or service opportunities that are closer to residents and contribute to the local economy and job creation.

> ***Goal ED-1*** *Help create jobs and improve job quality for existing and future Los Banos residents.*
>
> ***Goal ED-4*** *Make Los Banos an ideal place to do business by fostering a business-friendly climate.*

Land Use: New development must take into consideration the existing and planned land uses to ensure compatibility with surrounding uses. Land uses proposed for this development adhere to those listed within the General Plan and allow for seamless integration with its surrounding. The development is located near existing amenities including two schools, Los Banos High school and Mercey Springs Elementary School, a neighborhood park and commercial center, all within a half mile walking distance to the development making the mixed residential and neighborhood commercial land use a compatible fit.

> ***Goal LU-1*** *Provide for orderly, well-planned, and balanced development.*
>
> ***Goal LU-2*** *Foster neighborhoods with exceptional amenities and design, broad based opportunity, and a shared sense of identity.*
>
> ***Goal LU-4*** *Protect and enhance Los Banos' image and unique sense of place.*
>
> ***Goal LU-5*** *Provide residents with excellent employment and shopping opportunities.*

Circulation: Careful consideration to multiple modes of transit will aid in the accessibility, safety and sustainability of new development. Circulation throughout Presidential Estates East promote environmentally friendly transportation options including biking and walking. Coordination between transportation agency's and City planning will help in minimizing vehicular travel and reduce the City's carbon footprint.

Goal C-1 *Promote safe and efficient vehicular circulation for all modes and users*

Goal C-2 *Make efficient use of existing transportation facilities and, through coordinated land use planning, strive to improve accessibility to shops, schools, parks, and employment centers for all users, and reduce total vehicle miles traveled per household to minimize vehicle emissions and save energy.*

Goal C-4 *Promote bicycling and walking as alternatives to the automobile.*

Goal C-7 *Provide a safe and accessible multi modal circulation network for disadvantaged communities that improves health and reduces pollution exposure.*

Safety and Noise:

Goal S-2 *Protect the community from risks to lives and property posed by flooding and stormwater runoff.*

Goal S-7 *Improve Los Banos's resilience to existing and future climate change hazards, such as drier conditions, warmer temperatures, flooding, conditions, warmer temperatures, flooding, increased wildfire risks, and increased energy use to address changing temperatures and weather patterns.*

Goal S-8 *Strive to achieve an acceptable noise environment for the present and future residents of Los Banos.*

Public Facilities and Services: To further align with the General Plan, the development prioritizes the provision of essential services and infrastructure in a timely manner for seamless transition from existing to new land uses. This includes ensuring that essential services—such as roads, pedestrian circulation, public transportation, and utilities—are well-planned and adequately funded. Responsibilities of the developer includes implementation, construction and funding of all required public facilities in accordance with an approved Infrastructure Phasing Plan. An implementation plan shall be provided by the developer, identifying proper timing for improvements and all responsible parties involved that may be upheld to the development and funding of this development.

Goal PFS-3 *Ensure a resilient supply of fresh, safe water to serve existing and future needs of the city.*

Goal PFS-4 *Achieve a sustainable storm water drainage system that needs the exciting and future needs of the city.*

Goal PFS-6 *Ensure adequate and sustainable solid waste management that meets the existing and future needs of the city and strive to reduce disposable waste overtime.*

SPECIFIC PLAN VISION

The purpose of a Specific Plan for new residential and neighborhood commercial development in Los Banos is to provide a comprehensive framework for guiding the development process in a cohesive and organized manner. Key objectives include:

- Prioritizing complimentary land uses in various density types to promote walk-ability, making it easier for residents to access parks, schools, and local amenities. The incorporation of diverse housing types will address afford-ability and accessibility for Los Banos residents, ensuring that residents from various income levels can find suitable homes.

- Establishing clear guidelines and standards for the integration of residential and commercial spaces, ensuring they complement each other, adjacent land uses and meet community needs.

- Outlining necessary infrastructure improvements, such as roads, utilities, and public services, to support the new development.

- Set forth architectural and landscaping guidelines to promote visual consistency to compliment adjacent developments and enhance the aesthetic appeal of the neighborhood.

- Supporting local business creation and creating opportunities for local job growth through the inclusion of commercial spaces within the neighborhood.

Overall, this alignment with the General Plan will help create a thriving, resilient community that supports the long-term vision for Los Banos.

SPECIFIC PLAN CONTENTS

The Presidential Estates East Specific Plan is intended to provide a comprehensive view of all related land use and infrastructure policies that are necessary to implement the project. Per Sections 65451 of the California Government Code, a specific plan includes descriptive text and illustrations of land use and open space within the plan area. Specific plans lay out standards and criteria for proposed distribution, location, extent and intensity of public and private components, transportation, sewage, water, drainage, solid waste disposal, energy and other essential facilities required to support uses within the planning area. Implementation of these standards and criteria is crucial to ensure that the development can progress in a sustainable manner. Where there are discrepancies between the Specific Plan and Los Banos Municipal Code (LBMC) the Specific Plan shall take precedence. In the event the Specific Plan fails to provide direction, the LBMC should govern missing regulation and requirements.

The following chapters breaks down each of these components and details out the standards and criteria specific to Presidential Estates East.

Chapter 1-Introduction: Provides a brief overview of the project, specific plan process, document content, and project historical context.

Chapter 2-The Development Plan: Defines the proposed land uses and circulation within the development, and the standards for each, including an overview of proposed transportation systems such as roadways, bike paths and pedestrian walkways.

Chapter 3-Development Standards: This section utilizes descriptive text, diagrams and/or tables to convey to readers and the developer architectural and landscape guidelines to ensure a cohesive, high- quality built environment.

Chapter 4-Infrastructure: Summarizes utility related components such as sewer, water and drainage to support development.

Chapter 5-Implementation: This chapter details out the process and policies this development must adhere to for submittal and/or any amendments that may need to be made. In addition, a financing plan is included to ensure construction and design is cost effective and there is adequate funding to support the completion of the project.

Appendices: Two appendices are provided to supplement information provided in the plan.

HISTORICAL CONTEXT

Presidential Estates East is situated west of Mercey Springs Road and north of Pioneer Avenue within the City of Los Banos. The land that is now the City of Los Banos was formerly a hunting ground for Yokut Native Americans. The surrounding wetlands were rich in resources such as fish and game.

The Spanish had discovered and explored the area between 1808 and 1833. Franciscan Felipe Arroyo de la Cuesta discovered pools of water in a creek bed that flows into the San Joaquin Valley and named this area “Los Banos,” which means “the Baths.” In the 1830s and 1840s brought in more people such as miners and settlers and resources such as a new irrigation system, cotton, alfalfa, and rice to the San Joaquin Valley. After World War II, Los Banos’ population grew because of the returning veterans, highway construction, and irrigation and dam projects that brought farmers looking for arable land. The population became stagnant from 1970 to 1985, with agriculture no longer being a driving factor.

The City’s proximity to major employment centers in the Bay Area brought about a population boom in the mid-2000’s. However, over the years, Los Banos has seen slower growth compared to other similar cities. Today, Los Banos is seeing a surge in more non-family residents moving into the community due to affordable housing prices and its proximity to the Bay Area. The City is working towards building a vibrant community with diverse economic opportunities and sustainable living.

FIGURE 1.1 EXISTING PHOTO LOCATION MAP

FIGURE 1.2 EXISTING SITE PHOTOGRAPHS

PHOTO 1: OVERLOOKING PRESIDENTIAL ESTATES ALONG PIONEER RD.

PHOTO 2: LOOKING EAST OF PIONEER RD.

PHOTO 3: LOOKING TOWARDS PRESIDENTIAL ESTATES TO THE WEST

PHOTO 4: LOOKING NORTH OF MERCEY SPRINGS RD.

PHOTO 5: OVERLOOKING PRESIDENTIAL ESTATES NEAR SCRIPPS DR. AND MERCEY SPRINGS RD.

PHOTO 6 : LOOKING SOUTH OF MERCEY SPRINGS RD.

PHOTO 7: OVERLOOKING PRESIDENTIAL ESTATES AT NORTHEAST CORNER

PHOTO 8: OVERLOOKING PRESIDENTIAL ESTATES AT NORTHWEST CORNER

PHOTO 9: LOOKING SOUTH OF 11TH STREET

PHOTO 10: OVERLOOKING PRESIDENTIAL ESTATES AT S 11TH ST. AND PAGE AVE.

PHOTO 11: LOOKING EAST FROM TYLER AVE.

PHOTO 12 : LOOKING EAST FROM HARDING AVE.

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CHAPTER 2

DEVELOPMENT PLAN

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2. DEVELOPMENT PLAN

The Presidential Estate East Specific Plan lays out guidelines and standards consistent for the development of the Presidential Estates community and are intended to be consistent with the City of Los Banos General Plan 2042. The proposed development plan provides the approximate acreages of the following land uses – 88.9 acre of single-family parcels, 6.0 acres of multifamily lots consisting of apartments and open space, 2.7 acres of commercial land use, and less than 1 acre of landscaped entry.

Bounded by existing residential areas and nearby open farmlands, the Presidential Estate East is planned to integrate multiple land uses to promote quality neighborhoods in the urban environment. A network of sidewalks along the right of way provides safe and pleasant pedestrian access throughout the site. Neighborhood commercial land uses are centrally located within the site for convenient access. See Figure 2.1 Lotting and Land Use Map for more details.

RESIDENTIAL (R-1, R-3)

Low density residential lots include six different lot sizes are proposed ranging from 6,000 square feet to 8,400 square feet with six different lot frontage widths and three different lot lengths.

TABLE 2.1 SINGLE FAMILY LOT SIZES AND DIMENSIONS

LOT SIZE	LOT DIMENSION	# OF LOTS
6,000 SF	60' x 100'	183
6,270 SF	57' x 110'	41
6,500 SF	65' x 100'	42
6,700 SF	67' x 100'	49
7,500 SF	75' x 100'	36
8,400 SF	80' x 105'	20

NEIGHBORHOOD COMMERCIAL (C-N)

Presidential Estates East includes roughly 2.7 acres of commercial land use for neighborhood commercial development. Per the General Plan 2042, areas zoned as neighborhood commercial are intended to provide small-scale office space or retail stores that are accessible by pedestrians and automobiles. Neighborhood commercial spaces should incorporate public amenities such as seating areas, shade through trees or architectural features, water fountains or features, or art to reinforce neighborhood identity. In addition to small retail shops such as barber shops, flower shops, pet shops, grocery stores, neighborhood commercial spaces may include places of worship, day cares and private schools.

PARKS AND OPEN SPACE

Since the 1975 Quimby Act (California Government Code §66477) was passed, cities and counties in the state of California have had the power to establish land dedication ordinances and require that developers contribute in one of several ways to dedicating land for park improvements. Quimby Act standards include dedication of 5 acres per 1,000 residents in a given jurisdiction to ensure adequate park land is developed along with housing construction. While five acres does not constitute a maximum allowable park acreage, it does represent in the Quimby Act the maximum park acreage per 1,000 residents that may be required for developers.

The City of Los Banos has established a Level of Service (LOS) goal of providing a minimum of five acres of developed park land per 1,000 residents (Los Banos General Plan 2042, Policy P-P1.1) and currently provides a little over six acres per 1,000 residents. Per Quimby Act requirements, Presidential Estates East would require 7.0 acres of new developed park space. See Table 2.3 for Quimby Act calculations and required acreage per proposed dwelling units and projected population size. At time of Specific Plan preparation, the 2021 Los Banos Parks Master Plan (LBPMP) identified that existing parks within a half-mile radius of the project area provide adequate open space to meet LOS goals and service Presidential Estates East. The existing parks identified in the 2021 LBPMP are all within a half-mile service radius and total 15.94 acres, meeting the City's minimum goal of five acres per 1,000 residents for this development and surrounding areas. With this in mind, the developer may work with the City to pay in-lieu fees to offset the lack of parkland dedication. These fees may in turn, be used by the City to improve existing parks or help fund new parks in other areas of the City that may be under served. In the case of Presidential Estates East, with approval from the City, in-lieu fees may be paid to offset the parkland dedication. Fees are to be determined by the City and addressed during building permit issuance. It is important to note that in-lieu Quimby Fees are different from Park and Recreation Impact Fee. Developer is subject to collection of both fees at the appropriate times.

TABLE 2.2 ANALYSIS OF EXISTING PARKS WITHIN HALF-MILE RADIUS OF PRESIDENTIAL ESTATES

	STANDARD			PRESIDENTIAL ESTATES EAST
Dwelling Units				491
Population [1]	2.85 per DU			1,399
		REQUIREMENT	EXISTING PARKS[2]	
Parks	5 acres/1,000	7.0 acres	**15.94 acres**	0 acres

1 Persons per household derived from the 2020 US Census.

2 Existing park acreage includes pocket, neighborhood and community parks within a half-mile radius of Presidential Estates East. These parks include :Pacheco Park, College Greens Park, Presidential Park, Cresthills Park, Little Page Park. Park acreage are based on the 2021 Los Banos Parks Master Plan .

TABLE 2.3 PRESIDENTIAL ESTATES PARK REQUIREMENT PER QUIMBY ACT

	STANDARD	REQUIREMENT	PRESIDENTIAL ESTATES EAST	DIFFERENCE
Dwelling Units			491	
Population	2.85 per DU		1,399	
Community Parks (C)	3 acres/1,000	4.2 acres	0	0
Neighborhood Park (N)	2 acres/1,000	2.8 acres	0	0
Total C&N PARKS	**5 acres/1,000**	**7.0 acres**	**0**	**-7.0acres**

Open Space: Multi-Family Units

Multi-family units such as town homes or apartments may include shared landscaped open space such as gardens, courtyards, playgrounds, and picnic spots. These spaces provide opportunities for social interaction, relaxation, recreation, and sense of community among neighbors. It is encouraged for developers to include these spaces into the development. While not explicitly required, the City may include these spaces into the Conditions of Approval for a development. Multi-family developments should at a minimum provide landscaped frontage along streets, circulation paths and around buildings to soften building mass.

PRESIDENTIAL ESTATES DEVELOPMENT CONCEPT

Planned primarily for mixed-density residential use, Presidential Estates East is intended to provide residents a range of housing types mixed with commercial business opportunities to ensure a socially and economically integrated neighborhood. The General Plan 2042 dictates that low-density and medium-density residential development intensity shall range from two to six units per acre and seven to twenty units per acres, respectively. Below are land use summaries that provide an overview of land uses, gross acres, and gross density of the proposed project.

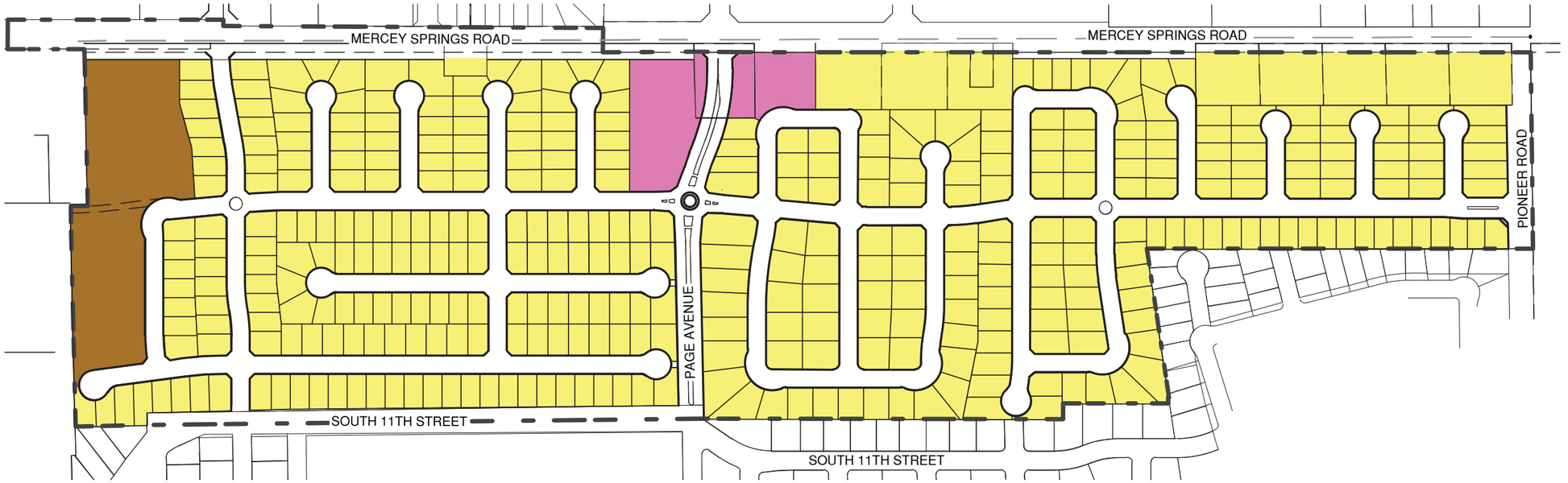
TABLE 2.4 PRESIDENTIAL ESTATES EAST LAND USE SUMMARY

LAND USE DESIGNATION	ACRES	LAND USE DISTRIBUTION	TOTAL UNITS	AVG. DENSITY (du/ac.)	POPULATION	GENERAL PLAN LAND USE DENSITIES [3]	BUILDING FOOTAGE[4]
RESIDENTIAL							
Low Density Residential (R-1)	88.9	91.1%	371	4.17	1,057	2-6 du/ac	
High Density Residential (R-3)	6.0	6%	~120	20	342	20-30 du/ac	
COMMERCIAL							
Neighborhood Commercial (C-N)	2.7	2.9%				FAR 0.25-0.6	50,000
RIGHT OF WAY	14.1						
TOTAL	111.7						

3 Per Los Banos General Plan 2042, residential densities are expressed by dwelling units per acre (du/ac). Nonresidential land use densities shall be expressed by Floor Area Ratio (FAR)

4 Maximum Building Square Footage is derived by multiplying the FAR and acreage.

FIGURE 2.1 LOTTING AND LAND USE MAP

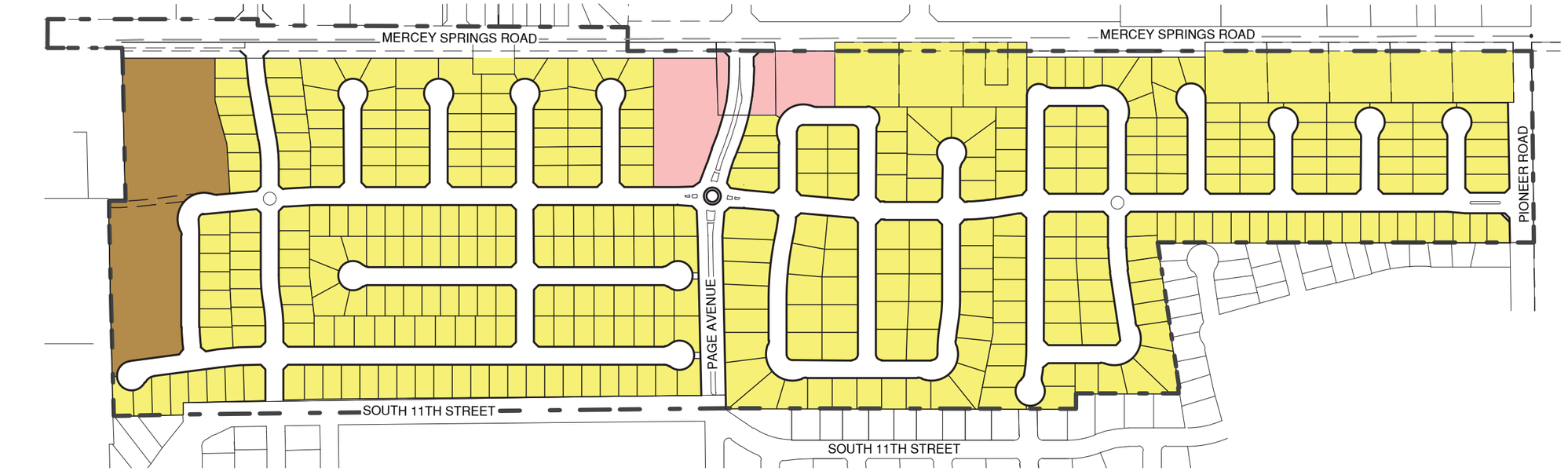


- Low Density Residential
- High Density Residential
- Neighborhood Commercial - Lot C and D
- Annexation Boundary

TABLE 2.5 ANNEXATION ACREAGE

	ACRES
Presidential Estates Project Boundary	100.6
Off-Site Properties	8.8
South 11th Street	-1.6
Mercey Springs Road	3.0
Pioneer Road	0.9
TOTAL	111.7

FIGURE 2.2 PRESIDENTIAL ESTATES EAST ZONING MAP



R-1
R-3
C-N
Annexation Boundary

CIRCULATION

Street System

A hierarchy of collector and local streets are proposed to provide access to and through the community to create a safe and efficient network and connect it to surrounding areas. Presidential Estates East will be accessed primarily by Mercey Springs Road, a State Highway that traverses Los Banos from north to south. The entrance along Pioneer Road will provide secondary access to the neighborhood. Page Avenue will act as a collector street and extends through the site in a north-south fashion connecting Mercey Springs Road to the rest of the development. Collectors provide transition between high-speed arterials and local streets.

The extension of Page Avenue through to S. 11th Street will connect residents to surrounding neighborhoods. Page Avenue spans 80' across with two way vehicular travel, 6' class II bike lanes on both sides and a 12' median. The design reflects consistency with the General Plan 2042 and City of Los Banos Bicycle-Pedestrian Plan. Collector streets typically have landscape parkways strips separating vehicle traffic from the pedestrian walk. Canopy trees should be planted within the parkway strips at even and consistent intervals to help establish a sense of space and help reduce the radiated heat from adjacent streets. In addition to connecting Page Avenue to S. 11st Street, improvements along S. 11 Street will be made on the north side where the right of way abuts the developments southern boundary. Improvements include a new sidewalk and landscape buffer.

Local streets are designed to be pedestrian oriented and supplement the circulation system that accommodates only necessary vehicular trips. Local street widths have been reduced to slow vehicular traffic and improve pedestrian experience. On-street parking may be restricted due to space available. Street trees may be provided to add neighborhood character and cooling of streets from the urban heat island effect.

Page Avenue has an 80-foot street right-of-way, which consists of a 12 feet wide landscaped median, two 20' wide roadway in either direction including a bike lane, and a buffered 8 feet wide sidewalk. The entrance at Pioneer Road is designed to be a 66-foot-wide street with an 8' landscape median and 6-foot-wide sidewalks with a 5' parkways strip between the street and sidewalk on each side. Refer to Figure 2.2 Circulation Map and Figure 2.4 Street Sections for more details.

As part of the development improvements, Pioneer Road will be widened to mirror street development immediately west of Presidential Estates East and include two through lanes with. As development on the south side begins, the street will be widened to include the installation of a 12' median allowing for an additional two through lanes on the south for two way vehicular traffic. The phased improvements are reflective of the following planning objectives identified in the Pioneer Road Complete Streets Plan 2021;

- Provide an alternative route for Los Banos residents and users of Pacheco Boulevard.
- Make aesthetic and safety improvements to Pioneer Road and Ward Road.
- Plan for safe and comfortable pedestrian and bicycle improvements along Pioneer Road that are connected to regional multi-use trails and bike routes.
- Minimize adverse effects that roadway improvements may have on residents, property owners, agricultural operations, business owners, and other users.

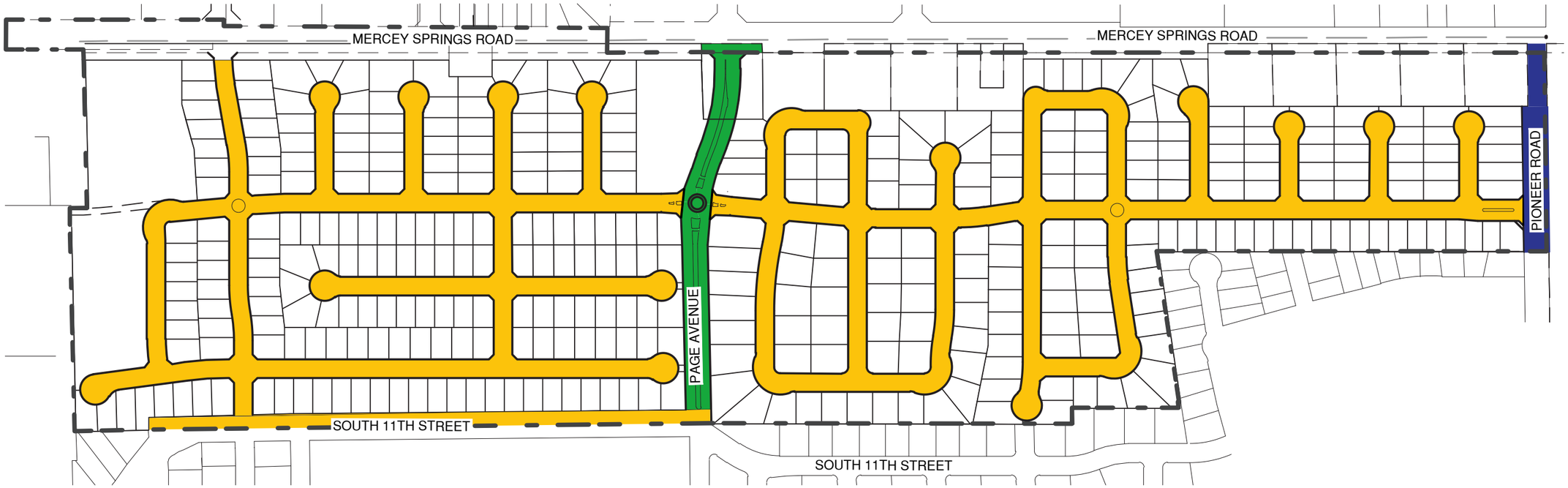
The section of Pioneer Road adjacent to the development includes improvements to provide safe and comfortable pedestrian and bicycle access through the addition of sidewalks and a class II bike lane which is reflective of improvement plans identified both in the Los Banos Bicycle-Pedestrian Plan and Pioneer Road Complete Streets Plan 2021. The future widening of Pioneer road will accommodate the increased vehicular traffic projected to occur when the surrounding areas are developed. Refer to the Pioneer Road Complete Streets Plan dated January 6, 2022 for more information.

PEDESTRIAN / BIKE SYSTEM

Sidewalks are provided on both sides of the right-of-way throughout the Presidential Estates East. The pedestrian network promotes walk-ability of the neighborhoods.

Trails and bicycle lanes provide residents an alternative to vehicular travel and promote a healthy lifestyle. In-road bike lanes are proposed on Page Avenue and a Class II bike lane on Pioneer Road. Class II bike lanes provide a striped lane for one-way travel on a street. Signage is typically provided to designed bike lane. The addition of a bike lane along Pioneer Road is consistent with the Los Banos Bicycle-Pedestrian Plan. Refer to Figure 2.3 Bike/Pedestrian Map for locations of pedestrian and bicycle paths.

FIGURE 2.3 CIRCULATION MAP



Major Arterial
Collector
Local Street

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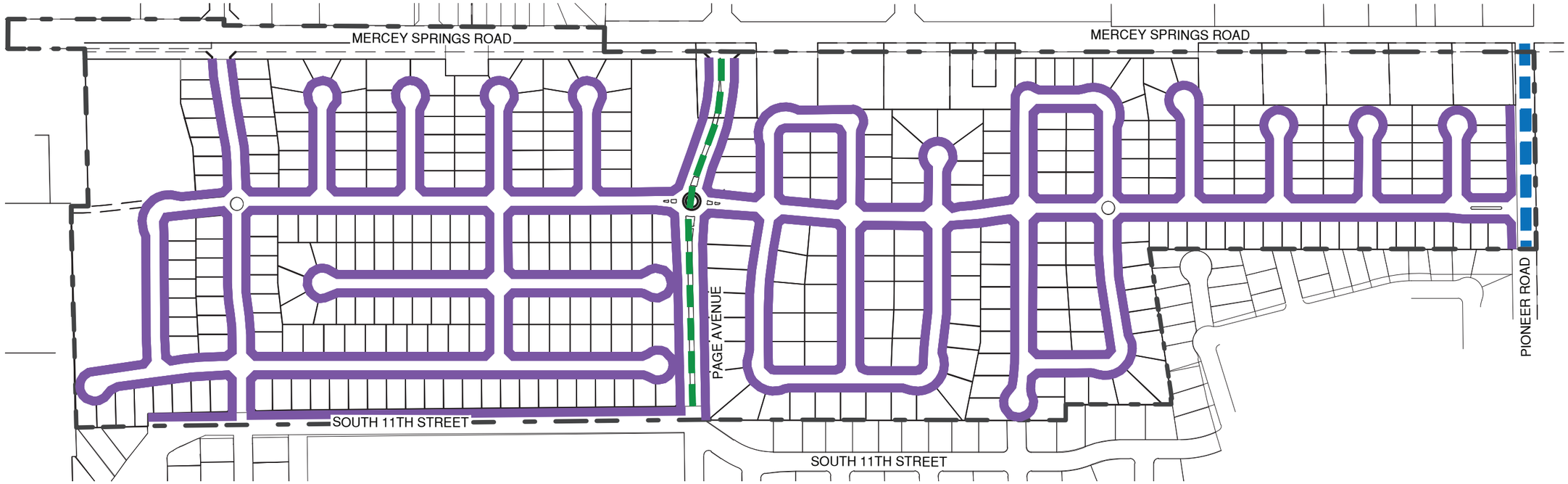
FIGURE 2.4 BIKE/PEDESTRIAN MAP



Pedestrian Walkway
Class II Bike Lane
Class I Bike Path

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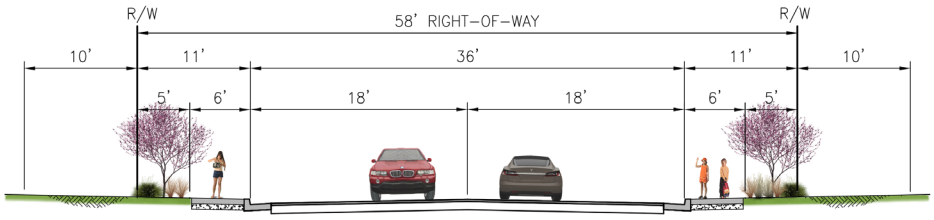
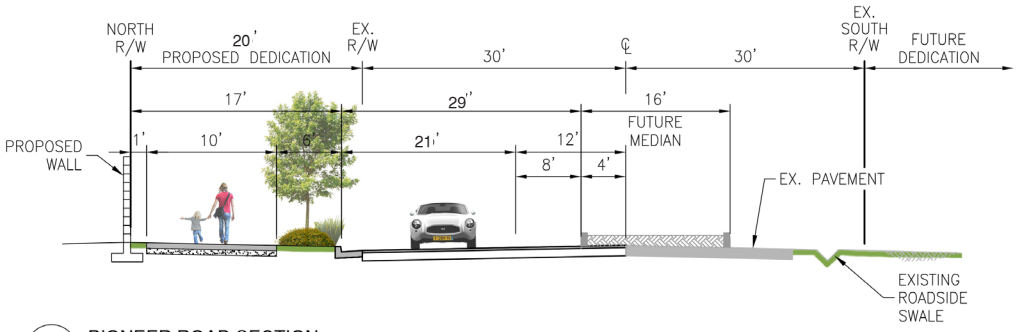
FIGURE 2.5 STREET SECTIONS



1 TYPICAL 58' RIGHT OF WAY SECTION

NOT TO SCALE



2 PIONEER ROAD SECTION

NO PARKING ON PAGE AVENUE OR PIONEER ROAD

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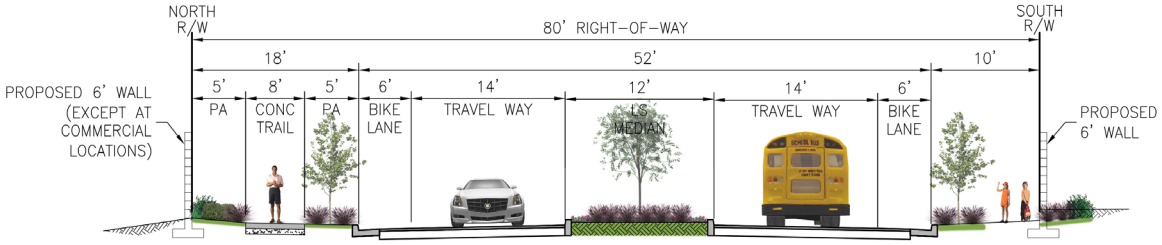

3 TYPICAL 80' RIGHT OF WAY SECTION (PAGE AVENUE)

NO PARKING ON PAGE AVENUE OR PIONEER ROAD

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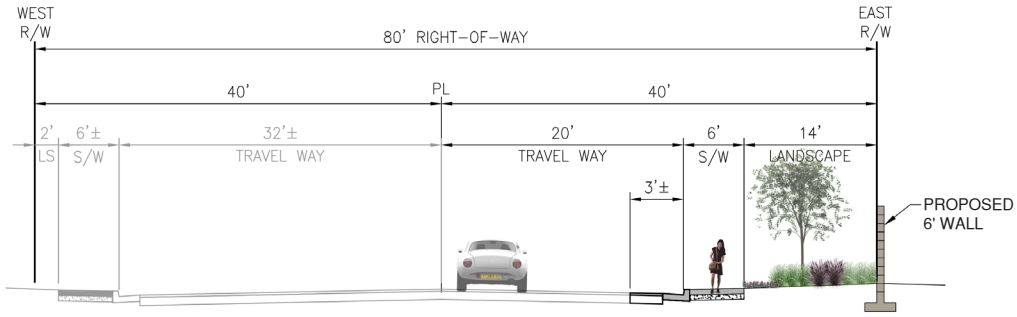
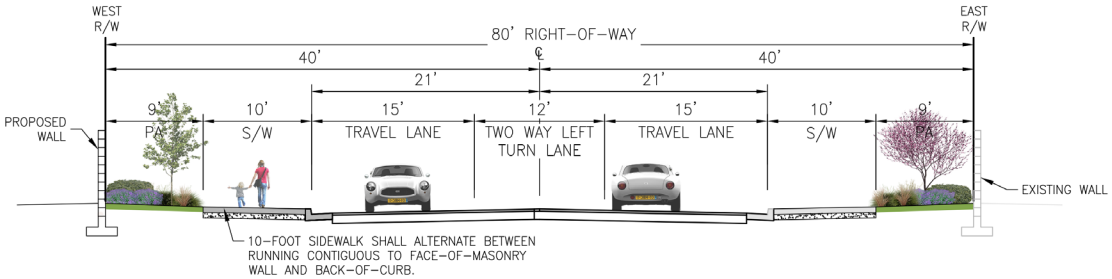


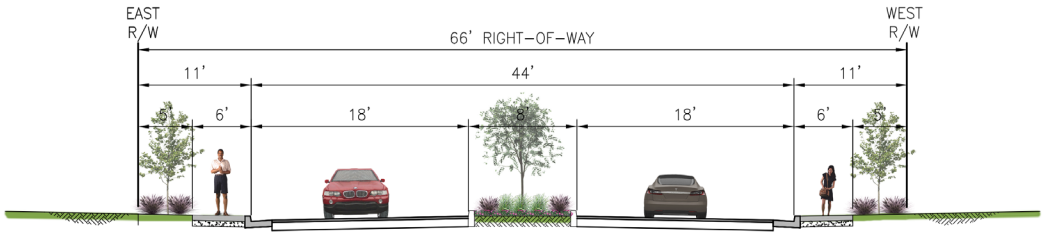
4 SOUTH 11TH STREET

N.T.S.



5 MERCEY SPRINGS ROAD (HWY 165)

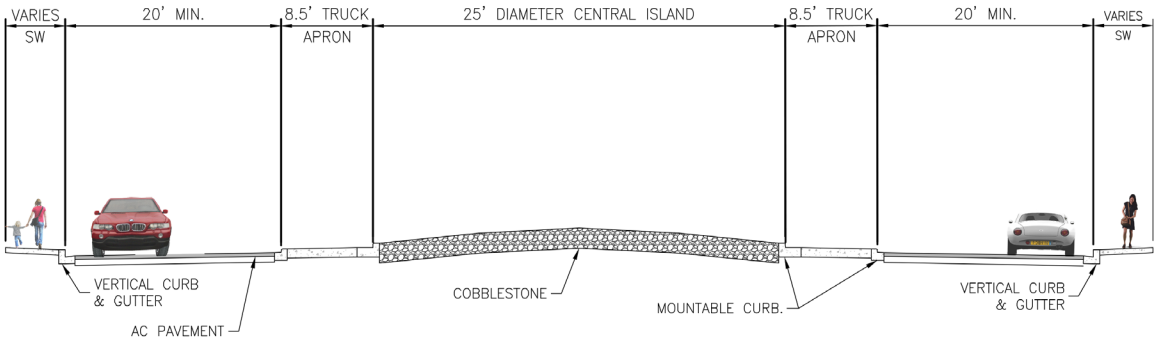
NOT TO SCALE



6 STREET A (AT PIONEER RD.)

NO PARKING ON PAGE AVENUE OR PIONEER ROAD

NOT TO SCALE



7 ROUNDABOUT SECTION (PAGE & STREET A)

NO PARKING ON PAGE AVENUE OR PIONEER ROAD

NOT TO SCALE

CHAPTER 3

DEVELOPMENT STANDARDS

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3. DEVELOPMENT STANDARDS

Presidential Estates East is primarily a low and high density residential neighborhood with some commercial spaces. Development standards dictated in this document are intended to ensure consistency within the development, unify the surrounding developments, and ensure the project conforms with the general vision of creating balanced neighborhoods for quality urban environments.

The following standards are explained through descriptive text, diagrams, or tables to convey the intent of the development and are intended to provide conceptual guidelines for builders.

SINGLE FAMILY HOMES (R-1)

The following section details development standards for low-density housing (single family detached housing units). Low density housing accounts for a majority of Presidential Estate East's residential product type. Lots sizes vary between 6,000 square feet to 8,400 square feet. The standards outlined in the section is intended to create distinct and varied lotting patterns that create neighborhood character, provide privacy and minimize monotony along the street scene. Standards not mentioned within this section shall abide by standards in the City of Los Banos Municipal Code (LBMC) Chapter 3 Article 6, the Los Banos Community Design Standards 2008, and latest California Building Code Requirements.

General Development Standards for Low Density/ Single Family Homes (R-1)

LOW DENSITY RESIDENTIAL STANDARDS (R-1)		
DENSITY RANGE	*2-6 dwelling units/acre per Los Banos General Plan 2042 and LBMC*	
LOT CONFIGURATION		
Building Site	*20' Minimum and not less than 800 sf*	
Area	*6,000 square feet minimum*	
Width	*Interior lot - 60' Minimum* *Corner lot - 65' Minimum*	
Coverage	*≤70% of lot max (main and accessory building, parking, driveways and patios)* *30% of lot max (landscaping, lawns and outdoor recreational facilities)*	
Height	*30' Maximum*	
LOW DENSITY (R-1)	**DEVELOPMENT STANDARD**	**GUIDELINES**
MASSING AND DETAIL	*•Dwelling width-20' minimum and not less than 800 square feet* *•A minimum of one single-story floor plan shall be required.* *•At least half of homes shall have significant single-story elements on front elevations. See single story element examples.*	*•Porches or port cocheres may be approved as a single story element if incorporated into the architecture.* *•Provide a variety of setbacks and massing along the streets.* *•Pay attention to execution of scale and detail of architectural styles.* *•Maintain consistent scale of elements throughout the design.* *•Design individual elements in proportion to each other.*

	DEVELOPMENT STANDARDS	GUIDELINES
FENCING (MAJOR ROADWAYS)	*•Solid fencing shall be provided along major roadways, such as Mercy Springs Road, and Pioneer Drive and along the northern perimeter of the development. See Walls and Fences Figure 3.4.*	
FENCING (RESIDENTIAL LIMITS)	*•All fences shall comply with LBMC 9-3.608* *•Fences within the side and rear yard shall not exceed 6' in height and be made of wood materials.* *•Concrete retaining walls shall be used with wood fencing where it abuts existing residential developments to address onsite lot drainage.* *•No wood fencing shall be allowed along lot edges adjacent to a street. See Walls and Fences Map Figure 3.4.*	
PORCHES AND DECKS	*•A minimum of two floor plans must incorporate porches.* *•Porches must be minimum five feet deep.* *•A minimum of two floor plans must have a porch option that can be converted to a wraparound corner treatment.*	*•Porches and decks shall reflect the appropriate scale and detail of the architectural style.* *•Where feasible, wrap around porches at corner lots should wrap at a minimum of five feet onto the side facade, depending on architecture.*
PORTE COCHERES	*•Porte cocheres must be less than twelve feet in height.* *•A three feet minimum side yard setback is required.*	
DRAINAGE	*• Bubble-up drainage shall not cross sidewalk* *• Provide drain under sidewalk per City standards*	
GARAGE AND DRIVEWAYS	*•For recessed garages, a minimum five foot setback is required between garage front elevation and living area or porch elevation.* *•No one garage location type may exceed half of a neighborhood's unit design. See garage location type examples.* *•Garage doors shall be roll-up and door shall be recessed at minimum twelve inches behind the garage wall plane.* *•Driveways shall be a minimum distance of 20' in length from the property line to the garage door.*	*•Avoid making the garage/driveway the primary feature of a home by varying location and door pattern.* *•Reduce the overall visual mass of the garage through the use of design treatments (windows, door pattern or color).* *•Alternate driveways as much as possible along a street.* *•Vary driveway widths as appropriate to the plan.*

	DESIGN STANDARDS	GUIDELINES
GARAGE LOCATION TYPES	*•Forward Garage- Garage is located in front of living area or front of home. If this garage placement is utilized, add extra architectural treatments such as low wall with gates, porte cochere, decorative garden fence or additional landscaping.* *•Deep Recessed Garage- Garage located min. 20' behind the living area.* *•Mid Recessed Garage- Garage located less than 20' behind the living area.* *•Located centerlines of driveway approach with the*	
SIDE YARD SETBACK	*•5' minimum (10' between residences)* *•10' minimum for lots adjacent to a street* *•Where dwelling unit has main entrance located on the side of building, a 10' minimum side setback shall be required (from setback line to entrance)*	
ACCESSORY STRUCTURES	*•Comply with LBMC 9-3.44*	
ACCESSORY DWELLING UNITS AND JUNIOR ACCESSORY DWELLING UNITS	*•Comply with LBMC 9-3.30*	
SWIMMING POOL	*•No more than 30% of total lot area may be devoted to a swimming pool facility* *•Swimming pools and hot tubs shall not be located in the front yard.* *•Pools or tubs may not be located closer than 3' from any rear lot line or side lot line measured from the water line.* *•Any mechanical equipment required for swimming pools or tubs shall not be located in the front yard.* *• Pool and/tub shall be installed in compliance with the most current California Building Code.*	
SIGNS	*•Permanent outdoor advertising structures and signs are not permitted.* *•Comply with LBMC 9-3.2808 and signage section of this chapter.*	
PERMITTED USES	*• Comply with LBMC 9-3.602*	

ROOFS	*•Mechanical equipment is not permitted on roofs.* *•Roof penetrations for vents shall be on the rear side of roof ridges where possible. Paint vents to match the roof color.* *•Roof material shall be tile.* *•12" minimum roof overhang - integrate into the building architecture.*	*•Place satellite dishes away from the street.*
WINDOWS AND DOORS	*•Openings of elevations shall be articulated with appropriate head and sill details at a minimum.* *•Window grids, where used shall be used on street facing elevations.* *•Shutters shall be traditional in design and size in proportion to the architectural style.*	*• Jamb trims may be added where appropriate.* *•Windows may be in various shapes and sizes. Double entry doors with or without side panels may be provided as long as they are appropriate to the building style.*
FRONT YARD SETBACK (from front property line)	*•20' to front-on garage(face of garage door)from public street.* *•Setback for lots fronting cul-de-sac bulb may be reduced to 10'.*	
REAR YARD SETBACK (from rear property line)	*•10' minimum for single story units and accessory structures* *• 20' for structures with two or more stories and secondary decks*	

Examples of Garage Locations

Mid Recessed Garage

Deep Recessed Garage

Forward Garage

HIGH DENSITY RESIDENTIAL (R-3)

The following section details development standards for high-density residential areas. High density residential areas in Presidential Estates East shall comprise of apartment style units.

Apartments provide residents an alternative to home ownership while having access to many other amenities such as landscaped grounds, pools, clubhouses, and gyms. Apartment complexes should be designed around a “community theme” which allows for repetition of building elevations. Still, variation among the building elevation should be incorporated through varied building massing, plate heights and articulation of decks, windows, and entries particularly at corner units. Areas around apartments shall be landscaped to compliment the architecture and comply with requirements in the landscape section of this chapter.

General Development Standards for High Density/ Multi-Family Homes (R-3)

HIGH DENSITY RESIDENTIAL STANDARDS (R-3)		
DENSITY RANGE	*20-30 dwelling units/acre per Los Banos General Plan 2042 and LBMC*	
LOT CONFIGURATION		
Building Site	*3 dwelling units per 6,000sf* *or* *1 dwelling unit per 1,500 sf* *(not to exceed 30 dwelling units per acre)*	
Width	*75' Minimum*	
Coverage	*70% Maximum (main and accessory building, parking, driveways and patios)* *30% Maximum (landscaping, lawns and outdoor recreational facilities)*	
Height	*50' Maximum* *30' Maximum - when High Density Residential (R-3) is within 50' of Low Density Residential (R-1).*	
	DEVELOPMENT STANDARD	**GUIDELINES**
SITE PLANNING	*• Orient dwelling units, entries, and pedestrian access towards Madison Avenue and Mercey Springs Road to the extent possible.* *•Provide a minimum of five feet landscape buffer between any parking lot and back of sidewalk along public streets.* *•Locate all service and maintenance areas away from public streets and pedestrian areas. Screen from view with walls and/or landscaping (trees or shrubs). Provide a minimum 5' landscape zone around service/ maintenance areas/enclosures.*	*•Private recreation facilities may be provided and may include but not limited to, a swimming pool, spa, tennis court, basketball court, playground, and/or picnic/barbecue area. The design of these facilities shall be compatible with the architectural style of the complex.*
MASSING AND DETAIL	*•Minimize the square/boxiness of this type of development along all elevations.* *•Architecture shall incorporate unique window treatments that contribute to the character of the project.* *•At least half of the units must have a significant single story or lower height element on the front and street facing elevations.* *•Units adjacent to Mercey Springs Road and South 11th Street shall have enhanced elevations where visible from the streets (i.e. building articulation, window treatments, massing variations)* *•Building material on front facade shall wrap to a logical termination point on elevation adjacent to exterior side yard.*	*•Avoid large, blank wall expanses. If necessary for noise attenuation, wall shall have a decorative applique.*

	DEVELOPMENT STANDARD	GUIDELINES
ACCESS AND PARKING	*•All garage doors shall be roll-up doors.* *•Locate parking throughout the site as close as possible to individual units.* *•Provide pedestrian connections from parking lots to units.* *•One parking lot tree shall be planted per six parking stalls.* *•Provide a continuous hedge, wall with landscaping or other acceptable screening options along parking lot perimeter.* *•Parking lot light fixtures shall use shielding devices to minimize light impacts on surrounding residential units. Lighting levels shall provide adequate illumination for safety purposes.*	*•Where possible, turn the short side of parking lots towards the street and avoid lengthy parking areas adjacent to street.* *•Garages may be set back from the face of the building to reduce the overall visual mass of the garage.*
ROOFS	*•Roof types shall be consistent with architecture.* *•Flat roofs are permitted only with appropriate para pets and in limited applications.* *•Utilize overhangs as necessary per architecture solar orientation and climatic conditions.* *•Vertical steps should be at least 18" to create visual interest.* *•Place non-mechanical roof vents in unobtrusive locations away from public view unless a part of architectural style.*	*•Vary roof types to add variety and visual interest.* *•Steps in roof should respond to the interior room arrangement and provide visual relief and interest.* *•Incorporate architectural elements for visual interest such as, dormers, chimneys and others.*
WINDOWS AND DOORS	*•Utilize window grids on public street facing elevations with proportions appropriate to architectural style.* *•Openings on all elevations shall be articulated with appropriate head, sill and jamb trim.* *•If shutters are incorporated , shall be traditional in design and sized appropriately to match architecture.*	*•Vary windows and doors to match various elevation styles.*
MATERIALS AND COLORS	*•Use consistent materials and colors within a given architectural style.* *•Accent materials such as brick or stone shall be returned to a logical termination point.* *•All materials and colors subject to architectural design review.* *•Full metal roofs are prohibited unless reviewed and approved by City.*	*•Utilize accent materials along street facing elevations to create visual interest.*

	DEVELOPMENT STANDARD	GUIDELINES
FRONT YARD SETBACK (From front property line)	*•Comply with LBMC 9-3.808*	
REAR YARD SETBACK (from rear property line)	*•Comply with LBMC 9-3.808*	
SIDE YARD SETBACK	*•Comply with LBMC 9-3.808*	
MECHANICAL EQUIPMENT & UTILITIES	*•Exterior light fixtures attached to the building shall be compatible in style, material, color and details of architecture.* *•All mechanical equipment, (air conditioners, gas regulators, and telephone/cable TV pedestals) shall be located in visually unobtrusive locations either at the side or rear of buildings away from adjacent streets or walkways.* *•Screen utilities with plantings and or structures such as walls, fences and/or trellis.* *•Do not located trash enclosure near primary pedestrian circulation and gathering areas. Trash enclosures shall be enclosed and screened with plantings and or structures such as walls, fences, and/or trellis.* *•All utilities should be coordinated with street tree, street light, and site landscaping. Tree and lighting plans shall be completed in conjunction with joint trench and utility placements plans to ensure the best spacing and location for trees and lights.*	*•Where feasible, located transformers and other above ground utility structures withing or adjacent to parking lot or behind buildings.*
OPEN SPACE/ LANDSCAPING	*•A minimum of 200 square feet of open space per unit shall be provided. This may include landscaped areas and recreation areas without structures, driveways or parking spaces. (LBMC 9-3.809)* *•Incorporate low maintenance and climate appropriate landscaping in open space areas.* *•Open areas shall comply with the City of Los Banos current Water Efficient Landscape Ordinance (WELO or the State of California's, whichever is more stringent.* *•All required open space shall be landscaped and maintained in accordance with an approved detailed landscape plan.*	•
SIGNS	*•No permanent outdoor advertising structure or sign shall be permitted except those used in conjunction with entry monuments and subject to their particular design standards.* *•Comply with LBMC 9-3.28.08 and signage section of this chapter.*	

	DEVELOPMENT STANDARD	GUIDELINES
PERMITTED USES	•*Comply with LBMC 9-3.802.*	
PERMITTED USES (subject to permit)	•*Comply with LBMC 9-3.803.*	
OPEN SPACE	*220 sf minimum per dwelling unit (landscaped areas, walkways, recreation areas without structures, drive-ways or parking spaces)* *Detailed landscape plan shall be provided for City review and approval*	

NEIGHBORHOOD COMMERCIAL (C-N)

Neighborhood commercial uses are neighborhood centers intended for small retail or office space that may supply convenient shopping for goods and services for residents. Space for neighborhood commercial is located at the main entrance of Presidential Estates to allow for easy arterial access, good visibility, and adequate parking. The incorporation of neighborhood commercial land use within a residential neighborhood is part of the City's efforts to build quality neighborhoods by providing ample retail and shopping opportunities that are integrated into neighborhoods and neighborhood centers.

Uses for neighborhood centers may include grocery, retail store, cafes, dry cleaners, post office, bank and other small businesses. All uses shall comply with the City of Los Banos Municipal Code (LBMC 9-3.1102 and LBMC 9-3.1103). These commercial areas should provide for efficient circulation through strategic storefront locations, public space design, and consideration of adjacent connections.

Side and rear yards of commercial areas within Presidential Estates East shall be fully landscaped with live plant material or a mix of live plant material and decorative landscaping. Landscaping shall conform to landscape standards established in chapter. Standards not mentioned within this chapter shall abide by standards in the LBMC Chapter 3 Article 11, the Los Banos Community Design Standards, and latest California Building Code requirements.

NEIGHBORHOOD COMMERCIAL STANDARDS (C-N)		
DENSITY RANGE	*0.25 - 0.6 FAR*	
LOT CONFIGURATION		
Building Site	*1,000 Square Feet Minimum*	
Height	*30' Maximum*	
	DEVELOPMENT STANDARD	**GUIDELINES**
SITE PLANNING	•Buildings fronting Mercey Springs Road shall incorporate special features either vertical elements or facade treatment. •Architecture and landscaping at this location shall help reinforce the main entry into the Presidential Estates development. •Site plan shall be well organized and easily navigable, with clear and organized circulation network that connects users from parking, adjacent features to buildings. •Site parking and loading areas on sides or rear of site layout. Exceptions may be made for traditional retail uses such as grocery stores. Exceptions subject to City approval. •Service areas and loading docks shall be screened from view with walls and/or landscaping. • Building height and size shall be designed to be compatible with surrounding neighborhoods. •Provide shaded pedestrian walkways between buildings and outdoor pedestrian areas. •All storm system design shall conform to the City of Los Banos Master Plan for Storm Drainage System and the City's Storm Water Management Program. See Chapter 4 for additional information.	•To the extent possible, buildings shall be sited adjacent to the public street right-of-way. • Where possible, parking drives shall be directed towards the major use on site. • Minimize the number of vehicular entries and locate them appropriately to avoid traffic conflicts.

COMMERCIAL (C-N)	DEVELOPMENT STANDARD	GUIDELINES
MASSING AND DETAIL	•Building facades shall be diverse and adequately glazed for visual access to interiors.	•Larger mass and floor plates of anchor stores should be located closer to Mercy Springs Road and be sided with smaller commercial spaces. •Break up larger buildings through changes in plane and height and use of articulation such as recesses and shadow lines. • Vary building and landscape elements along the sidewalk for varied and visually interesting streetscape. Elements may include but not limited to facade offsets arcades, trellises and landscaping.
FENCING & WALLS	•Solid walls shall be provided along commercial lots abutting residential land uses. Wall shall be a minimum six feet high and made of concrete masonry units or similar.	
PARKING LOTS	•Parking lot design and stall requirements shall comply with this section and standards listed in the Los Banos Improvement Standards and Specifications. •Any pedestrian connections through the parking lots to commercial buildings and public streets shall be integrated into the design, clearly and conveniently located, and incorporated with landscaping, circulation design, and building siting . •All direct access shall be located along Mercey Springs Road or Page Avenue. •Parking lot edges shall be defined by a continuous hedge. •Provide adequate lighting for safety.	•Select light fixtures that complement adjacent architecture.
ON & OFF-STREET PARKING	• Comply with LBMC 9-3.20	

COMMERCIAL (C-N)	DEVELOPMENT STANDARDS	GUIDELINES
MATERIALS AND COLORS	•Vinyl siding, T111 plywood and thin brick are prohibited. Glass curtain walls are only permitted in a limited or partial application per building. •Use permanent building materials. Acceptable facade materials include: -Stucco/plaster -Colored concrete -Brick, stone, pre-cast concrete, split face masonry block -Non-reflective and clear/lightly colored window glazing -Tile-as a secondary materials -Glass block-as a secondary material •Acceptable roof materials include: -High quality composition roof (comparable to 30 year minimum grades). -Subject to architectural review -Concrete tiles (all shapes) -Standing seam / corrugated metal (appropriate to style) -Built-up asphalt (flat roofs only). Parapet required.	•Ensure materials and colors selected are harmonious and unified through the development.
YARDS	• Sites adjacent to a major or collector streets shall comply with LMBC 9.3.1901	
LIGHTING & SIGNAGE	• Comply with LBMC 9-3.1902, LBMC 9-3.28.10,lighting, and signage section of this chapter.	
PERMITTED USES	• Comply with LBMC 9-3.1102	
PERMITTED USES (subject to a permit)	• Comply with LBMC 9-3.1103	
ENCROACHMENTS (up to 3 feet into public areas)	•Eaves •Second floor architectural projections (i.e. overhangs) •First floor architectural projections (i.e. columns, building facades at entires) At public streets, these projections can only encroach 1 foot	
ENCROACHMENTS (up to 5 feet into public areas)	•Benches/portable tables/ chair setups •Planters •Removable fencing, heat lamps,etc. •Merchant display	

COMMERCIAL (C-N)	DESIGN STANDARDS	GUIDELINES
ENCROACHMENTS (up to 6 feet into public areas)	•Awnings and canopies (min. 8 feet height clearance required)	
MECHANICAL EQUIPMENT	•All mechanical equipment shall be in visually unobtrusive locations, screened from view and baffled for noise attenuation. •Locate trash enclosures either in buildings, within or adjacent to the parking lot, or behind buildings. •Trash enclosures shall be enclosed with structures such as walls, fences, and trellises that will blend with the architectural styles, materials and colors or adjacent buildings. •Transformers and other above ground utility structures shall be located either in buildings, within or adjacent to the parking lot, or behind buildings. •Screen transformers with plantings and/or structures such a walls, fences or trellis. •Coordinate utilities with street trees and street light locations. Street trees and light locations take precedence over utility.	•Place transformers withing a self-contained utility room, withing a building or at the periphery of parking lots wherever possible.

ARCHITECTURE STANDARDS

This portion of the document provides direction and details into the overall building aesthetic that is desired for this community. Building styles should have consistent design features to create coherent neighborhood character. Five distinct architectural plans, each with three different elevations are included in this document for single-family units. The multiple elevation styles allow for variation among similar floor plans. These architectural plans are intended to be prescriptive and allow for interpretation to create uniquely distinct street scenes. See Appendix A for prescriptive architectural plans.

LANDSCAPE ARCHITECTURE STANDARDS

All plants selected should be a native or adapted species well suited to the local climate and specific use and be drought tolerant, durable and long-lived. Plant and tree selections should avoid varieties with invasive characteristics, such as: surface roots that can spread, creating trip hazards or that can be destructive to surrounding curbs and walls, species that produce large wind blown seed varieties that become invasive or destructive, varieties that are extremely allergenic and varieties with toxic properties that can be ingested by humans or animals. Fruiting varieties of tress or shrubs should be avoided as much as possible due to maintenance challenges and may be problematic due to litter and pest attraction.

Plant selection should be determined based upon natural shape of species with minimal pruning or maintenance. Shrubs should be used to screen fences or utility structures. Evergreen plant material as a background is preferable to maintain year-round screening, however, the usage of decorative deciduous plant species is desirable and recommended with care being taken to maintain year-round interest and structure.

The use of traditional “lawn” species and spaces should be limited unless gray water usage is incorporated. Select drought-tolerant, durable and long-lived ground cover species that maintain a year round cover and interest through leaf structure or flower varieties. When “lawn” species are utilized, varieties should be deep roting species that use less water than traditional varieties. The use and application of “lawn” species shall follow the guidelines and requirements set forth in the latest California Water Efficient Landscape Ordinance (MWELO).

The project area is located on the border of Sunset Western Garden Climate Zones 8-9. Minimum plant stock sizes used for landscape installations will be:

- Street Trees -15 gallon
- Shrubs - 1 gallon
- Groundcover - 1 gallon
- Turf - Sod or Hydroseed

All plant stock shall be nursery grown material conforming to national nursery standards and shall be free from harmful insects. See Appendix B for proposed plant list. Plant species subject to City approval.

Streetscape

Landscaping along streets create pedestrian friendly environments through softening the edge between vehicular and pedestrian travel. Street trees often define street character and assist in establishing street hierarchy through size of tree canopy, foliage color and tree height. Proper selections of tree species along streets help identify and differentiate different communities, spaces and use. Streetscape landscaping should match scale and function of the street. Heavily traveled and regionally oriented streets should receive larger massing and heavier landscaping, while low trafficked streets should have landscaping scaled to support lower volumes of traffic. Tree species and character should reflect the local context.

Local neighborhood streets are intended to support lower volumes of traffic and encourage pedestrian and bicycle use. Neighborhoods should receive one to two varieties of street tree species to establish and maintain neighborhood identity. See Appendix B for plant list and Figure 3.1 for Street Tree Master Plan.

Pioneer Road

Pioneer Road acts as a minor east-west arterial road that borders the development on the south. A 6' tall community wall shall separate any lots backing onto the street. Pioneer Road will be expanded to provide a two lanes for bi-directional travel and a eight foot wide class II bike lane on the north side. Street improvements for Pioneer Road include an 18' right-of-way dedication to accommodate a 5-foot-wide meandering sidewalk flanked by landscaped parkway strips. Large structural trees shall be planted in a linear fashion within the parkway strip closest to the vehicular lanes. A mix of vines, tall shrubs, and accent shrubs shall be used to soften the edge between the wall and sidewalk.

Page Avenue

Page Avenue is a neighborhood collector street that runs east-west in the middle of the development. Page Avenue shall be characterized by a row of single species located withing the interior parkway strips adjacent to the street and a row of flowering/accents trees within the median. A 6' tall community wall shall separate any lots backing onto the street except at commercial locations. A variety of tall, medium and accent shrubs shall line the parkway strip located within the parkway strip adjacent to the community wall and sidewalk. Spacing between trees should remain consistent and span the length of the street within this development. The median shall be planted with a mix of groundcovers and accent shrubs. Plantings shall be grouped into larger masses and be consistent along entire length of the street.

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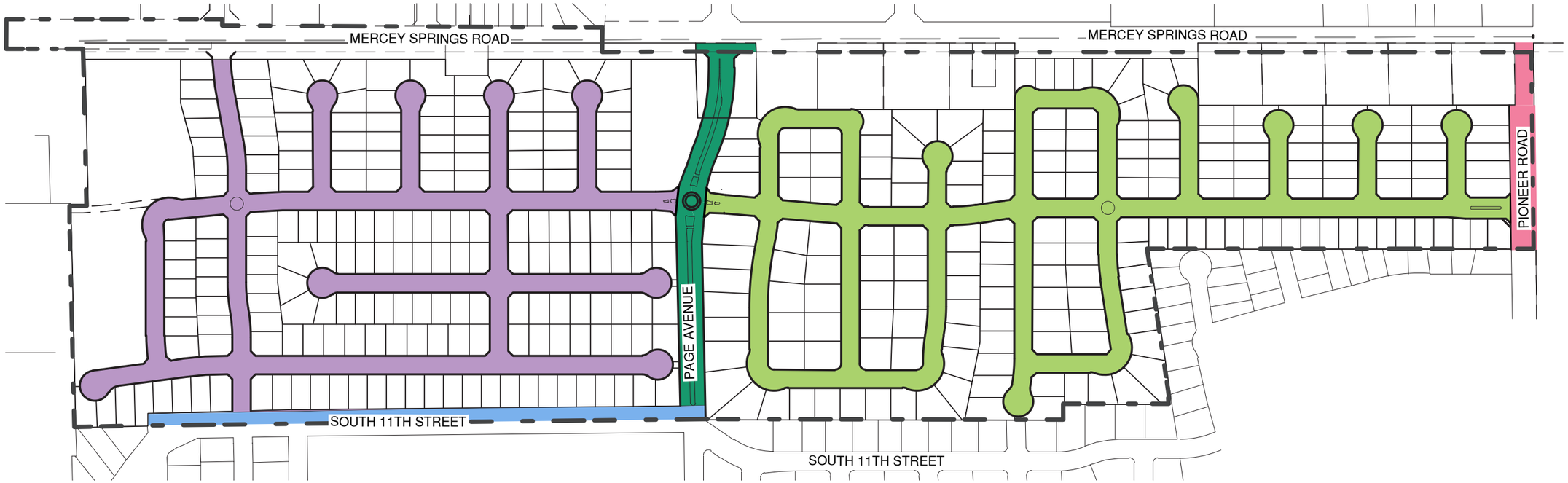
FIGURE 3.1 STREET TREE MASTER PLAN



STREET	BOTANICAL NAME	COMMON NAME
Page Avenue	Chinese Pistache	Pistacia Chinensis ‘Keith Davey’
Pioneer Road	Coast Live Oak	Quercus agrifolia
Residential S	Lacebark Elm	Ulmus parvifolia ‘Allee’
Residential N	Zelkova	Zelkova serrata ‘Green Vase’
South 11th Street	Acer Rubrum ‘October Glory’	October Glory Maple

ACCENT TREE LIST	
Cercis sp.	Redbud
Chilopsis linearis	Desert Willow
Chitalpa tashkentensis	Chitalpa
Lagerstroemia indica	Crape Myrtle
Malus x ‘Prairifire’	Prairiefire Crabapple

Annexation Boundary

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Residential Streets

Residential streets are narrow two-lane roadways that typically front residential homes or neighborhood parks. These streets are pedestrian oriented and should be landscaped to match the surrounding scale and character. Pedestrian walkways shall be 6' wide. Large street trees shall be planted at 5' behind the sidewalk to provide shade and reduce the urban heat island. Interior lots shall provide two street trees in the front yard. Corner lot conditions may require street trees to be planted at 2.5' behind the sidewalk and require at minimum two trees along the side yard and two in the front yard. See Figure 3.2 for conceptual front and side yard landscaping. Street tree species should be different per neighborhood to establish unique neighborhood identity, buffer against potential tree die out due to disease or insects and support diversity within the urban forest. Street trees shall be planted in equal spacing and centered in the parkway strip, where applicable. Similarly, one or two groundcover species shall be selected to complement street trees. See Street Tree Master Plan Figure 3.1 for suggested street tree and groundcover species. The property owner is responsible for the maintenance of street trees within property limits.

Roundabouts

A Roundabout is placed within the project to facilitated efficient vehicular movement. Roundabouts shall be highlighted through focal elements such as a monument, accent trees, or trees that create visual interest. Roundabouts should be landscaped with shrubs and ground cover to delineate extent of roundabout. See Figure 3.10 for conceptual roundabout design.

Walls and Fencing

A hierarchy of walls and fencings help create usable spaces and are key to maintaining continuity and identity throughout the project. The following section details character, function, materials and permitted fencing and wall types for different spaces. Wall and fencing heights determined by noise study, refer to Environmental Noise & Vibration Assessment report created by Bollard Acoustical Consultants, Inc. dated July 2nd, 2025.

Community Walls

Community walls shall frame major streets, neighborhood entries and along border of Presidential Estates East limits except areas of the project adjacent to residential development. See Walls and Fences Figure 3.4. Walls shall be at most 7 feet tall except along Mercey Springs Road where it shall be 8 feet high. Where required, masonry sound wall design will be deferred to noise studies.

Placement of the community walls shall be at the right of way/property line, private property side of the property line, or on public utility easement boundary. Any columns shall be equally spaced at no more than 30' on center. Community walls shall consist of CMU blocks or similar. Detailed columns shall be incorporated at significant landmark locations directional changes or at wall end locations. Community wall panels shall receive a continuous cap and panels shall receive a decorative treatment or design. All columns shall have a separate decorative cap from the wall panels.

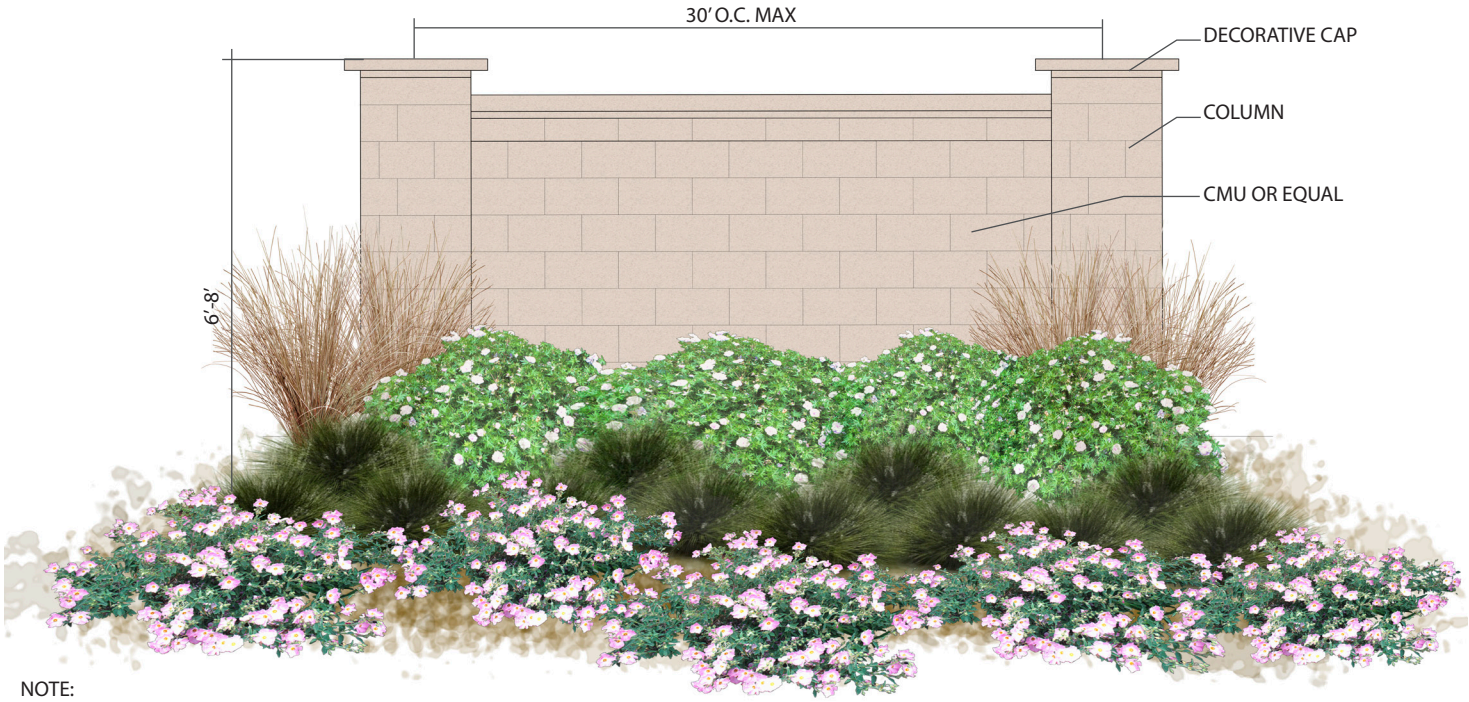
Neighborhood Lot Fencing

Neighborhood fencing is utilized within residential areas to delineate residential private spaces. Fencing fronting any residential street or lot shall receive a decorative wood fence. Any fencing shared between lots shall be located on the rear and side property lines of the home lot, except at entries where community wall is specified between units. All neighborhood wood fences shall be 6 feet high, and uniform throughout the project unless otherwise noted.

Community Fencing

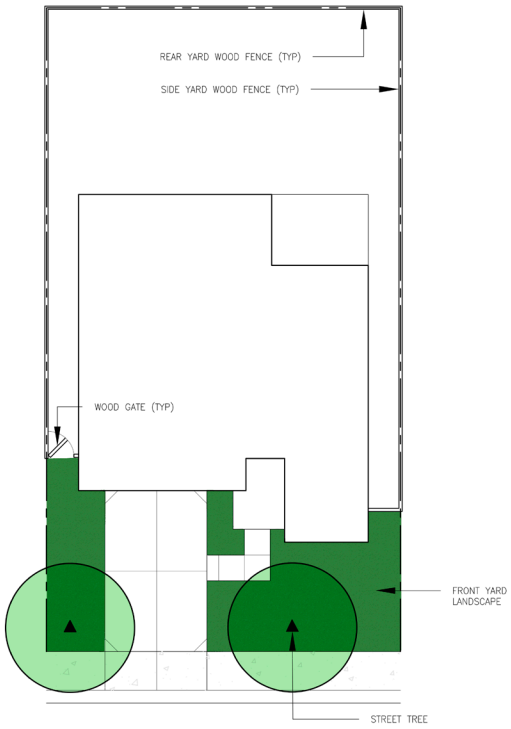
Community fencing is utilized within the residential areas along roadways to delineate residential private spaces. This fencing type fronting any residential street shall be topped with a decorative lattice treatment for enhancing the aesthetic. All community fences are to be made of wood and shall be 6 feet high, and uniform throughout the project unless otherwise noted.

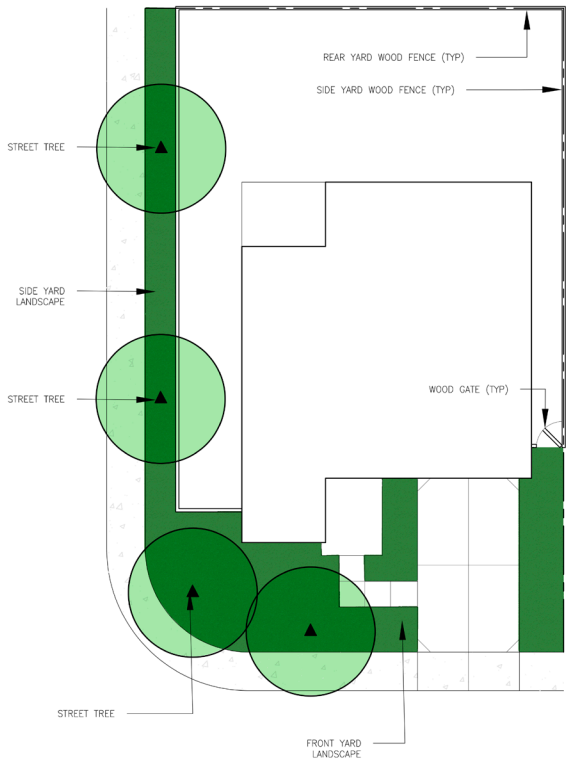
FIGURE 3.2 COMMUNITY WALL CONCEPT



NOTE:
•8' high masonry wall at various locations per July 2nd, 2025 noise study
•Refer to Figure 3.4 Fencing and Walls Maps for locations of 6' high community wall
•Concept imagery is for reference only. Community wall shall be approved by the City .

FIGURE 3.3 RESIDENTIAL LOT: CONCEPTUAL FRONT/SIDE YARD LANDSCAPE





LIGHTING

Lighting fixtures shall be designed to reflect the appropriate scale, type and illumination of the street or area where located, and selected to reinforce the overall community theme. Any exterior lighting shall be shielded to minimize direct glare and reflections. The lighting fixtures shall utilize LED light fixtures wherever possible. Electrical drawings and photometric analysis should be performed to ensure adequate lighting for each use type. Lighting shall match City Department of Public Works standards and specifications and meet City, local utility and State of California standards for illuminations and safety unless an appropriate alternative is otherwise approved by the City.

Collector and residential streets may receive lower pedestrian level lighting. Provide safety lighting at all street intersections; fixtures to comply with City Standards or as approved by City. Pole heights along collector streets should be higher than those pole heights of residential streets. Fixture types, height and locations shall be consistent throughout the project and match existing adjacent neighborhoods, be concealed and pointed downward unless used for signage illumination.

Exterior light fixtures attached to buildings shall be compatible with the style, materials, colors and details of the building and be submitted for planning review. Shielding devices shall be used to prevent light spillage that may impact residential development. Parking lot lighting shall be of a style and color complementary to the architecture. Park and open spaces may receive low level lighting such as bollard lights or pedestrian scale lighting.

SIGNAGE

A successful signage system not only contributes to an efficient traffic circulation of vehicles, but assists in reinforcing neighborhood character and identity. Signage within the project shall be consistent and located based on signage hierarchy to facilitate proper directional instruction. The color, materials and design should be durable and vandal resistant.

Consider utilizing the area's historical context as a basis for establishing street and park names as a unifying feature. Design standards in this section shall take precedent over those found in the City's Zoning Ordinance.

Street/Vehicular Signs

Street signs contain street names and orient vehicular travel. These signs should follow a hierarchy in size that is appropriate for the accompanying street. For example, major arterial and collector streets should have larger signs for legibility. Presidential Estates East shall use street sign standards adopted by the City of Los Banos and match the overall color and design theme used in the Presidential Estates project. Signage shall conform to the City's requirements for traffic regulatory signs and posts. Street signs require 8' vertical clearance. Consider shrub and tree location and spacing to avoid obstructing signs.

Model Homes Signage/Subdivision Sales Signs

This type of signage includes signage that provide sales information to potential homeowners and shall be temporary and located on the project site. They shall comply with the following and standards listed in LBMC 9-3.2819(f):

- No more than two on-site subdivisions signs are permitted at subdivision entrance.
- Sign may be freestanding or wall mounted.
- Maximum area of sign shall be 128 square feet.
- Maximum height of a freestanding sign is 10' and shall be setback at minimum 5' from property line. Sign should not impair the vision of vehicles driving into or out of the site. Signs mounted on an entry or community wall may not extend above the top of the wall.

Subdivision and Residential Development Directional Signs

These signs are temporary and located off-site the subdivision that provide sales and directional information to potential buyers. All off-site subdivision signage shall be approved by the City and comply with the following and standards listed in LBMC 9-3.2819(g):

- Be freestanding and contain no more than 2 sides
- Maximum height 12', maximum width 8'
- Shall not be located within 1/8 mile (660 feet) from any other community off-site subdivision signage
- Any community off-site subdivision signage shall only advertise for Presidential Estates East neighborhoods and directional arrow or directions to Presidential Estates East.
- Signage shall not be erected until information is advertised on the sign. Building Permit must be issues for the subdivision before sign can be erected.
- Sign shall be removed within 30 days if no model homes or lots are available for viewing or sale.

Other Real Estate Sales/Leasing Signage

Display of signs for advertising real estate sales, leasing or rental opportunities shall be limited to one per property with a maximum of 8 square feet in area. Real estate sale/listing signs shall be removed withing thirty (30) days of settlement of property.

Garage/Yard Sales Signage

Garage or yard sale signs shall comply with the following:

- Sign shall not exceed 4 square feet in area.
- May not be erected more than 2 days prior to event .
- One(1) sign shall be allowed on-site.
- All signs must be removed within one(1) day after the close of garage or yard sale.

Standards for other signage not mentioned above can be found in the LBMC 9-3.28 and/or require approval of the City.

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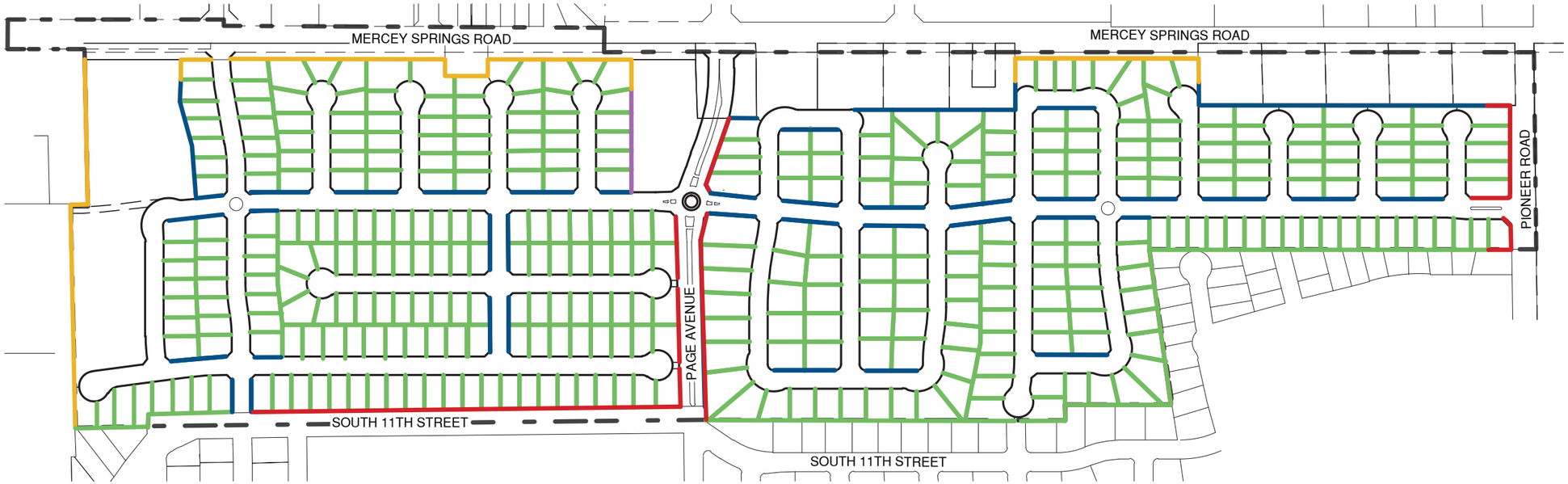
FIGURE 3.4 FENCING AND WALLS MAPS



- 8’ High Masonry Wall
- 7’ High Masonry Wall
- 6’ High Community Wall
- 6’ High Community Fence
- 6’ High Interior Lot Wood Fence
- Annexation Boundary

Note:

1. Refer to Environmental Noise & Vibration Assessment, July 2, 2025 prepared by Bollard Acoustical Consultants for noise barrier recommendations along development perimeter.
2. Wall treatment for new walls shall match existing wall on east side of Mercey Springs Road (split face block in a beige color)

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CHAPTER 4

PUBLIC SERVICES

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4. PUBLIC SERVICES

Communities require an array of public services and facilities that address the recreational, educational, governmental and emergency response needs of a community. These facilities may include but are not limited to fire, safety, law enforcement, and more. The City and other responsible agencies should collaborate and review plans to ensure adequate public facilities and improvements are included to service new development.

SCHOOLS

New students from Presidential Estates East would fall within Los Banos Unified School District (LBUSD). The City and LBUSD work closely together in planning new developments, projecting new students numbers, and expanding facilities as needed to ensure adequate school and recreation facilities are built to meet the growing population. Table 3.0 show the projected number of new students generated by Presidential Estates East based on the number of units developed. The development does not propose any new school facilities and would require the developer to pay in-lieu fees. New students from the development will be absorbed into existing schools in the area. Additionally, the developer is subject to the terms agreed upon in the LBUSD School Impact Mitigation Agreement, 2004. This document includes methods for mitigating the impact of existing, proposed and future lots within LBUSD through various fees intended to help acquire, develop and design school sites. As part of the agreement, the developer has agreed to participate in financing the costs of school facilities for projects through school impact fees, special taxes and other financial gifts identified in the agreement. The District will also establish one or more Mello Roos Community Facilities District for proposed and future lots. The Agreement has been amended twice since 2004, once in February 2014 and again in April 2015. Refer to the complete agreement and amendments for full details.

TABLE 4.0 PROJECTED NEW STUDENTS GENERATION RATE

	UNITS	ELEMENTARY	MIDDLE SCHOOL	HIGH SCHOOL
LBUSD STUDENT GENERATION RATES (per residential unit) [1]		0.491	0.131	0.207
Single Family	371	182.16	48.6	76.80
Apartments	120	58.92	15.72	24.84
	TOTAL	**241.08**	**64.32**	**101.64**

LIBRARIES

Residents of Presidential Estates East may visit the Los Banos Branch Merced County Library located at 1312 Seventh Street near Downtown for any literary, artistic and reference materials. The library is part of the Merced County Library network. As part of the ongoing effort to provide public and cultural facilities to residents, the City may require developers to pay a fee for expanding library services to maintain current service levels and new development needs.

FIRE PROTECTION

The City operates their own fire department and serves the community through two fire stations. Each station is staffed with three personnel a day with an additional Chief Officer on duty 24-7. The closest station to Presidential Estates East is roughly 1.5 miles away.

1 *Los Banos Unified School District: 2024 School Facility Fee Justification Report*

LAW ENFORCEMENT

The Los Banos Police Department (LBPD) plays a crucial role in maintaining public safety and fostering community relations. With a dedicated team of approximately 40 sworn officers and a support staff of around 15, the department provides a comprehensive range of services, including crime prevention, emergency response, traffic enforcement, and community policing initiatives. Their commitment to maintaining a safe environment is underscored by regular patrols and proactive measures to address local concerns.

Community engagement and information transparency is a cornerstone of the Los Banos Police Department's approach. They actively involve residents through programs such as neighborhood watch, youth outreach initiatives, and community forums, which encourage open dialogue and foster trust between law enforcement and citizens. Additionally, officers participate in the Police Activities League (PAL), a non-profit(501(c)3) organization focused on community engagement through various program and activities. PAL's focus is to foster close relationships between youth and officers to reduce youth crime, violence, and drug and alcohol use.
LBPD has three stations throughout the city and will service residents of Presidential Estates East.

CHAPTER 5

INFRASTRUCTURE

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5. INFRASTRUCTURE

Presidential Estates East is a 111.7-acre annexation into the City of Los Banos. Land uses are mostly residential with a small commercial area. In March 2010, the City of Los Banos adopted a City-Wide Master Utility Plan Study, which was prepared by Corollo. The Master Utility Plans (Master Plans) provide for the expansion and/or implementation of potable water, wastewater, storm drainage facilities. Infrastructure for the Presidential Estates East Specific Plan shall be designed in accordance with the Master Plans and zoning regulations and any applicable City standards.

Existing utilities shall be abandoned per City standards and indicated as such on approved Improvement Plans. All improvements shall be constructed to City standards and are required to be submitted for City review and approval. Improvements on SR 165 and intersections of Pioneer Road, Page Avenue and Madison Avenue at SR 165 should be constructed per TIA requirements. Upon notice to proceed, the Developer shall be required to provide construction documents, ROW acquisition, and proposed completion timeline with dates or phases of milestones as outlined in the TIA and per Caltrans requirements.

STORM DRAINAGE AND WATER QUALITY

Based on the 2010 City Master Storm Drain Plan, Presidential Estates is located within the Central City sub-basin. The Central City sub-basin is currently the largest sub-basin in the city. At the time of the Master Plan, there were no existing detention basins within this sub-basin. The storm drainage Master Plan proposed two separate detention basins (CC-11 and CC-B1) to provide treatment and storage within the sub-basin. CC-11's proposed location is at the corner Mercey Springs and B Street and will hold 25 acre-ft. CC-B11's proposed location is recommended to be at Talbot Park and will hold 20 acre-ft.

An existing 24-inch storm drain main runs through the north portion of Presidential Estates. The proposed project storm drain system will tie directly into the existing system with treatment of the runoff coming from the detention basins proposed in the drainage Master Plan. On-site storm drain infrastructure will be sized per most current City of Los Banos Improvement Standards and Specifications. As part of the improvement plan preview, calculations shall be submitted to verify existing facility (piping, basin, pumping) capacities that will be connected to for new storm drainage system.

DOMESTIC WATER

Domestic water will be provided by the City of Los Banos in accordance with the 2010 City Master Water Plan. Water supply for the infrastructure demand will be supplied by an existing 10-inch water main. The 10-inch water main enters the site, it the northeast off Mercey Springs Road and runs south though the middle of the site and then runs west to meet up with Page Avenue. A 10-inch water main also runs along South 11th street and just north of the Presidential Estates area. Proposes water infrastructure will connect directly to the water main running through the site and will also connect to the 10-inch main adjacent to the site. The existing water is serviced by the 5-million-gallon tank located on Ward Road. On-site domestic water infrastructure will be sized per the City of Lost Banos Improvement Standards and Specifications.

Developer shall extend 18" water main from Pioneer Road to westerly boundary of subdivision and connect 18" water main to subdivision water main at Street A. Water main on Street A between Pioneer Roadand Madison Avenue shall be 12" diameter. Water Main on Madison from SR 165 to I Street shall be 12" diameter and connect to 18" water main in SR 165. Water main on Page Avenue shall be 12" from SR 165 to Street A and connect to 18" water main in R 165. Changes to the design are subject to City review and approval.

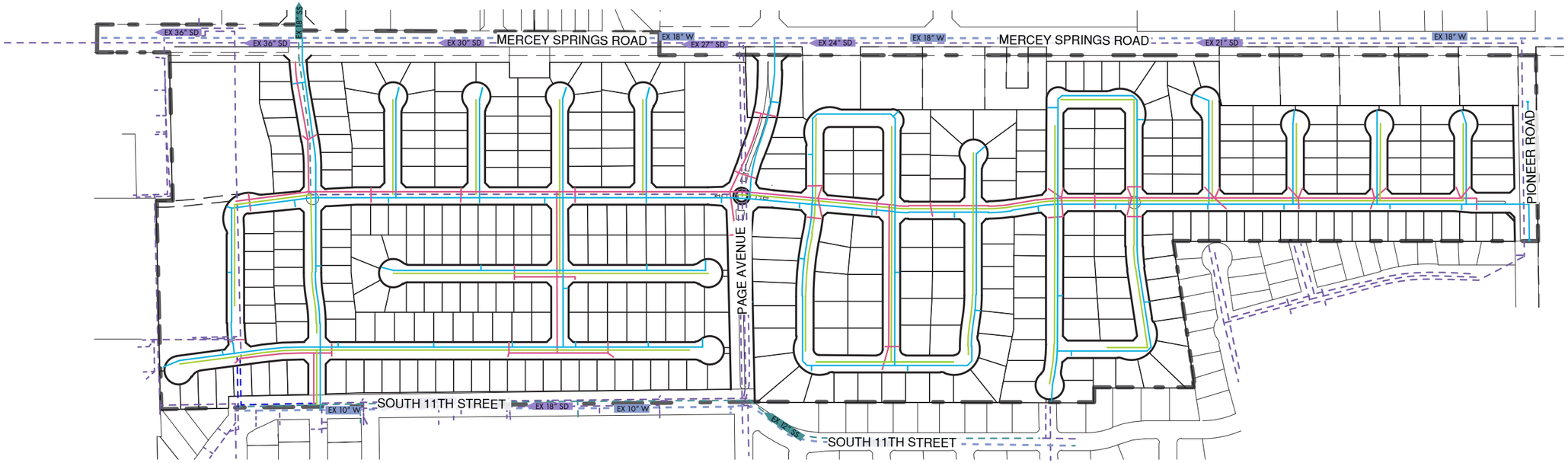
SANITARY SEWER

Sanitary Sewer will be provided by the City of Los Banos. Per the 2010 City Master Sewer Plan, the existing sewer infrastructure has been sized to accommodate future flows from Presidential Estates. The Presidential Estates project will install gravity lines to service the project which will connect directly into the existing 18-inch sewer main that runs parallel to the existing 10-inch water main through the northern portion of the project site. On-site sanitary sewer infrastructure will be sized per the City of Lost Banos Improvement Standards and Specifications.

OTHER UTILITIES

Solid Waste Disposal is provided by Mid Valley Disposal Service in Los Banos, CA. Electric and Natural Gas are provided by Pacific Gas & Electric. Telephone/CATV/Data services are provided by AT&T and/or Comcast depending on homeowner preferences. All Utilities are adjacent to the site and the Utility Companies have expressed the ability and willingness to provide services to the project.

FIGURE 5.1 UTILITIES MAP



Storm Drain

Water Main

Sanitary Sewer

Existing Utilities

Existing Utilities to be abandoned

Annexation Boundary

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CHAPTER 6

IMPLEMENTATION

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6. IMPLEMENTATION

PHASING

Presidential Estates East development is expected to occur in phases to enable the developer to respond to market demand and allow for necessary public improvements or infrastructure to be installed to support the development. The plan outlined herein shall be taken as a general guideline for possible phasing of the proposed development. The actual phasing of the project could differ based on various factors out of the control of this plan such as economic concerns, constructibility challenges or political variances.

The planned infrastructure phasing is intended so that the construction of the current phase will accommodate the needs of the next phase's construction. The phasing timeline assumes that construction will take place over an extended period and throughout this time, if necessities arise, changes to the plan will be made to accommodate for immediate infrastructure improvements. The projected phasing of this project is to trend from the north to the south starting with Single Family Home (SFH) lot development and ending with the infill of commercial and HDR development. The proposed phasing area map and corresponding areas can be found in Figure 2 and Table 1 below. Figure 6.3 indicates the proposed order of construction for the development. Phasing shown is preliminary and is subject to change as development occurs. Certain backbone improvements should be prioritized and required through current and future Phases. Backbone improvements include but are not limited to streets, utilities, pedestrian access, intersection improvements such as Pioneer and SR 165, etc. These are subject to traffic studies, pedestrian circulation needs and utility demand/impact modeling.

Any improvements on SR165 or at intersections of Pioneer, Page, and Madison should be constructed as required by the Transportation Impact Analysis (TIA). The phasing plan should including a timeline for preparation of construction plans, ROW acquisitions and construction completion, outlined as phases or milestones per TIA and Caltrans requirements.

Current land uses include ongoing agricultural operations for almond and tomato farming. The existing agricultural operations will remain until the property is annexed and/or upon start of approved improvement plans.

Phase I

Phase 1 will extend from the eastern to the western extent of the project boundary along the Madison Ave extension including all associated lots and encompass the block of lots in the northwest corner. It will consist entirely of LDR with the construction of 45 (SFH) lots.

Sewer services east of Street C and along Street B will connect to the existing sewer manhole at the intersection of the Madison Avenue extension and Street A. Sewer services along Court B and Street C will flow to the Madison Avenue Extension and Street C intersection before flowing west to the existing 12" sewer line along South 11th Street. The proposed 12" sewer line along Street C will also serve the existing 8" sewer line from the existing development north of the project via a manhole connection at the Madison Avenue extension and Street C intersection. A portion of the existing 8" sewer line serving the development to the north is to be abandoned in place, therefore the portion of the proposed sewer along Street C and connecting to existing sewer along South 11th street will need to be completed first.

Domestic water and fire service will be provided by connection to the existing 18" water line along Mercey Springs Road and the existing 10" water line along South 11th Street.

Storm drainage for Phase 1 will be served by the existing 24" storm drain line running along proposed Street B. A portion of this line is to be abandoned in place and the existing line along South 11th Street will be rerouted to follow the Madison Avenue Extension and Street C alignments before connecting to the existing 24" storm drain line along Street B, therefore this portion of the storm drain system will need to be completed first to ensure there is no disruption to existing storm drainage along South 11th Street.

The roads to be completed with Phase 1 are the Madison Avenue Extension connecting South 11th Street to Mercey Springs Road, Street B, Court B and the portion of Street C between Street B and Madison Avenue. The scope of roads to be completed will include the portions of Street A and Street C necessary to ensure proper installation and function of curb inlets, and to ensure frontage of included lots are paved. The portion of Mercey Springs Road adjacent to the development of Phase 1 is to be improved concurrently with the construction of this phase. To mitigate impacts to roadway drainage or functionality of existing storm drain facilities from phased roadway improvement, the scope of improvement may need to extend beyond the impacted roadway that is immediately adjacent to this phase.

Phase 2

The extent of Phase 2 is from the southern boundary of Phase 1 to the lots along the south side of proposed Street H and encompass the full extent of the project boundary from east to west. This phase will be entirely LDR and include the construction of 97 SFH lots.

Sewer will be served by the existing 18" sewer line along proposed Street A. Sewer service from Court F, Court G, Court H and Street H will be connected to the existing sewer line along Street A. Court D will be connected to the proposed 8" sewer line to be installed for Street H. The scope of sewer lines to be installed with this phase shall ensure service to all included lots.

Domestic water and fire service will be served from the infrastructure created concurrent with Phase 1.

Storm drains will be served by the proposed 24" line along Street A connecting into the Phase 1 manhole at the Madison Avenue extension and Street A intersection.

Roads to be constructed concurrent with Phase 2 are Court D, Court F, Court G, Court H, Street H, and the section of Street C from the Madison Avenue extension to Street H. The scope of roads to be completed will include the portions of Street A, Court E and Court C necessary to ensure proper installation and function of curb inlets, and to ensure frontage of included lots are paved. The portion of Mercey Springs Road adjacent to the development of Phase 2 is to be improved concurrently with the construction of this phase. To mitigate impacts to roadway drainage or functionality of existing storm drain facilities from phased roadway improvement, the scope of improvement may need to extend beyond the impacted roadway that is immediately adjacent to this phase.

Phase 3

Phase 3 will be a continuation of Phase 2 from the north and extend south to meet up with the proposed Page Avenue extension Right of Way. It will extend to the western project boundary and east to the back of the lots on the east side of Court E. This phase will be entirely LDR and include the construction of 28 SFH lots.

Sewer will be a continuation of the infrastructure created in Phase 2.

Domestic Water and Fire Service will be a continuation of the infrastructure created in Phase 2.

Storm drain will not be installed along Court E for Phase 3. The portion of storm drain to be installed along Court C will be connected to the Phase 2 manhole at the intersection of Street C and Street H.

Court E and Court C are to be completed during Phase 3 construction.

Phase 4

Two separate areas will be built during Phase 4 with the Page Avenue extension bisecting. The portion to the north of Page Avenue extension will consist of LDR with the construction of 20 SFH lots. This portion will be a continuation of Phase 2 from the north and extends south to the back of the lots south of Court I. It will extend to the project boundary on the east, and the boundary of Phase 3

on the west. The southern portion of Phase 4 will include the Page Avenue Extension to Mercey Springs Road and extend south to encompass the lots along Street M. This portion will extend east to encompass Street J, and west to the project boundary. It will be LDR and create 42 SFH lots.

Sewer for the northern portion will connect to the existing 18" line along Street A. The southern portion will collect to a 10" sewer line along Street A and then connect to the existing 18" sewer line along Street A via an existing manhole at the intersection of Street A and Page Avenue extension.

Domestic water and fire service will connect to the 12" water line installed in Phase 2.

Storm drain in this phase will connect with the infrastructure created in Phase 2 at the manhole immediately south of the intersection of Street A and Street H.

Roadways to be completed in concurrence with Phase 4 include Court I, Street J, Street L, and Street M. It will also include the continuation of Street A from Phase 2 to the southern end of Phase 4, and Street K just to the southern end of Phase 4, to ensure proper installation and function of drain inlets and to ensure the frontage of all lots are improved. Page Avenue will be extended from the project's western boundary at 11th Street to Mercy Springs Road, including the intersection at Street A. This will relocate the existing Class I bike path connecting 11th Street to Mercy Springs Road, to the north side of Page Avenue. The Page Avenue intersection with Mercy Springs Road will require a new roundabout as part of the Phase 4 improvements. The portion of Mercy Springs Road adjacent to Phase 4 is to be improved concurrently with the construction of this phase. To mitigate impacts to roadway drainage or functionality of the existing storm drain facilities from phased roadway improvements, the scope of the improvements may need to extend beyond the impacted roadway that is immediately adjacent to this phase.

Phase 5

Phase 5 encompasses all lots corresponding with Court N, Street N and the continuation of Street K from Phase 4. This phase will consist of LDR and create 22 SFH lots. Boundaries for Phase 5 are Phase 4 to the north, project boundaries on the east and west and the back of lots on the southern side of Street N and Court N to the south.

Sewer for the portion of Street K will connect to the 8" sewer line created along street A during Phase 4. Sewer along Street N and Court N will connect to the 10" sewer line created along street A during Phase 4.

Domestic water and fire service will connect to the 12" water line built along Street A concurrently with Phase 4.

Storm drain will include the continuation of the 18" line along Street A. No drainage structures are planned to be installed for Phase 5.

Roads to be constructed concurrent with Phase 5 are the continuation of Street K, Street N, Court N and the continuation of Street A from Phase 4. The scope of roads to be completed will include the portion of Street A necessary to ensure the frontage of included lots are paved.

Phase 6

Phase 6 encompasses all lots corresponding with Street O, Court O, Street P, Street R and Street S. This phase will consist of LDR and create 56 SFH lots. Boundaries for Phase 6 are Phase 5 to the north, project boundaries to the east and west, and the back of lots on the southern side of Street P to the south. Sewer for all streets within Phase 6 will connect to the proposed 8" sewer line along Street A. Domestic water and fire service will connect to the proposed 12" line along Street A and to the existing 6" water line at the end of Court O. Storm drain will connect to the proposed 18" line along Street A.

Roads to be completed in concurrence with Phase 6 include Street O, Court O, Street P, Street R, Street S and the continuation of Street A from Phase 5. The scope of roads to be completed will include the portion of Street A necessary to ensure the frontage of included lots are paved. The portion of Mercey Springs Road adjacent to the development of Phase 6 is to be improved concurrently with the construction of this phase. To mitigate impacts to roadway drainage or functionality of existing storm drain facilities from phased roadway improvement, the scope of improvement may need to extend beyond the impacted roadway that is immediately adjacent to this phase.

Phase 7

Phase 7 encompasses all lots corresponding with Street Q, Court T, Court U, Court V, and the continuation of Street A from Phase 6. This phase will consist of LDR and create 61 SFH lots. Boundaries for Phase 7 are Phase 6 to the north and project boundaries to the east, west and south.

Sewer for all streets within Phase 7 will connect to the proposed 8" sewer line along Street A.

Domestic water and fire service will connect to the proposed 12" line along Street A. The proposed 12" water line along Street A will connect to the proposed 18" water line along Pioneer Road.

Storm drain will connect to the proposed 15" line along Street A.

Roads to be completed in concurrence with Phase 7 include Street Q, Court T, Court U, Court V, and the continuation of Street A from Phase 6. Street A will connect to existing Pioneer Road. The portions of Mercey Springs Road and Pioneer Road adjacent to the development of Phase 7 are to be improved concurrently with the construction of this phase. To mitigate impacts to roadway drainage or functionality of existing storm drain facilities from phased roadway improvement, the scope of improvement may need to extend beyond the impacted roadway that is immediately adjacent to this phase.

Phase 8

Phase 8 consists of HDR and GC infill. There are 2 separate areas that will be developed as a part of this phase. The northern portion will consist of the area north of Phase 1 and bounded by the project boundaries on the north and east side. This portion will create approximately 6.0 acres of HDR. The southern portion of Phase 8 is bounded by Phase 4 on the north, west and south and by the project boundary on the west. This portion will create approximately 2.7 acres of GC.

Sewer for the northern portion will connect to the existing 8" sewer line to the west. For the southern portion sewer will connect to the existing 18" sewer line running along Street A.

Domestic water and fire service for both portions of Phase 8 will connect to the existing 18" water line along Mercey Springs Road.

Storm drain for the northern portion will connect to the existing 24" storm drain line running through the lot and out to Mercey Springs Road. The southern portion will connect to the existing 27" storm drain line running along Mercey Springs Road. The portion of Mercey Springs Road adjacent to the development of Phase 8 is to be improved concurrently with the construction of this phase. To mitigate impacts to roadway drainage or functionality of existing storm drain facilities from phased roadway improvement, the scope of improvement may need to extend beyond the impacted roadway that is immediately adjacent to this phase

ENTITLEMENTS

The Presidential Estates East project seeks the following entitlements: Annexation (see figure 6.1), Pre-Zoning (See figure 6.2), Specific Plan and Vesting Tentative Map, Development Agreement, and the project CEQA.

FINANCING MECHANISMS

The City will require the Presidential Estates East project to construct certain infrastructure to provide access and utilities to the site, the details of which are included in the Infrastructure section of this document. To guarantee that the project has sufficient funding to carry out these requirements, various financing methods may be employed including:

- •Infrastructure Financing Districts,
- •Special Taxes,
- •Special Assessments,
- •General Obligation Bonds,
- •Revenue Bonds,
- •Impact Fees,
- •In-lieu Fees (Quimby Act)
- •Third Party Assistance,
- •Private Developer Financing, and
- •Financing of Ongoing Operation and Maintenance.

Private developer financing will account for the majority of Presidential Estates East's on-site improvements and include construction and maintenance of any conditioned public improvements until Applicant/Developer conveys to the City upon site Acceptance.

FINANCIAL PLAN

As mentioned previously, the upfront costs for construction associated with the Presidential Estates East project are generally the responsibility of the developer. The ongoing operation and maintenance of public facilities (roads, utilities, parks, etc.) will be funded by the City, County, or other agency, as appropriate.

The City will prepare and approve a project specific Financing Plan prior to approving the Presidential Estates East Final Map. This thorough plan will identify suitable funding sources for construction and maintenance of public infrastructure, community facilities, and other public services that are required to develop the area.

The Financing Plan will be executed according to the following principles as delineated in the General Plan unless other arrangements are made between the City and the developer:

1. Existing residents in the City shall not incur costs for infrastructure or services required to serve the proposed project unless a direct benefit can be demonstrated. All on-site and off-site costs associated with providing municipal services shall be paid for through the project budget.
2. Any consideration by the City to use project revenue to fund infrastructure shall first ensure that the levels of City operated facilities and municipal services in a project area are of a quality not less than existing City operated facilities and services.
3. The City will consider using revenue generated from project development to help fund public improvements.
4. The City will consider the use of any public financing mechanism that is deemed appropriate to help construct the project, so long as the suggested method of repayment is from the project and not from the general citizenship.
5. The City will establish appropriate financing mechanisms to cover the cost of municipal services. In addition, the City may assist in securing the financing necessary for capital infrastructure construction and maintenance. These mechanisms include, but are not limited to the following:
   a. The establishment of a Lighting and Landscape District, maintenance district, and user charges for operation and maintenance purposes.
   b. The establishment of Assessment Districts, Benefit Districts, Community Facilities Districts, Infrastructure Financing Districts and Joint Power Arrangements for capital construction.
6. The City may enter into a Joint Power Agreement with the County, State or any other appropriate

governmental agency that will facilitate the financing of necessary infrastructure improvements.

7. The City agrees to establish reimbursement mechanisms if a development pays for infrastructure that exceeds what is needed by that development.
8. The City shall consider implementing per-unit fees to accommodate financing infrastructure improvements or the reimbursement of costs fronted by the developer.
9. The City and the developer will actively pursue outside funding for regional infrastructure improvements that benefit the project.
10. The City will assist the developer of the plan area in obtaining private and public financing for both on- and off-site improvements.

CITY APPROVAL PROCESS

The review and approval of the Presidential Estates East project will be conducted by the City of Los Banos, which will include a Vesting Tentative Map, a project CEQA, a Neighborhood Design Review, Building Permit review, Improvement Plan review and a Final Map.

Specific Plan

Before establishing a planned development or issuing development or building permits, the City of Los Banos requires a Specific Plan to be submitted and approved. The Specific Plan provides a framework of development and project implementation for use by the City, developers and builders, which includes street and design standards and guidelines, detailed land uses, infrastructure, site planning, architecture, landscape. The approval of this document satisfies the requirements of the City's Specific Plan process.

Architectural Design Review

Architectural Design Review (ADR) is a discretionary permit and will be required prior to building permit. The purpose of the ADR is to confirm that the proposed plans for this project are in keeping with the policies and guidelines set forth in the General Plan and Specific Plan. The ADR will include an administrative approval review of Model Home Complexes. The City requires projects to meet specific standards with respect to architectural styles and signage, landscape and design themes. The Architecture Design Review discretionary permit is reviewed and approved by the Community and Economic Development Director.

Annexation

The annexation process is initiated through submitting an application to the City. This project proposes the the annexation of 111.7 acres to become part of the City. Properties must be contiguous to the City limits for annexation. The application is reviewed by several departments within the City including Community & Economic Development, Planning Commission, City Council, and Local Agency Formation Commission (LAFCO) who will provide final approvals or deny the Annexation.

Vesting Tentative Tract Map

Also referred to as a Tentative Subdivision Map, a Vesting Tentative Tract Map (VTTM) will be submitted to initiate the process of subdividing the Presidential Estates East project. The VTTM design will be governed by the Subdivision Map Act, the City of Los Banos Subdivision Ordinance, the Specific Plan and the infrastructure master plans (see the Infrastructure section of this document). The VTTM will be reviewed by the Community and Economic Development Director and approved by the City Council.

Development Agreement

A Development Agreement (DA) will serve as a key implementing tool for the Presidential Estates East project, establishing a legally binding contract between the City, the property owner, and any successors-in-interest. The DA will memorialize the Community Amenity Fee (CAF), outline the required phasing of backbone infrastructure improvements, and identify improvements eligible for reimbursement,

focusing on backbone infrastructure. It will also specify the Fiscal Impact Analysis (FIA) impact, define the DA term as ten (10) years with automatic one (1) year extensions, and confirm that the life of the Vesting Tentative Tract Map (VTTM) runs concurrently with the DA. This agreement secures development rights, delineates obligations for infrastructure and financing, and ensures performance obligations within the project. The DA must be approved and executed by the Los Banos City Council prior to the approval of any Final Map.

Project CEQA

An environmental review in compliance with the California Environmental Quality Act (CEQA) will be required for the Presidential Estates East project. A Mitigated Negative Declaration (MND) report was prepared in 2020 by the City of Los Banos.

Building Permit Review

City staff will review construction documents for compliance as part of the building permit process during the Final Map stage.

Improvement Plan Review

Improvement plans will be drafted to demonstrate the grading, design and installation of all public and private, on- and off-site infrastructure (utilities, streets, parks, residential lots, etc.) associated with the Presidential Estates East project. These plans must be approved by City staff prior to the granting of construction permits and the approval of the Final Map.

Final Map

Upon meeting the conditions of the VTTM, the approval of improvement plans and the finalization of all agreements between the City and the developer, the City can approve the Final Map for Presidential Estates East in accordance with the Subdivision Map Act as implemented by the City Subdivision Ordinance. If the project's Final Map closely reflects the lotting pattern shown in the VTTM and provides the appropriate residential density for a low and high density residential zone and neighborhood commercial zone, the Map will be deemed consistent with the Presidential Estates East Specific Plan.

Subsequent Environmental Review

Changes to Presidential Estates East community after review and approval will require a subsequent environmental review. The initial Mitigated Negative Declaration report prepared in 2020 has been prepared for new development for this area will be updated as part of the entitlement review. The development must be consistent with the conditions and mitigations of the original MND. Any subsequent studies should address the differences or new issues not originally found. The City may require revisions and additional studies after reviewing the project application.

Amendments to the Specific Plan

An approved Specific Plan indicates that the City of Los Banos accepts the development guidelines for Presidential Estates East that are portrayed in the document. Execution of the plan may occur over the course of several years. During this time, changes to the Plan may be necessary to conform with any changing conditions. Interpretation and implementation of the Specific Plan should be performed with flexibility to allow owner and City to adapt to changing markets. Changes to the guidelines in the Specific after initial approval is granted shall require either a minor or major amendment.

Minor Specific Plan Amendment

Changes to text or graphics that are in keeping with: the original Specific Plan are considered Minor Amendments and may receive administrative approval from the Community and Economic Development Director. No public hearing is required; however, Minor Amendments are subject to an appeal by the Planning Commission. Minor Specific Plan Amendments approval may occur when the Community and Economic Development Director finds substantial conformance with

- The vision and overall intent of the Specific Plan
- Applicable development agreement
- City of Los Banos General Plan 2042

Examples of a Minor Amendment request may include:

- •Modifications to plant palettes,
- •Changes to permitted building materials,
- •Editorial corrections to text or exhibits,
- •Amendments to text or graphics to align with other laws,
- •A retroactive change to text or graphics to align with existing conditions and/or previous City development project approvals,
- •Realignment to walking trails,
- •Alterations to fence types, materials, or locations,
- •A change to the number of lots or acreage totals by 10% or less,
- •Any other comparable revision that is in harmony with the purpose and intent of a Minor Amendment as determined by the Community Development Director, or
- •The inclusion of new architectural styles (which shall be submitted with a narrative describing the style, a schematic drawing, and a graphic representation of the elements which characterize the proposed style),
- •Changes to the provision of public infrastructure and facilities that do not impact the level of service provided,
- •Modifications to the phasing plan provided changes continue to adequately serve development in a timely manner.

Request for minor amendments should be submitted in writing to the Community and Economic Development Department and specify how the request is in substantial conformance with the Specific Plan along with any information necessary for evaluation. Any amendment shall be consistent with the graphic style and format of the original Specific Plan document. The Planning Commission may appeal any approved minor amendment. In the event that agreement between staff and owner cannot be reached, the owner may appeal to the Planning Commission for approval. Owner may appeal to City Council if they are in disagreement with Planing Commission decision.

Major Specific Plan Amendment

Alternatively, if the staff considers a request for a change to be more than a minor administrative change, the request would be deemed a Major Amendment and must be approved by the Planning Commission, subject to appeal by the City Council. A major amendment may be initiated by a developer, property owner or City. If the Major Amendment is substantial enough, it could trigger a simultaneous change to the General Plan, Municipal Code, Development Agreement or other related City and Specific Plan documents. Major Specific Plan Amendments shall be reviewed in the same manner in which the Specific Plan was processed.

Major Specific Plan Amendments shall be submitted in writing to the Community and Economic Development Director for Planning Commission review. The amendment shall include text (red-line/strike-out), graphics and other materials necessary to replace or augment section(s) for amendment. Any amendment shall be consistent with the graphic style and format of the original Specific Plan document. All amendments to the Specific Plan and related documents are subject to compliance with CEQA. Any request for changes to text and graphics that does not fall into one of the categories listed in the previous section would represent a Major Amendment, such as the relocation of a neighborhood park.

FIGURE 6.1 ANNEXATION BOUNDARY MAP

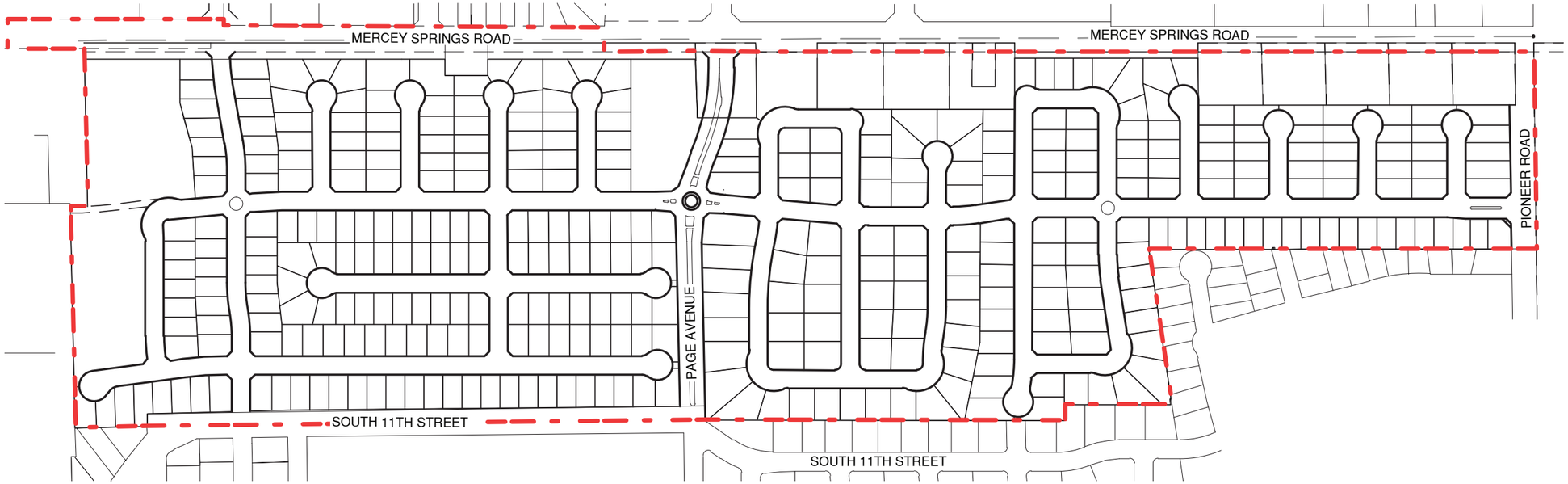
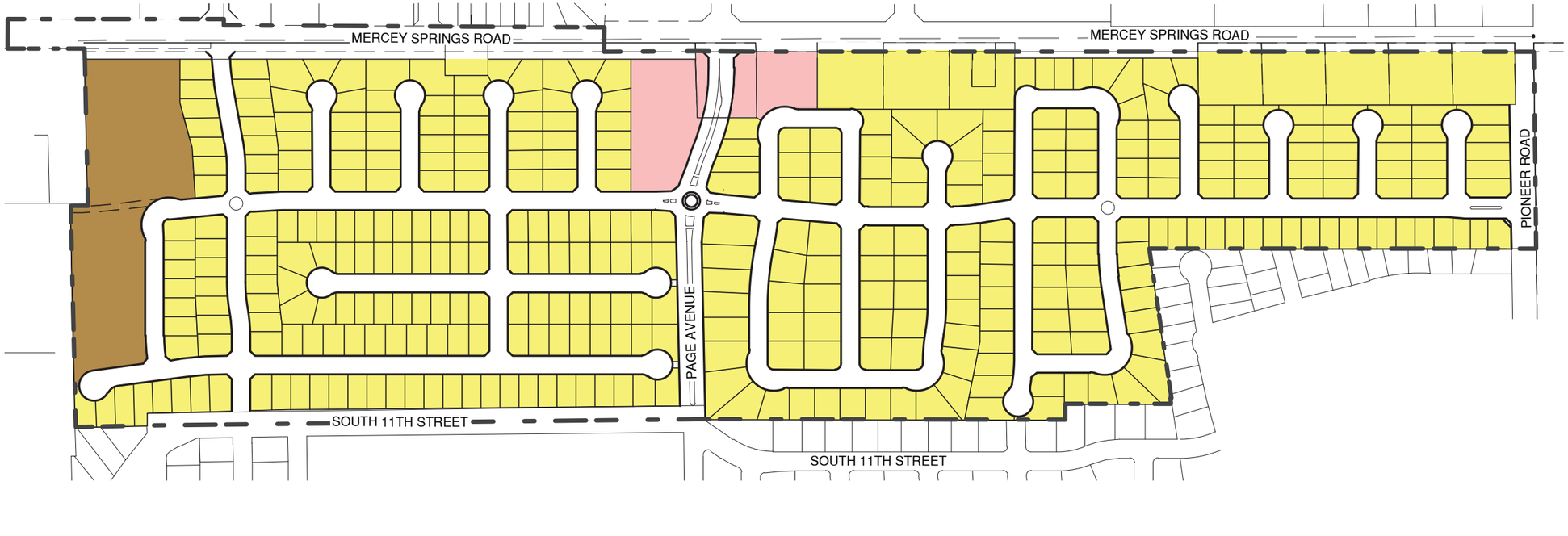


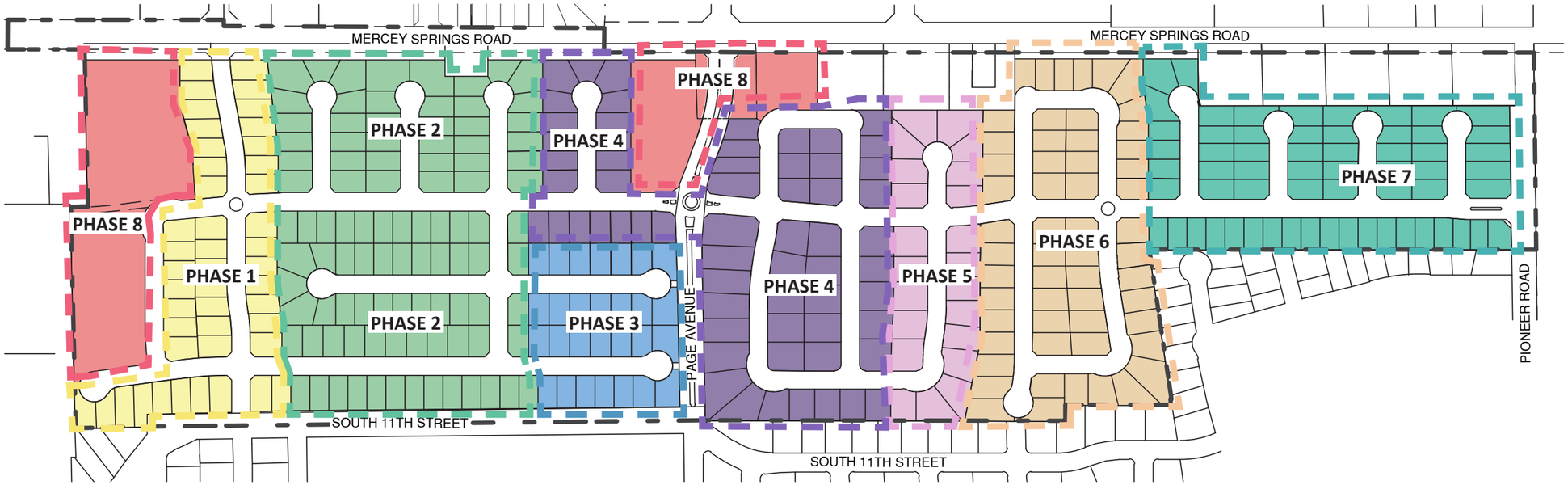
FIGURE 6.2 PRE-ZONING MAP



R-1
R-3
C-N

N

FIGURE 6.3 PRELIMINARY PHASING PLAN



PHASE	NO. OF LOTS	LOTS AREA (AC)	STREET AREA (AC)	TOTAL AREA (AC)
Phase 1	45	6.9	2.8	9.7
Phase 2	97	15.1	5.2	20.3
Phase 3	28	4.3	1.8	6.0
Phase 4	62	12.5	7.0	19.5
Phase 5	22	4.6	1.5	6.2
Phase 6	56	9.8	3.8	13.7
Phase 7	61	9.1	3.4	12.5
Phase 8		8.75 (6.00 HDR, 2.75 COMM)	1.0	9.7
TOTALS	371	71.2	26.4	97.6

APPENDIX A

ARCHITECTURE

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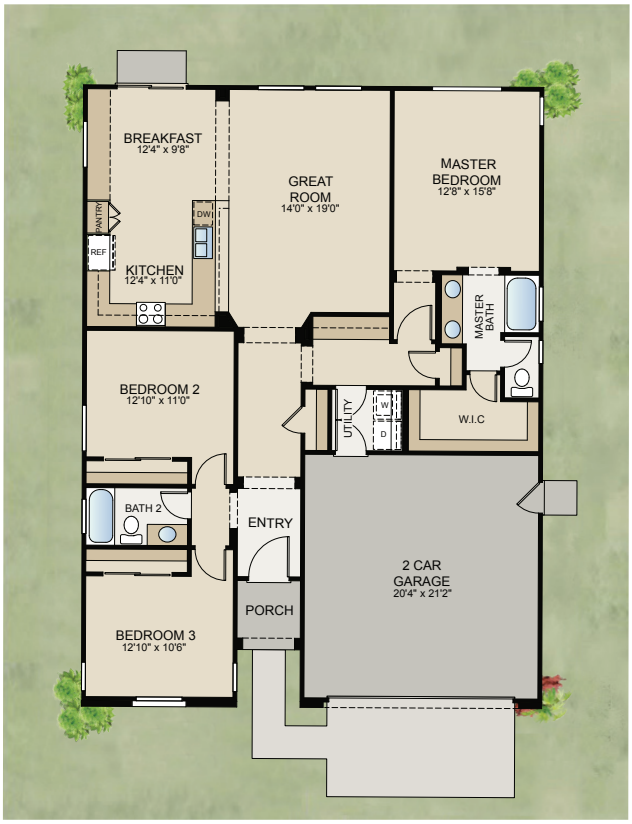
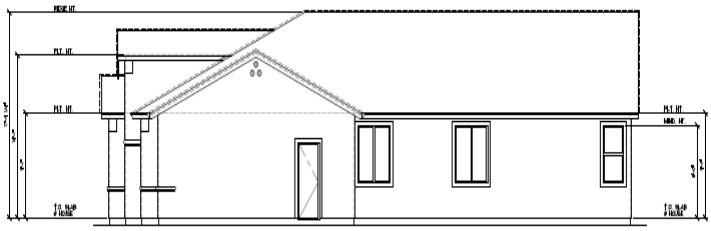
PLAN 1 ARCHITECTURE



Front Elevation



Right Elevation

TYPICAL MATERIALS:

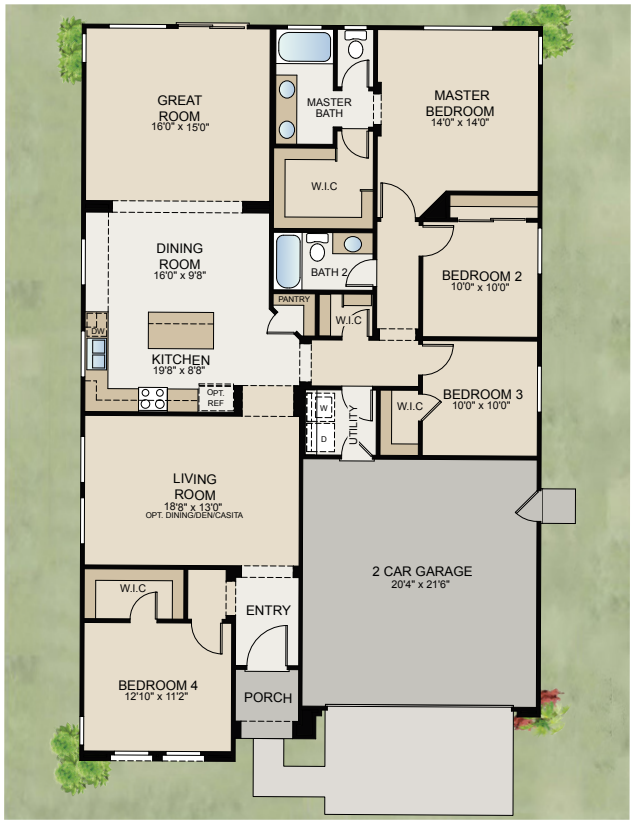
- Walls: Stucco Siding
- Roof: Concrete barrel tile or Concrete tile
- Windows: Vinyl
- Doors: Wood
- Garage Doors: Metal Roll Up

PLAN 1-A

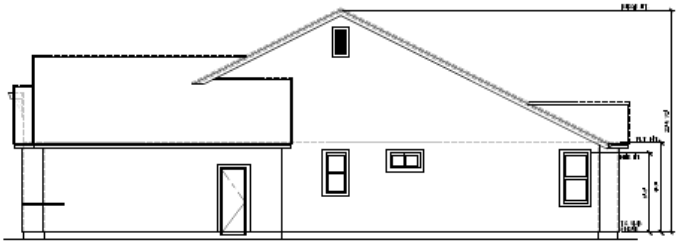
PLAN 1-B

PLAN 1-C

PLAN 2 ARCHITECTURE



Front Elevation



Right Elevation

TYPICAL MATERIALS:

- Walls: Stucco Siding
- Roof: Concrete barrel tile or Concrete tile
- Windows: Vinyl
- Doors: Wood
- Garage Doors: Metal Roll Up

PLAN 2-A

PLAN 2-B

PLAN 2-C

PLAN 3 ARCHITECTURE

Front Elevation

Right Elevation

TYPICAL MATERIALS:

- Walls: Stucco Siding
- Roof: Concrete barrel tile or Concrete tile
- Windows: Vinyl
- Doors: Wood
- Garage Doors: Metal Roll Up

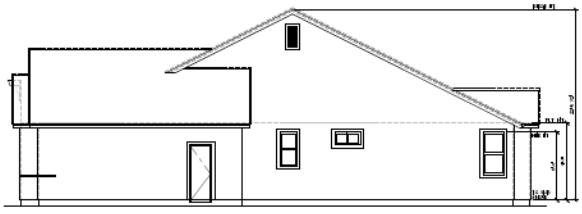
PLAN 3-A

PLAN 3-B

PLAN 3-C

PLAN 4 ARCHITECTURE

Front Elevation



Right Elevation

TYPICAL MATERIALS:

- Walls: Stucco Siding
- Roof: Concrete barrel tile or Concrete tile
- Windows: Vinyl
- Doors: Wood
- Garage Doors: Metal Roll Up

PLAN 4-A

PLAN 4-B

PLAN 4-C

PLAN 5 ARCHITECTURE

Front Elevation

Right Elevation

TYPICAL MATERIALS:

- Walls: Stucco Siding
- Roof: Concrete barrel tile or Concrete tile
- Windows: Vinyl
- Doors: Wood
- Garage Doors: Metal Roll Up

PLAN 5-A

PLAN 5-B

PLAN 5-C

APPENDIX B

PLANT LIST

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Potential Plant Species	Common Name	Scientific Name	Size	Water Use
Shrubs	Lily-of-the-Nile	Agapanthus sp.	5 gal	Low
	Powis Castle Sagebrush	Artemisia 'Powis Castle'	5 gal	Low
	Little Leaf Cordia	Cordia parvifolia	5 gal	Low
	African Iris	Dietes sp.	5 gal	Low
	California Lilac	Ceanothus sp.	5 gal	Low
	Cotoneaster	Cotoneaster sp.	5 gal	Low
	Juniper	Juniperus sp.	5 gal	Low
	Lantana	Lantana sp.	5 gal	Low
	Spanish Lavender	Lavandula stoechas	5 gal	Low
	Oleander	Nerium oleander	5 gal	Low
	Little Ollie Olive	Olea europea 'Little Ollie'	5 gal	Low
	Fountain Grass	Pennisetum alopecuroides	1 gal	Low
	New Zealand Flax	Phormium tenax	5 gal	Low-Mod
	Mugo Pine	Pinus mugo	5 gal	Low
	Mock orange	Pittosporum tobira	5 gal	Moderate
	India Hawthorne	Rhaphiolepis indica	5 gal	Low
	Sage	Salvia sp.	1 gal	Low-Mod
	Variegated Society Garlic	Tulbaghia v. 'Silver Lace'	1 gal	Low
Groundcovers / Turf	Manzanita	Arctostaphylos 'Emerald Carpet'	1 gal	Low
	Myoporum	Myoporum parvifolium	1 gal	Low
	Mexican Primrose	Oenothera speciosa 'Siskiyou'	1 gal	Low
	90 / 10 active turf fescue grass blend		Seed/Sod	High

Potential Street Trees	Common Name	Scientific Name	Size	Water Use
	Mayten tree	Maytenus boaria	15 Gallon	Moderate
	Wilson Olive	Olea europaea 'Wilsonii'		Low
	Chinese Pistache	Pistachia chinensis 'Keith Davey'		Low
	Columnar English Oak	Quercus robur 'Fastigiata'		Moderate
	Coast Live Oak	Quercus agrifolia		Very Low
	Valley Oak	Quercus lobata		Low
	Lacebark Elm	Ulmus parvifolia 'Allee'		Moderate
	Zelkova	Zelkova serrata 'Green Vase'		Moderate

Potential Plant Species	Common Name	Scientific Name	Size	Water Use
General Use Trees	California Buckeye	Aesculus californica	15 Gallon	Very Low
	Incense Cedar	Calocedrus decurrens		Moderate
	Eastern Redbud	Cercis canadensis		Moderate
	Desert Willow	Chilopsis linearis		Very Low
	Chitalpa	Chitalpa tashkentensis		Moderate
	Jeffrey Pine	Pinus jeffreyi		Low
	Flowering Cherry	Prunus serrulata		Moderate
	Blue Oak	Quercus douglasii		Very Low
	Black Oak	Quercus kelloggii		Low
	Interior Live Oak	Quercus wislizeni		Very Low
	Purple Robe Locust	Robinia pseudoacacia 'Purple Robe'		Low

Chitalpa tashkentensis

Nerium Oleander

Olea europea

Phormium tenax

Tulbaghia violacea

Pistachia chinensis

Pittosporum tobira

Pennisetum alopecuroides

Appendix B

Vesting Tentative Tract Map

LEGEND & ABBREVIATIONS

BOUNDARY	±	PLUS OR MINUS	MIN MINIMUM
CENTERLINE	AC-FT	ACRE-FEET	N NORTH
ELECTROLIER	APN	ASSESSOR PARCEL NUMBER	N.T.S. NOT TO SCALE
WATER VALVE	℄	CENTERLINE	PA PLANTING AREA
FIRE HYDRANT	CL II	CLASS II BIKE LANE	PUE PUBLIC UTILITY EASEMENT
SANITARY SEWER MANHOLE	CONC	CONCRETE	R RADIUS
STORM DRAIN MANHOLE	D OR SD	STORM DRAINAGE	R/W RIGHT-OF-WAY
UNDERGROUND UTILITY LINE LABEL AND DIRECTION (XX"SD) (XX"SS)	E	EAST	S SOUTH
MASONRY WALL	EVA	EMERGENCY VEHICLE ACCESS	S OR SS SANITARY SEWER
	EX.	EXISTING	S.F. SQUARE FEET
	℄	FLOWLINE	STD. STANDARD
	LS	LANDSCAPE STRIP	W WATER or WEST
	MEAN	MEANDERING	

NOTES

OWNER:

HOSTETLER RANCHES LLC
923 E PACHECO BLVD. #C
LOS BANOS, CA 93635
APN: 026-290-001-000
AREA: 17.7± ACRES

HOSTETLER RANCHES LLC
923 E PACHECO BLVD. #C
LOS BANOS, CA 93635
APN: 026-290-002-000
AREA: 16.6± ACRES

HOSTETLER RANCHES LLC
923 E PACHECO BLVD. #C
LOS BANOS, CA 93635
APN: 026-290-003-000
AREA: 0.4± ACRES

HOSTETLER RANCHES LLC
923 E PACHECO BLVD. #C
LOS BANOS, CA 93635
APN: 026-290-005-000
AREA: 16.1± ACRES

STEVEN R THORNTON / KRELING ROMMEL VON
P.O. BOX 1256
HEALDSBURG, CA 95448
APN: 083-120-012-000
AREA: 0.1± ACRES.

THIERCOF PATRICK & MAUREEN (TRUSTEES)
1657 8TH ST
LOS OSOS, CA 93402-2201
APN: 083-120-013-000
AREA: 1.0± ACRES

HOSTETLER RANCHES LLC
923 E PACHECO BLVD. #C
LOS BANOS, CA 93635
APN: 083-120-014-000
AREA: 1.0± ACRES

HOSTETLER RANCHES LLC
923 E PACHECO BLVD. #C
LOS BANOS, CA 93635
APN: 083-120-024-000
AREA: 14.0± ACRES

HOSTETLER RANCHES LLC
923 E PACHECO BLVD. #C
LOS BANOS, CA 93635
APN: 083-120-028-000
AREA: 31.2± ACRES

HOSTETLER RANCHES LLC
923 E PACHECO BLVD. #C
LOS BANOS, CA 93635
APN: 083-120-027-000
AREA: 1.0± ACRES

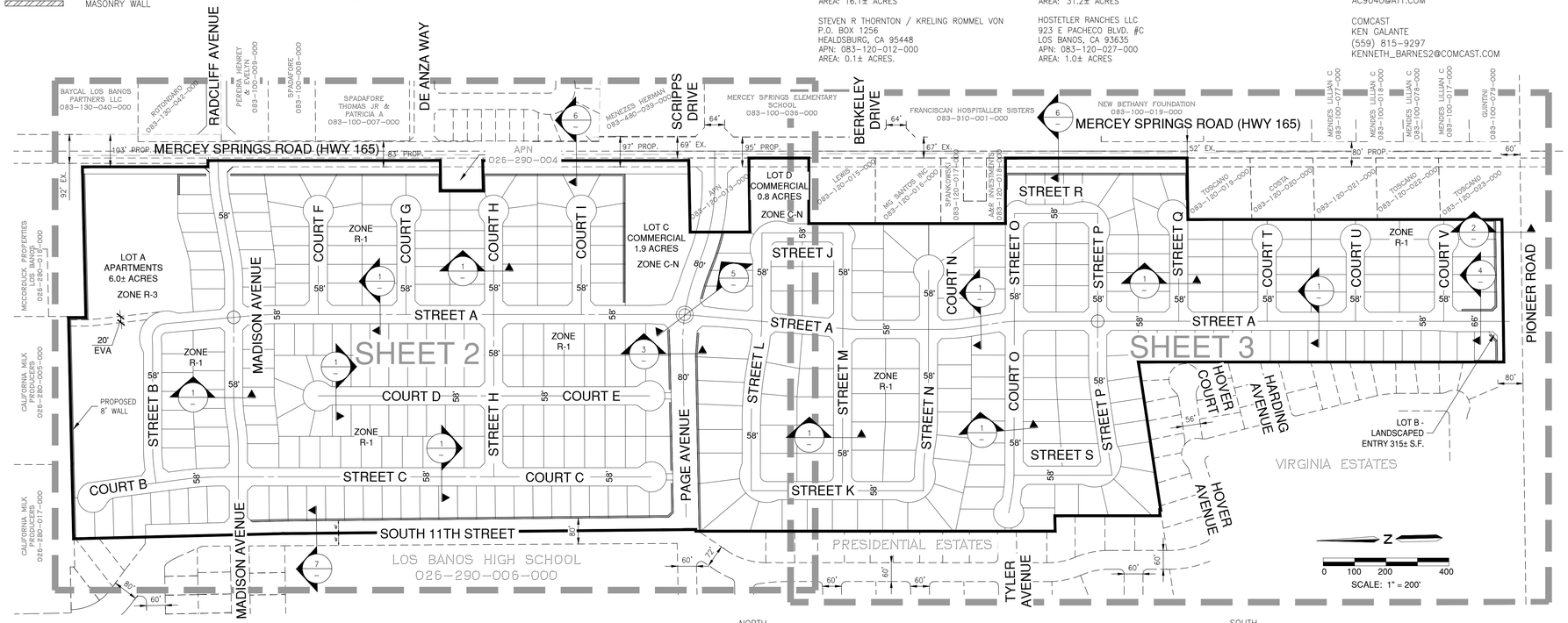
APPLICANT:
STONEFIELD HOME, INC.
923 E. PACHECO BLVD., SUITE C
LOS BANOS, CA 93635
(209) 826-6200

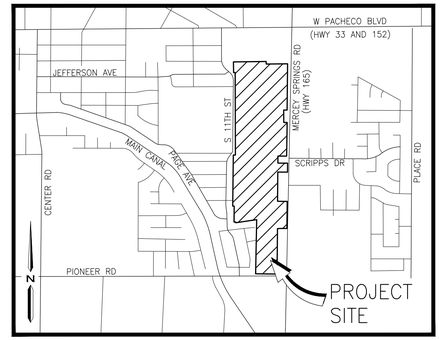
ENGINEER:
WESTWOOD PROFESSIONAL SERVICES
1165 SCENIC DRIVE, SUITE A
MODESTO, CA 95350
(209) 571-1765

UTILITY PROVIDERS:
PG&E
PAUL SYTSMA
(559) 907-2411
PPS4@PGE.COM

AT&T
ADAM CRISWELL
(209) 412-8543
AC9040@ATT.COM

COMCAST
KEN GALANTE
(559) 815-9297
KENNETH_BARNES2@COMCAST.COM





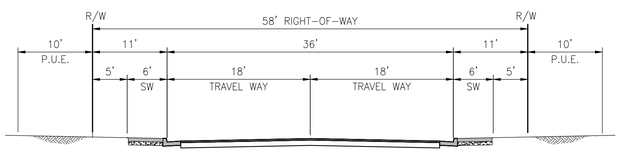
VICINITY MAP
N.T.S.

SUBDIVIDER'S STATEMENT

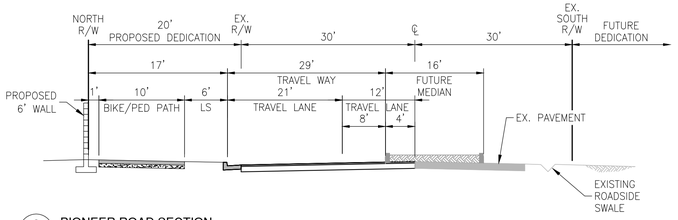
1. 100.6± ACRES
   SINGLE FAMILY
   – RESIDENTIAL LOTS 88.9± ACRES (371 LOTS)
   – LOT B 315± S.F. (LANDSCAPED ENTRY)
   MULTIFAMILY
   – LOT A 6.0± ACRES (APARTMENTS – APPROX. 120 UNITS)
   COMMERCIAL
   – LOT C 1.9± ACRES (COMMERCIAL)
   – LOT D 0.8± ACRES (COMMERCIAL)
2. GENERAL PLAN DESIGNATION FOR PROPERTY: PROFESSIONAL OFFICE, COMMERCIAL, HIGH DENSITY RESIDENTIAL, MEDIUM DENSITY RESIDENTIAL, AND LOW DENSITY RESIDENTIAL.
3. EROSION CONTROL PLAN SHALL BE DONE PER CITY ORDINANCES.
4. MINIMUM BUILDING SETBACK LINES SHALL COMPLY WITH CITY STANDARDS.
5. DOMESTIC WATER SUPPLY SHALL BE BY CONNECTION TO CITY OF LOS BANOS WATER SYSTEM.
6. SEWAGE DISPOSAL SHALL BE BY COLLECTION SYSTEM AND CONNECTION TO CITY OF LOS BANOS SANITARY SEWER SYSTEM.
7. STORM DRAINAGE DISPOSAL SHALL BE BY COLLECTION SYSTEM AND CONNECTION TO CITY OF LOS BANOS STORM DRAINAGE SYSTEM.
8. TREE PLANTING SHALL BE PERFORMED IN ACCORDANCE WITH CITY ORDINANCE.
9. THE APPLICANT PROPOSES TO BUILD ON LOTS, BUT RESERVES THE RIGHT TO SELL LOTS.
10. THIS TENTATIVE SUBDIVISION MAP IS A SUBDIVISION OF PARCEL NUMBERS: 026-290-001-000, 026-290-002-000, 026-290-003-000, 026-290-005-000, 083-120-012-000, 083-120-013-000, 083-120-014-000, 083-120-024-000, 083-120-027-000, & 083-120-028-000,
11. THE APPLICANT RESERVES THE RIGHT TO PHASE PROJECT PER THE SUBDIVISION MAP ACT.
12. NO AREAS ARE SUBJECT TO PERIODIC INUNDATION.
13. PROPOSED ZONE DENSITY:
   – HIGH DENSITY RANGE = 20–30 DU/AC
   * ACTUAL PROPOSED DENSITY WILL BE DETERMINED WHEN LOT A IS DEVELOPED.
   – LOW DENSITY RANGE = 2–6 DU/AC
   * ACTUAL PROPOSED DENSITY= 4.17 DU/AC
14. PARK SPACE CALCULATIONS

PARK REQUIREMENT PER QUIMBY ACT

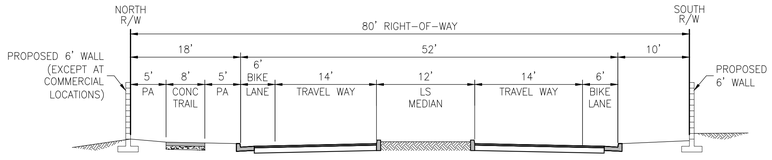
	STANDARD	REQUIREMENT	PRESIDENTIAL ESTATES EAST
DWELLING UNITS			491
POPULATION	2.85 PER DU		1,399
COMMUNITY PARKS (C)	3 ACRES/1,000	4.2 ACRES	0
NEIGHBORHOOD PARK (N)	2 ACRES/1,000	2.8 ACRES	0
TOTAL C&N PARKS	5 ACRES/1,000	7.0 ACRES	0



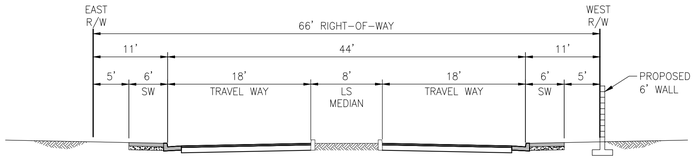
1 TYPICAL 58' RIGHT OF WAY SECTION
N.T.S.



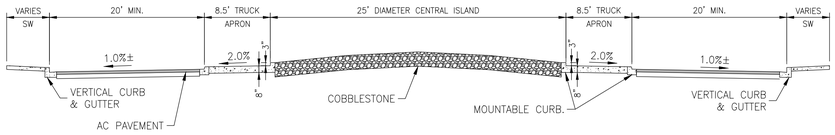
2 PIONEER ROAD SECTION
N.T.S.



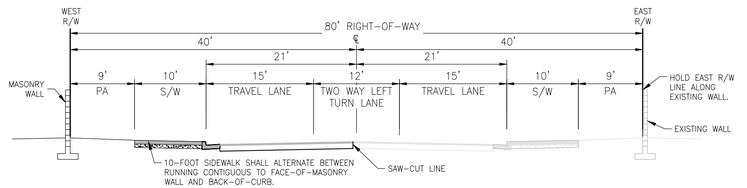
3 TYPICAL 80' RIGHT OF WAY SECTION (PAGE AVENUE)
N.T.S.



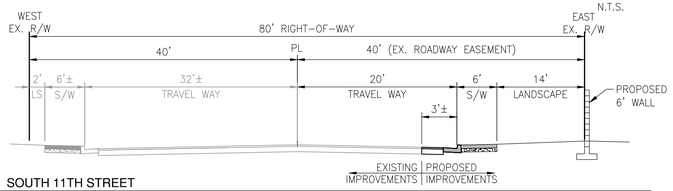
4 STREET A (AT PIONEER RD.)
N.T.S.



5 ROUNDABOUT SECTION (PAGE & STREET A)
N.T.S.



6 MERCEY SPRINGS ROAD (HWY 165)
N.T.S.



7 SOUTH 11TH STREET
N.T.S.

Westwood
Westwood Professional Services, Inc.
1165 SCENIC DRIVE, SUITE A
MODESTO, CA 95350
T: 209.571.1765
F: 888.937.5150
westwoodps.com

NO.	DESCRIPTION	DATE	BY
1	VTM SUBMISSION	09/11/18	

COVER SHEET

VESTING TENTATIVE MAP - PRESIDENTIAL ESTATES EAST

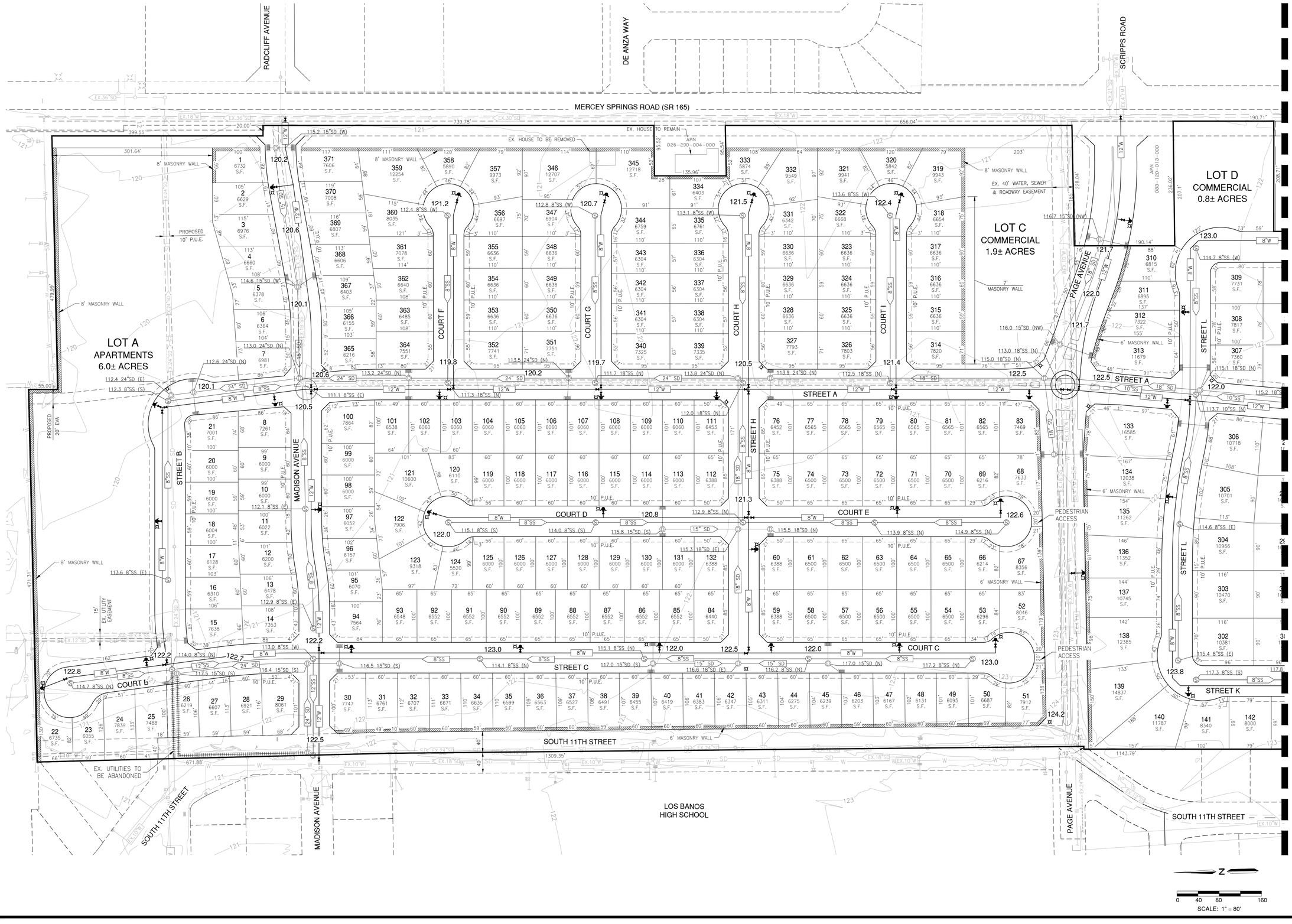
LOS BANOS, CALIFORNIA

DATE: 7/29/2026
DRAFTER: EH
DESIGNER: EH
CHECKED: MP

PROJECT NO. 29490

SHEET NO. 1 OF 3

Drawing N:\ ODE\Modesto\29490-Presidential Estates East 2018\Planning\PlanDwgs\29490VTM.dwg Plot Date/Time: 7/29/2026 3:11 PM Last Saved by: DFathil



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westwoodps.com

NO.	DESCRIPTION	DATE	BY
1	VTM SUBMISSION	09/11/18	

GRADING & UTILITIES

VESTING TENTATIVE MAP - PRESIDENTIAL ESTATES EAST

LOS BANOS, CALIFORNIA

DATE:	7/29/2026
DRAFTER:	EH
DESIGNER:	EH
CHECKED:	MP
PROJECT NO.	29490

SHEET NO. 2 OF 3

SCALE: 1" = 80'

Drawing N:\ ODE\Modesto\29490-Presidential Estates East 2018\Planning\PlanDwg\29490-VTM.dwg Plot Date/Time: 7/29/2026 3:11 PM Last Saved by: DFathil

MERCEY SPRINGS ROAD (SR 165)

BERKELEY DRIVE

SEE SHEET 2

SOUTH 11TH STREET

SOUTH 12TH STREET

HOOVER COURT

HARDING AVENUE

TYLER AVE.

PIONEER ROAD

STREET A

STREET J

STREET K

STREET M

STREET N

COURT N

STREET O

COURT O

STREET P

STREET Q

COURT T

COURT U

COURT V

STREET R

STREET S

EX. HOUSE TO REMAIN

EX. HOUSE TO BE REMOVED

8' MASONRY WALL

6' MASONRY WALL

LOT B LANDSCAPED ENTRY

EMERGENCY VEHICLE ACCESS (EVA) WITH WROUGHT IRON FENCE AND KNOX BOX IN ACCORDANCE WITH CITY STANDARDS

LEWIS 083-120-015-000

MG SANTOS INC 083-120-016-000

SPANKOWSKI 083-120-017-000

AMP INVESTMENTS 083-120-018-000

TOSCANO 083-120-019-000

COSTA 083-120-020-000

TOSCANO 083-120-022-000

TOSCANO 083-120-023-000

SCALE: 1" = 80'

0 40 80 160

Drawing N:\ ODE\Modesto\29490-Presidential Estates East 2019\Planning\PlanDwg\29490-VTM.dwg Plot Date/Time: 7/29/2026 3:11 PM Last Saved by: DPathil

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NO.	DESCRIPTION	DATE	BY
1	VTM SUBMISSION	09/11/18	

GRADING & UTILITIES

VESTING TENTATIVE MAP - PRESIDENTIAL ESTATES EAST
LOS BANOS, CALIFORNIA

DATE: 7/29/2026
DRAFTER: EH
DESIGNER: EH
CHECKED: MP

PROJECT NO.
29490

SHEET NO.
3
OF
3

Appendix C

ISR Approval Letter, dated July 18, 2025

San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

July 18, 2025

Planning Department
City of Los Banos
520 J. Street
Los Banos, CA 93635

Re: Air Impact Assessment (AIA) Application Approval
ISR Project Number: C-20250269
Land Use Agency: City of Los Banos
Land Use Agency ID Number: Unknown

To Whom It May Concern:

The San Joaquin Valley Air Pollution Control District (District) has approved the Air Impact Assessment (AIA) application for the Presidential Estates project located at Mercey Springs Road & Pioneer Road in Los banos, California. The project consists of 371 single-family residential units, 120 multi-family units, and 2.7 acres of commercial uses. Pursuant to District Rule 9510, Section 8.4, the District is providing the City of Los Banos with the following information:

- A notification of AIA approval (this letter)
- A statement of tentative rule compliance (this letter)
- A summary of project emissions and emission reductions
- A summary of the off-site fees
- A copy of the Air Impact Assessment application
- An approved Monitoring and Reporting Schedule

Certain emission mitigation measures proposed by the applicant may be subject to approval or enforcement by the City of Los Banos. No provision of District Rule 9510 requires action on the part of the City of Los Banos; however, please review the enclosed list of mitigation measures and notify the District if the proposed mitigation measures are inconsistent with your agency's requirements for this project. The District can provide the detailed emissions analysis upon request.

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

www.valleyair.org www.healthyairliving.com

If you have any questions, please contact Mr. Eric S McLaughlin by telephone at (559) 230-5808 or by email at eric.mclaughlin@valleyair.org.

Sincerely,

Mark Montelongo
Director of Policy and Government Affairs

For: Daniel Martinez
Program Manager

Enclosures

Emissions Estimator Worksheet

07/01/2025

Applicant/Business Name:	**Stonefield Home, Inc.**
Project Name:	**Presidential Estates**
Project Location:	**Mercey Springs Road & Pioneer Road, in Los Banos, CA**
District Project ID No.:	**20250269**

Project Construction Emissions

If applicant selected Construction Clean Fleet Mitigation Measure - Please select "Yes" from dropdown menu: **Yes**

Project Phase Name	ISR Phase	Construction Start Date	NOx: Unmitigated Baseline[1] (TPY)	NOx: Mitigated Baseline[2] (TPY)	NOx: Achieved On-site Reductions[3] (tons)	NOx: Required Off-site Reductions[4] (tons)	NOx: Emission Reductions Required by Rule[5]	PM10: Unmitigated Baseline[1] (TPY)	PM10: Mitigated Baseline[2] (TPY)	PM10: Achieved On-site Reductions[3] (tons)	PM10: Required Off-site Reductions[4] (tons)	PM10: Emission Reductions Required by Rule[5]
Phase 1 - 45 DU	1	03/01/2030	0.9999	0.7999	0.2000	0.0000	0.2000	0.0356	0.0195	0.0161	0.0000	0.0160
Phase 1 - 45 DU	2	01/01/2031	0.0733	0.0586	0.0147	0.0000	0.0147	0.0025	0.0013	0.0012	0.0000	0.0011
Phase 2 - 97 DU	3	03/01/2031	1.0702	0.8561	0.2141	0.0000	0.2140	0.0387	0.0212	0.0175	0.0000	0.0174
	4				0.0000	0.0000	0.0000			0.0000	0.0000	0.0000
Phase 2 - 97 DU	5	01/01/2032	0.1660	0.1328	0.0332	0.0000	0.0332	0.0052	0.0028	0.0024	0.0000	0.0023
	6				0.0000	0.0000	0.0000			0.0000	0.0000	0.0000
Phase 3 - 28 DU	7	03/01/2034	0.8714	0.6971	0.1743	0.0000	0.1743	0.0267	0.0146	0.0121	0.0000	0.0120
Phase 3 - 28 DU	8	01/01/2035	0.1332	0.1065	0.0267	0.0000	0.0266	0.0035	0.0019	0.0016	0.0000	0.0016
	9				0.0000	0.0000	0.0000			0.0000	0.0000	0.0000
Phase 4 - 62 DU	10	03/01/2036	0.8678	0.6942	0.1736	0.0000	0.1736	0.0257	0.0141	0.0116	0.0000	0.0116
Phase 4 - 62 DU	11	01/01/2037	0.1419	0.1135	0.0284	0.0000	0.0284	0.0034	0.0018	0.0016	0.0000	0.0015
Phase 5 - 22 DU	12	03/01/2037	0.8056	0.6444	0.1612	0.0000	0.1611	0.0225	0.0123	0.0102	0.0000	0.0101
	13				0.0000	0.0000	0.0000			0.0000	0.0000	0.0000
Phase 5 - 22 DU	14	01/01/2038	0.3033	0.2426	0.0607	0.0000	0.0607	0.0070	0.0038	0.0032	0.0000	0.0032
Phase 6 - 56 DU	15	03/01/2038	0.8176	0.6540	0.1636	0.0000	0.1635	0.0230	0.0126	0.0104	0.0000	0.0104
	16				0.0000	0.0000	0.0000			0.0000	0.0000	0.0000
Phase 6 - 56 DU	17	01/01/2039	0.1362	0.1089	0.0273	0.0000	0.0272	0.0031	0.0017	0.0014	0.0000	0.0014
	18				0.0000	0.0000	0.0000			0.0000	0.0000	0.0000
Phase 7 - 61 DU	19	03/01/2040	0.7809	0.6247	0.1562	0.0000	0.1562	0.0212	0.0116	0.0096	0.0000	0.0095
Phase 7 - 61 DU	20	01/01/2041	0.1328	0.1062	0.0266	0.0000	0.0266	0.0028	0.0015	0.0013	0.0000	0.0013
	21				0.0000	0.0000	0.0000			0.0000	0.0000	0.0000
Phase 8 - 120 MFR DU	22	03/01/2045	0.7379	0.5903	0.1476	0.0000	0.1476	0.0174	0.0095	0.0079	0.0000	0.0078
Phase 9 - 15,000 SF	23	03/01/2045	0.7379	0.5903	0.1476	0.0000	0.1476	0.0174	0.0095	0.0079	0.0000	0.0078
Phase 8 - 120 MFR DU	24	01/01/2046	0.6954	0.5563	0.1391	0.0000	0.1391	0.0127	0.0069	0.0058	0.0000	0.0057
Phase 9 - 15,000 SF	25	01/01/2046	0.6954	0.5563	0.1391	0.0000	0.1391	0.0127	0.0069	0.0058	0.0000	0.0057
Phase 8 - 120 MFR DU	26	01/01/2047	0.0605	0.0484	0.0121	0.0000	0.0121	0.0009	0.0004	0.0005	0.0000	0.0004
Phase 9 - 15,000 SF	27	01/01/2047	0.0605	0.0484	0.0121	0.0000	0.0121	0.0009	0.0004	0.0005	0.0000	0.0004
	28				0.0000	0.0000	0.0000			0.0000	0.0000	0.0000
	29				0.0000	0.0000	0.0000			0.0000	0.0000	0.0000
	30				0.0000	0.0000	0.0000			0.0000	0.0000	0.0000
		Total	**10.2877**	**8.2295**	**2.0582**	**0.0000**	2.0575	**0.2829**	**0.1543**	**0.1286**	**0.0000**	0.1273

Total Achieved On-Site Reductions (tons)

ISR Phase	NOx	PM10
1	0.2000	0.0161
2	0.0147	0.0012
3	0.2141	0.0175
4	0.0000	0.0000
5	0.0332	0.0024
6	0.0000	0.0000
7	0.1743	0.0121
8	0.0267	0.0016
9	0.0000	0.0000
10	0.1736	0.0116
11	0.0284	0.0016
12	0.1612	0.0102
13	0.0000	0.0000
14	0.0607	0.0032
15	0.1636	0.0104
16	0.0000	0.0000
17	0.0273	0.0014
18	0.0000	0.0000
19	0.1562	0.0096
20	0.0266	0.0013
21	0.0000	0.0000
22	0.1476	0.0079
23	0.1476	0.0079
24	0.1391	0.0058
25	0.1391	0.0058
26	0.0121	0.0005
27	0.0121	0.0005
28	0.0000	0.0000
29	0.0000	0.0000
30	0.0000	0.0000
Total	**2.0582**	**0.1286**

Project Operations Emissions (Area + Mobile)

Project Phase Name	ISR Phase	Operation Start Date	NOx: Unmitigated Baseline[1] (TPY)	NOx: Mitigated Baseline[2] (TPY)	NOx: Achieved On-site Reductions[3] (tons)	NOx: Required Off-site Reductions[4] (tons)	NOx: Total Emission Reductions Required by Rule[6]	NOx: Average Annual Emission Reductions Required by Rule[7]	PM10: Unmitigated Baseline[1] (TPY)	PM10: Mitigated Baseline[2] (TPY)	PM10: Achieved On-site Reductions[3] (tons)	PM10: Required Off-site Reductions[4] (tons)	PM10: Total Emission Reductions Required by Rule[6]	PM10: Average Annual Emission Reductions Required by Rule[7]
	1				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
	2				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
	3				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Phase 1 - 45 DU	4	07/01/2031	0.3540	0.3540	0.0000	0.8850	0.8850	0.0885	0.7812	0.7812	0.0000	3.9060	3.9060	0.3906
	5				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Phase 2 - 97 DU	6	07/01/2032	0.7296	0.7296	0.0000	1.8240	1.8240	0.1824	1.6841	1.6841	0.0000	8.4205	8.4205	0.8421
	7				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
	8				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Phase 3 - 28 DU	9	07/01/2035	0.1893	0.1893	0.0000	0.4733	0.4733	0.0473	0.4858	0.4858	0.0000	2.4290	2.4290	0.2429
	10				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
	11				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
	12				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Phase 4 - 62 DU	13	07/01/2037	0.4049	0.4049	0.0000	1.0123	1.0123	0.1012	1.0758	1.0758	0.0000	5.3790	5.3790	0.5379
	14				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
	15				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Phase 5 - 22 DU	16	07/02/2038	0.1424	0.1424	0.0000	0.3560	0.3560	0.0356	0.3823	0.3823	0.0000	1.9115	1.9115	0.1912
	17				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Phase 6 - 56 DU	18	07/01/2039	0.3599	0.3599	0.0000	0.8998	0.8998	0.0900	0.9732	0.9732	0.0000	4.8660	4.8660	0.4866
	19				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
	20				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Phase 7 - 61 DU	21	07/01/2041	0.3830	0.3830	0.0000	0.9575	0.9575	0.0958	1.0600	1.0600	0.0000	5.3000	5.3000	0.5300
	22				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
	23				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
	24				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
	25				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
	26				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
	27				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Phase 8 - 120 MFR DU	28	07/01/2047	0.4717	0.4717	0.0000	1.1793	1.1793	0.1179	1.3489	1.3489	0.0000	6.7445	6.7445	0.6745
Phase 9 - 15,000 SF	29	07/01/2047	0.1719	0.1719	0.0000	0.4298	0.4298	0.0430	0.3565	0.3565	0.0000	1.7825	1.7825	0.1783
	30				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
		Total	**3.2067**	**3.2067**	**0.0000**	**8.0170**	**8.0168**	**0.8017**	**8.1478**	**8.1478**	**0.0000**	**40.7390**	**40.7390**	**4.0739**

Total Required Off-Site Reductions (tons)

ISR Phase	NOx	PM10
1	0.0000	0.0000
2	0.0000	0.0000
3	0.0000	0.0000
4	0.8850	3.9060
5	0.0000	0.0000
6	1.8240	8.4205
7	0.0000	0.0000
8	0.0000	0.0000
9	0.4733	2.4290
10	0.0000	0.0000
11	0.0000	0.0000
12	0.0000	0.0000
13	1.0123	5.3790
14	0.0000	0.0000
15	0.0000	0.0000
16	0.3560	1.9115
17	0.0000	0.0000
18	0.8998	4.8660
19	0.0000	0.0000
20	0.0000	0.0000
21	0.9575	5.3000
22	0.0000	0.0000
23	0.0000	0.0000
24	0.0000	0.0000
25	0.0000	0.0000
26	0.0000	0.0000
27	0.0000	0.0000
28	1.1793	6.7445
29	0.4298	1.7825
30	0.0000	0.0000
Total	**8.0170**	**40.7390**

Notes:

TPY: Tons Per Year

[1] **Unmitigated Baseline:** The project's baseline emissions generated with no on-site emission reduction measures.

[2] **Mitigated Baseline:** The project's baseline emissions generated after on-site emisison reduction measures have been applied.

[3] **Achieved On-site Reductions:** The project's emission reductions achieved after on-site emission reduction measures have been applied.

[4] **Required Off-site Reductions:** The project's remaining emission reductions required by Rule 9510 if on-site emission reduction measures did not achieive the required rule reductions.

[5] **Emission Reductions Required by Rule:** The project's emission reductions required (20% NOx and 45% PM10) for construction from the unmitigated baseline.

[6] **Total Emission Reductions Required by Rule:** The project's emission reductions required (33.3% NOx and 50% PM10) for operations from the unmitigated baseline over a 10-year period.

[7] **Average Annual Emission Reductions Required by Rule:** The project's total emission reduction for operations required by Rule 9510 divided by 10 years.

Fee Estimator Worksheet

07/01/2025

Applicant/Business Name:	Stonefield Home, Inc.
Project Name:	Presidential Estates
Project Location:	Mercey Springs Road & Pioneer Road, in Los Banos, CA
District Project ID No.:	20250269

NOTES:

(1) The start date for each ISR phase is shown in TABLE 1.

(2) If you have chosen a **ONE-TIME** payment for the project, then the total amount due for ALL PHASES is shown under TABLE 2.

(3) If you have chosen a **DEFERRED** payment schedule or would like to propose a **DEFERRED** payment schedule for the project, the total amount due for a specific year is shown in TABLE 3 according to the schedule in TABLE 1.

* If you have not provided a proposed payment date, the District sets a default invoice date of 60 days prior to start of the ISR phase.

If applicant selected Fee Deferral Schedule - Please select "Yes" from dropdown menu	Yes ▼

TABLE 1 - PROJECT INFORMATION				TABLE 2 - No Fee Deferral Schedule (FDS)		TABLE 2 - NO FDS
Project Phase Name	ISR Phase	Start Date per Phase	Scheduled Payment Date*	Pollutant	Required Offsite Reductions (tons)	2030
Phase 1 - 45 DU	1	3/1/30	Clean Fleet	NOx	0.0000	0.0000
				PM10	0.0000	0.0000
Phase 1 - 45 DU	2	1/1/31	Clean Fleet	NOx	0.0000	0.0000
				PM10	0.0000	0.0000
Phase 2 - 97 DU	3	3/1/31	Clean Fleet	NOx	0.0000	0.0000
				PM10	0.0000	0.0000
Phase 1 - 45 DU	4	7/1/31	06/30/2031	NOx	0.8850	0.8850
				PM10	3.9060	3.9060
Phase 2 - 97 DU	5	1/1/32	Clean Fleet	NOx	0.0000	0.0000
				PM10	0.0000	0.0000
Phase 2 - 97 DU	6	7/1/32	06/30/2032	NOx	1.8240	1.8240
				PM10	8.4205	8.4205
Phase 3 - 28 DU	7	3/1/34	Clean Fleet	NOx	0.0000	0.0000
				PM10	0.0000	0.0000
Phase 3 - 28 DU	8	1/1/35	Clean Fleet	NOx	0.0000	0.0000
				PM10	0.0000	0.0000
Phase 3 - 28 DU	9	7/1/35	06/30/2035	NOx	0.4733	0.4733
				PM10	2.4290	2.4290
Phase 4 - 62 DU	10	3/1/36	Clean Fleet	NOx	0.0000	0.0000
				PM10	0.0000	0.0000
Phase 4 - 62 DU	11	1/1/37	Clean Fleet	NOx	0.0000	0.0000
				PM10	0.0000	0.0000
Phase 5 - 22 DU	12	3/1/37	Clean Fleet	NOx	0.0000	0.0000
				PM10	0.0000	0.0000
Phase 4 - 62 DU	13	7/1/37	06/30/2037	NOx	1.0123	1.0123
				PM10	5.3790	5.3790
Phase 5 - 22 DU	14	1/1/38	Clean Fleet	NOx	0.0000	0.0000
				PM10	0.0000	0.0000
Phase 6 - 56 DU	15	3/1/38	Clean Fleet	NOx	0.0000	0.0000
				PM10	0.0000	0.0000
Phase 5 - 22 DU	16	7/2/38	07/01/2038	NOx	0.3560	0.3560
				PM10	1.9115	1.9115
Phase 6 - 56 DU	17	1/1/39	Clean Fleet	NOx	0.0000	0.0000
				PM10	0.0000	0.0000
Phase 6 - 56 DU	18	7/1/39	06/30/2039	NOx	0.8998	0.8998
				PM10	4.8660	4.8660
Phase 7 - 61 DU	19	3/1/40	Clean Fleet	NOx	0.0000	0.0000
				PM10	0.0000	0.0000
Phase 7 - 61 DU	20	1/1/41	Clean Fleet	NOx	0.0000	0.0000
				PM10	0.0000	0.0000
Phase 7 - 61 DU	21	7/1/41	06/30/2041	NOx	0.9575	0.9575
				PM10	5.3000	5.3000
Phase 8 - 120 MFR DU	22	3/1/45	Clean Fleet	NOx	0.0000	0.0000
				PM10	0.0000	0.0000
Phase 9 - 15,000 SF	23	3/1/45	Clean Fleet	NOx	0.0000	0.0000
				PM10	0.0000	0.0000
Phase 8 - 120 MFR DU	24	1/1/46	Clean Fleet	NOx	0.0000	0.0000
				PM10	0.0000	0.0000
Phase 9 - 15,000 SF	25	1/1/46	Clean Fleet	NOx	0.0000	0.0000
				PM10	0.0000	0.0000
Phase 8 - 120 MFR DU	26	1/1/47	Clean Fleet	NOx	0.0000	0.0000
				PM10	0.0000	0.0000
Phase 9 - 15,000 SF	27	1/1/47	Clean Fleet	NOx	0.0000	0.0000
				PM10	0.0000	0.0000
Phase 8 - 120 MFR DU	28	7/1/47	06/30/2047	NOx	1.1793	1.1793
				PM10	6.7445	6.7445
Phase 9 - 15,000 SF	29	7/1/47	06/30/2047	NOx	0.4298	0.4298
				PM10	1.7825	1.7825
	30			NOx	0.0000	0.0000
				PM10	0.0000	0.0000
TOTAL (tons)				NOx	8.0170	8.0170
				PM10	40.7390	40.7390

Offsite Fee by Pollutant ($)	NOx	$74,955
	PM10	$367,095
Administrative Fee ($)		$17,682.00
Offsite Fee ($)		$442,050.00
Total Project Offsite Fee ($)		$459,732.00

Rule 9510 Fee Schedule ($/ton)		
Year	Nox	PM10
2030 and Beyond	$9,350	$9,011

TABLE 3 - APPROVED FEE DEFERRAL SCHEDULE (FDS) BY PAYMENT YEAR												
ISR Phase	Pollutant	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
1	NOx											
	PM10											
2	NOx											
	PM10											
3	NOx											
	PM10											
4	NOx		0.8850									
	PM10		3.9060									
5	NOx											
	PM10											
6	NOx			1.8240								
	PM10			8.4205								
7	NOx											
	PM10											
8	NOx											
	PM10											
9	NOx						0.4733					
	PM10						2.4290					
10	NOx											
	PM10											
11	NOx											
	PM10											
12	NOx											
	PM10											
13	NOx								1.0123			
	PM10								5.3790			
14	NOx											
	PM10											
15	NOx											
	PM10											
16	NOx									0.3560		
	PM10									1.9115		
17	NOx											
	PM10											
18	NOx										0.8998	
	PM10										4.8660	
19	NOx											
	PM10											
20	NOx											
	PM10											
21	NOx											
	PM10											
22	NOx											
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27	NOx											
	PM10											
28	NOx											
	PM10											
29	NOx											
	PM10											
30	NOx											
	PM10											
TOTAL (tons)	NOx	0.0000	0.8850	1.8240	0.0000	0.0000	0.4733	0.0000	1.0123	0.3560	0.8998	0.0000
	PM10	0.0000	3.9060	8.4205	0.0000	0.0000	2.4290	0.0000	5.3790	1.9115	4.8660	0.0000
Offsite Fee by Pollutant ($)	NOx	$0	$8,274	$17,054	$0	$0	$4,425	$0	$9,465	$3,328	$8,413	$0
	PM10	$0	$35,196	$75,877	$0	$0	$21,887	$0	$48,470	$17,224	$43,847	$0
Administrative Fee ($)		$0.00	$1,738.80	$3,717.24	$0.00	$0.00	$1,052.48	$0.00	$2,317.40	$822.08	$2,090.40	$0.00
Offsite Fee ($)		$0.00	$45,208.80	$96,648.24	$0.00	$0.00	$27,364.48	$0.00	$60,252.40	$21,374.08	$54,350.40	$0.00
Total Project Offsite Fee ($)		$459,732.00										

San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

Indirect Source Review (ISR) - Air Impact Assessment (AIA) Application

A. Applicant Information

Applicant/Business Name: Stonefield Home, Inc.			
Mailing Address: 923 E. Pacheco Blvd. Suite C	City: Los Banos	State: CA	Zip: 93635
Contact: Greg Hostetler	Title: Agent		
Is the Applicant a licensed state contractor? ☑ No ☐ Yes, please provide State License number:			
Phone: (209)826-6200	Email: greg@ranchwood.com		

B. Agent Information (if applicable)

Agent/Business Name: Jovan Granados Land Development Consulting Inc.			
Mailing Address: 923 E. Pacheco Blvd., Suite C	City: Los Banos	State: CA	Zip: 93635
Contact: Jovan Granados	Title: Consultant		
Phone: (209)819-1772	Email: granadosjovan@gmail.com		

C. Project Information

Project Name: Presidential Estates			
Project Location	Street: Mercey Springs Road & Pioneer Road	City: Los Banos	Zip: 93635
Cross Streets: Mercey Springs Road & Pioneer Drive		County: Merced County	
Permitting Agency: City of Los Banos	Planner: Stacy Souza	Contact Number: (209)827-2433	
Permit Type and Number (if known): TBD			
Subject to Project-Level Discretionary Approval? ☑ Yes ☐ No		Last Project-Level Discretionary Approval Date: TBD	
		Last Project-Level Ministerial Approval Date: NA	

D. Project Description

Please briefly describe the project (e.g.: 300 multi-family residential units apartments or 6 miles road widening):
371 Single Family Residential Lots (88.9 acres)
120 Multi-Family Residential Lots (6 acres)
2 Commercial Lots (2.7 acres)

For **Residential/Non-Residential/Mixed-Use** please check the box next to each applicable land use below:

☑ Commercial / Retail	☐ Educational	☐ Office	☐ Warehouse
☑ Residential	☐ Government	☐ Industrial	☐ Distribution Center
☐ Recreational (e.g. park)	☐ Medical	☐ Manufacturing	☐ Other: ____

For **Transportation/Transit** please check the box next to each applicable land use below:

☐ New Road Construction	☐ Expansion to an Existing Road	☐ Bridge / Overpass	☐ Interchange or Intersection Improvements

Select land use setting: ☐ Urban ☑ Rural

E. Notice of Violation

Is this application being submitted as a result of receiving a Notice of Violation (NOV)? ☑ No ☐ Yes, NOV #:

FOR DISTRICT USE ONLY

Filing Fee Received:	Check #:	Date Stamp: Finance	Date Stamp: Permit
Date Paid:	Project #: C-20250209		Received JUN 19 2025 SJVAPCD
Applicant #: C-303100			

F. Voluntary Emission Reduction Agreement (VERA)

Is this project part of a larger project for which there is a VERA with the District? ☑ No ☐ Yes, VERA #:

G. Optional Section

Do you want to receive information about the Healthy Air Living Business Partners Program? ☑ No ☐ Yes

H. Parcel and Land Owner Information

	APN (000-000-00 Format)	Gross Acres	Land Owner
1.	026-290-001	17.7 +/-	Hostetler Ranches LLC
2.	026-290-002	16.6 +/-	Hostetler Ranches LLC
3.	026-290-003	.4 +/-	Hostetler Ranches LLC

Additional sheets for listing APN numbers can be found on the District's website at www.valleyair.org/ISR.

I. Project Development and Operation

Will the project require demolition of existing structures?	☐ Yes, *complete J*
	☑ No, *complete K*

J. Demolition

Total square feet of building(s) footprint to be demolished:	Number of Building Stories:
Demolition Start Date (Month/Year):	Number of Days for Demolition:

K. Timing

Expected number of work days per week during construction?	☐ 5 days ☑ 6 days ☐ 7 days
For **Transportation/Transit** projects, *please complete L-1*	
For **Residential/Non-Residential/Mixed-Use** projects, will it be developed in multiple phases?	☐ No, *complete L-2*
	☑ Yes, *complete L-3*

L-1. Transportation / Transit Development and Timing Details

Please note that development timelines provided within this section should reflect actual work time, and should not account for possible project delays.

Start of Construction (Month/Year):		End of Construction (Month/Year):	
Number of actual construction days:			
Length of road being constructed:	miles	Width of road being constructed:	feet
Predominant Soil Type (choose one):	☐ Sand Gravel	☐ Weathered Rock – Earth	☐ Blasted Rock
Amount of soil imported:	cubic yards	Amount of soil exported:	cubic yards
Amount of asphalt imported:	cubic yards	Amount of asphalt exported:	cubic yards
Total area to be disturbed:	acres	Maximum area disturbed per day:	acres
Average truck capacity:	cubic yards	Will water trucks be used?	☐ Yes ☐ No

L-2. Single Phase Development

Start of Construction (Month/Year):	Gross Acres:
End of Construction (Month/Year):	Net Acres (area devoted to buildings/structures):
First Date of Occupation (Month/Year):	Paved Parking Area (# of Spaces):
Building Square Footage:	Number of Dwelling Units:

L-3. Phased Site Development and Building Construction

In addition to the information below you can submit phase specific activity timeline found on District's website at www.valleyair.org/ISR.

1	Start of Construction (Month/Year): 03/2030	Gross Acres: 9.72 AC
	End of Construction (Month/Year): 03/2031	Net Acres (area devoted to buildings/structures): 6.89 AC

	First Date of Occupation (Month/Year): 07/2031	Paved Parking Area (# of Spaces): 2.84 AC
	Building Square Footage: ~1600 SF	Number of Dwelling Units: 45
2	Start of Construction (Month/Year): 03/2031	Gross Acres: 20.31 AC
	End of Construction (Month/Year): 04/2032	Net Acres (area devoted to buildings/structures): 15.13 AC
	First Date of Occupation (Month/Year): 07/2032	Paved Parking Area (# of Spaces): 5.18 AC
	Building Square Footage: ~ 1600 SF	Number of Dwelling Units: 97
3	Start of Construction (Month/Year): 03/2034	Gross Acres: 6.03 AC
	End of Construction (Month/Year): 04/2035	Net Acres (area devoted to buildings/structures): 4.26 AC
	First Date of Occupation (Month/Year): 07/2035	Paved Parking Area (# of Spaces): 1.77 AC
	Building Square Footage: ~1600 SF	Number of Dwelling Units: 28
4	Start of Construction (Month/Year): 03/2036	Gross Acres: 18.29 AC
	End of Construction (Month/Year): 04/2037	Net Acres (area devoted to buildings/structures): 12.54 AC
	First Date of Occupation (Month/Year): 07/2037	Paved Parking Area (# of Spaces): 5.75 AC
	Building Square Footage: ~1600 SF	Number of Dwelling Units: 62

Additional sheets for phasing information can be found on the District's website at www.valleyair.org/ISR.

M. On-Site Emission Reduction Measures (Mitigation Measures)

Listed below are categories of possible mitigation measures for applicants to implement that will reduce a project's impact on air quality. Check "Yes" next to any measure that will be utilized for this project, and please complete the corresponding page in this form to identify specifics related to that measure. If a category is not applicable to the project, check "No" and provide justification for not selecting the measure. Also, the applicant is encouraged to provide any mitigation measures including supporting documentation that are not listed on this application form for District consideration. For reference, see www.valleyair.org/ISR for potential additional mitigation measures.

Clean Construction Fleet Mitgation Measure below can be selected for all development types

1. Clean Construction Fleet (Note: Making a commitment to using less polluting construction equipment)
- [x] Yes, *please complete mitigation measure 1 below*
- [ ] No, *please provide justification why not selected:* _____

Operational Mitgation Measure below can be selected for all development types, except for transportation and transit projects

2. Clean On-Road Trucks (e.g. Heavy Duty Trucks, Medium Duty Trucks, and Light Duty Trucks)
Note: Operational fleet will use zero and/or near-zero emissions for all or part of its activities.
- [ ] Yes, *please complete applicable mitigation measure 2a through 2c below*
- [ ] No, *please provide justification why not selected:* _____

3. On-Site Zero Emission Off-Road Vehicles and Equipment (e.g. electric forklifts and electric yard trucks)
- [ ] Yes, *please complete applicable mitigation measure 3 below*
- [x] No, *please provide justification why not selected:* _____

4. Solar Panels (e.g. incorporate solar panels in the project)
- [x] Yes, *please complete applicable mitigation measure 4 below*
- [ ] No, *please provide justification why not selected:* _____

5. Electric Vehicle (EV) Chargers (e.g. incorporate onsite EV charging infrastructure)
- [ ] Yes, *please complete applicable mitigation measure 5 below*
- [x] No, *please provide justification why not selected:* _____

6. Clean Lawn and Garden Equipment (e.g. eletric mowers, electric leaf blowers, electric trimmers, etc.)
- [ ] Yes, *please complete applicable mitigation measure 6 below*
- [x] No, *please provide justification why not selected:* _____

7. Land Use/Location (e.g. increased residential density, increase job density, etc.) Not applicable for rural settings.
- [ ] Yes, *please complete applicable mitigation measures 7a through 7c below*
- [x] No, *please provide justification why not selected:* _____

8. Parking Policy/Pricing (e.g. unbundle residential parking costs, limit residential parking supply, etc.) Not applicable for rural settings.
- [ ] Yes, *please complete applicable mitigation measure 8a through 8d below*
- [x] No, *please provide justification why not selected:* _____

9. Commute Trip Reduction Programs (e.g. workplace parking charge, provide ridesharing program, etc.) Not applicable for rural settings.

☐ Yes, *please complete applicable mitigation measures 9a through 9c below*

☑ No, *please provide justification why not selected:* _____

10. Exceed Title 24 (e.g. exceed California Title 24 required energy efficiency for building(s) associated with the project)

☐ Yes, *please complete applicable mitigation measure 10 below*

☑ No, *please provide justification why not selected:* _____

N. Review Period

You may request a five (5) day period to review a draft of the District's analysis of your project before it is finalized. However, if you choose this option, it will delay the project's finalization by five (5) business days.

☑ I request to review a draft of the District's analysis.

O. Fee Deferral Schedule

If the project's on-site air pollution reductions (mitigation measure) insufficiently reduced air pollution as outlined in Rule 9510, an off-site fee is assessed based on the excess air pollution. The money collected from this fee will be used by the District to reduce air pollution emissions 'off-site' on behalf of the project.

An Applicant may request a deferral of all or part of the 'off-site' fees up to, but not to exceed, the start date of construction. The start of construction is any of the following, whichever occurs first: start of grading, start of demolition, or any other site development activities not mentioned above.

☑ I request a Fee Deferral Schedule, and have enclosed the Fee Deferral Schedule Application.

The Fee Deferral Schedule Application, can be found on the District's website at www.valleyair.org/ISR.

P. Change of Project Developer

The Applicant assumes all responsibility for ISR compliance for this project. If the project developer changes, the Applicant must notify the Buyer, and both Buyer and Applicant must file a 'Change of Project Developer' form with the District. If there is a change of project developer, and a 'Change of Project Developer' form is not filed with the District, the Applicant will remain liable for ISR compliance.

The Change of Project Developer form can be found on the District's website at www.valleyair.org/ISR.

Q. Attachments

Required:

☑ Tract Map or Project Design Map

☑ Vicinity Map

☑ Application Filing Fee
$841.00 for mixed use / non-residential / transporation / transit projects
OR
$562.00 for residential projects only

If applicable:

☑ Letter from Applicant granting Agent authorization

☑ Fee Deferral Schedule Application

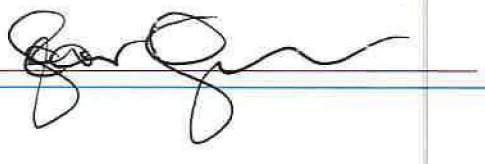
☐ Monitoring & Reporting Schedule

☐ Supporting documentation for selected Mitigation Measures

R. Certification Statement

I certify that I have reviewed and completed the entire application and hereby attest that the information relayed within is true and correct to the best of my knowledge. I commit to implementation of those on-site mitigation measures that I have selected above. I am responsible for notifying the District if I will be unable to implement these mitigation measures. If a committed mitigation measure is not implemented, the project may be re-assessed for air quality impacts.

(An authorized Agent may sign the form in lieu of the Applicant if an authorization letter signed by the Applicant is provided).

Name (printed): Jovan Granados	Title: Agent
Signature: 	Date: 04/13/25

Indirect Source Review
Complete Project Summary Sheet &
Monitoring and Reporting Schedule

Project Name:	**PRESIDENTIAL ESTATES**
Applicant Name:	**STONEFIELD HOME, INC**
Project Location:	**MERCEY SPRINGS ROAD & PIONEER ROAD** **MERCEY SPRINGS ROAD & PIONEER DRIVE** **APNs: 026-290-01, 02, 03**
Project Description:	**LAND USE:** **Residential - 45 Dwelling Unit - Single Family Housing** **Residential - 45 Dwelling Unit - Single Family Housing** **Residential - 97 Dwelling Unit - Single Family Housing** **Residential - 45 Dwelling Unit - Single Family Housing** **Residential - 97 Dwelling Unit - Single Family Housing** **Residential - 97 Dwelling Unit - Single Family Housing** **Residential - 28 Dwelling Unit - Single Family Housing** **Residential - 28 Dwelling Unit - Single Family Housing** **Residential - 28 Dwelling Unit - Single Family Housing** **Residential - 62 Dwelling Unit - Single Family Housing** **Residential - 62 Dwelling Unit - Single Family Housing** **Residential - 22 Dwelling Unit - Single Family Housing** **Residential - 62 Dwelling Unit - Single Family Housing** **Residential - 22 Dwelling Unit - Single Family Housing** **Residential - 56 Dwelling Unit - Single Family Housing** **Residential - 22 Dwelling Unit - Single Family Housing** **Residential - 56 Dwelling Unit - Single Family Housing** **Residential - 56 Dwelling Unit - Single Family Housing** **Residential - 61 Dwelling Unit - Single Family Housing** **Residential - 61 Dwelling Unit - Single Family Housing** **Residential - 61 Dwelling Unit - Single Family Housing** **Residential - 120 Dwelling Unit - Apartments, Low Rise** **Commercial/Retail - 15000 Square Feet - Other** **Residential - 120 Dwelling Unit - Apartments, Low Rise** **Commercial/Retail - 15000 Square Feet - Other** **Residential - 120 Dwelling Unit - Apartments, Low Rise** **Commercial/Retail - 15000 Square Feet - Other** **Residential - 120 Dwelling Unit - Apartments, Low Rise** **Commercial/Retail - 15000 Square Feet - Other** **ACREAGE: 34.70**
ISR Project ID Number:	**C-20250269**
Applicant ID Number:	**C-303100**
Permitting Public Agency:	**CITY OF LOS BANOS**
Public Agency Permit No:	**UNKNOWN**

Existing Emission Reduction Measures

There are no Existing Measures for this project

Non-District Enforced Emission Reduction Measures

There are no Non-District Enforced Measures for this project

Indirect Source Review
Complete Project Summary Sheet &
Monitoring and Reporting Schedule

District Enforced Emission Reduction Measures (Continued)

Enforcing Agency	Measure	Specific Condition
SJVAPCD	Construction Clean Fleet	For each project phase, maintain records of total hours of operation for all construction equipment, greater than 50 horsepower, operated on site. Within 30-days of completing construction of each project phase, submit to the District a summary report of total hours of operation, by equipment type, equipment model year and horsepower.
SJVAPCD	Construction and Operation - Recordkeeping	For each project phase, all records shall be maintained on site during construction and for a period of ten years following either the end of construction or the issuance of the first certificate of occupancy, whichever is later. Records shall be made available for District inspection upon request.
SJVAPCD	Construction and Operational Dates	For each project phase, maintain records of (1) the construction start and end dates and (2) the date of issuance of the first certificate of occupancy, if applicable.
SJVAPCD	Install Solar Panel	Install solar panels with a total power output of 1,484 kW

Number of District Enforced Measures: 4

Appendix D

Presidential Estates Geotechnical Investigation, dated October 11, 2024, prepared by North American Technical Services, Inc.

North American Technical Services

GEOTECHNICAL INVESTIGATION
PROPOSED PRESIDENTIAL ESTATES EAST
APN NO'S: 026-290-001, -002, -005, 083-120-012,-013,-014,-024,-028,-027
WEST OF MERCY SPRINGS ROAD BETWEEN PIONEER ROAD & E. PACHECO BLVD.
LOS BANOS, CALIFORNIA

Prepared for:

ATTENTION: MS. TIFFANIE MARSHALL
STONEFIELD HOME, INC
923 EAST PACHECO BOULEVARD, SUITE C
LOS BANOS, CALIFORNIA

Prepared by:

NORTH AMERICAN TECHNICAL SERVICES, INC.
4713 ENTERPRISE WAY, SUITE 4
MODESTO, CALIFORNIA 95356

NATS JOB NO.: 24-329G OCTOBER 11, 2024

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1.0 INTRODUCTION AND SCOPE OF SERVICES

1.1 Introduction

North American Technical Services, Inc. (NATS) has completed a geotechnical investigation and report providing conclusions and recommendations for the proposed Presidential Estates East Subdivision in Los Banos, California. The project is shown on plans (Sheets 1 thru 3, dated 5/2/24) by O'Dell Engineering. It is understood the project site is a 97.6-acre property and the proposed development will include 328 single family residential lots and 80 multi family units, approximately 120 apartment units, 0.8 acres commercial, and, 315± sf landscaped entry. In addition, the project is expected to include construction of new residential streets and cul-de-sacs, and, sewage disposal and storm drainage systems connected to existing City of Los Banos facilities. Preliminary geotechnical recommendations for the proposed improvements are presented herein.

1.2 Scope of Services

The scope of services provided included:

- Review of readily available geologic and geotechnical reports.
- Coordination of utility mark-out and location.
- Excavation of twelve exploratory borings and soil sampling utilizing a truck-mounted drill rig.
- Laboratory testing of selected soil samples.
- Description of site geology and evaluation of potential geologic hazards.
- Preparation of this preliminary geotechnical investigation report.

2.0 SITE DESCRIPTION

The proposed project site will include nine existing parcels (APN No's: 026-290-001, -002, -005, and, 083-120-012, -013, -014, -024, -028, -027) located West of Mercy Springs Road between Pioneer Road & E. Pacheco Blvd. in Los Banos, California. As shown on plans, there are eight existing single-family parcels along Mercy Springs Road which are not a part of the project. Existing site conditions are illustrated on Figures 1 and 2. The project site is currently covered by orchard trees, row crops and bare vacant land with scattered weeds. Several stockpiles of fill were present at the south end of the project site at time our field work was performed.

Based on review of Google Earth Pro (Build 7.3.6.9796, Build Date February 22, 2024) historic aerial photography, the existing parcels which make up the site have been used for agricultural purposes dating back to 1998. Surrounding properties include existing farm properties to the south, existing single-family subdivision and Los Banos High School on the west, Mercy Springs Road adjacent to the east, and, an existing shopping center to the north of the project site. Based on reconnaissance and review of site topography shown on plans, the proposed improvement area generally descends gently to the south with elevations ranging from 127± to 120± feet above mean sea level (msl), therefore, grading is expected to require only nominal cuts/fills.

3.0 FIELD INVESTIGATION AND LABORATORY TESTING

3.1 Field Investigation

NATS conducted the recent field investigation for the subject site on July 29th and October 4th, 2024 that included a geologic reconnaissance and the excavation of twelve (12) exploratory borings. The borings were excavated with a truck-mounted drill rig utilizing four-inch-diameter, solid-stem augers. The borings extended to a maximum depth of approximately 11.5 feet below the ground surface (bgs). Relatively undisturbed soil samples were collected with a Standard Penetration (SPT) sampler driven with a rope and cathead actuated, 350 ft-lb, hammer. The Borings were backfilled upon completion of drilling.

The soils from the exploratory borings were logged in the field by a NATS geotechnical representative, and were classified in general accordance with the Unified Soil Classification System via visual and tactile methods. The field descriptions have been modified, where appropriate, to reflect laboratory test results. Boring log information is included in Appendix B. The approximate locations of the explorations are presented on Figure 2.

3.2 Laboratory Testing

Laboratory testing was performed on selected representative soil samples for classification purposes, and to evaluate physical properties and engineering characteristics. Laboratory tests were limited to Moisture, Density, Atterberg Limits, and #200 Wash Analyses. Test descriptions and laboratory test results are included in Appendix C.

4.0 GEOLOGY

4.1 General Setting

The site lies along the western side of the San Joaquin Valley. The San Joaquin Valley makes up the southern portion of the Great Valley Geomorphic Province. The "Great Valley" is a gently-sloping to essentially-flat alluvial plain situated east of the Coast Ranges and west of the Sierra Nevada. The Great Valley has been filled with hundreds of feet of basin and river sediments ranging in age from Pleistocene to Holocene. Recent alluvial deposits generally consist of poorly sorted silts and fine sands with less extensive lenses of medium to coarse grained sands and gravel. Grain size and texture are based on local relationships with the alluvial source or eroding agent. Lacustrine deposits occur along the axis of the valley, and consist of clays, silts, and fine sands. These deposits overlie Pliocene-Pleistocene continental clastic deposits, which in turn lie over older continental and marine deposits. A pre-Tertiary basement complex of granitic and metamorphic rocks unconformably underlies the entire area.

4.2 Geologic Conditions

Regional geologic mapping by Wagner, E.J., Bortugno, E.J., and McJunkin, R.D. (CDMG Map 5A, 1991) indicates the near surface geologic units underlying the site consist of Quaternary San Luis Ranch Alluvium on the northern half and Patterson Alluvium on the southern half of the site. These units are described as fine to coarse grained fan, mudflow, terrace, and floodplain deposits and coarse to fine grained stream, fan, and mudflow deposits, respectively. Soil materials consistent with these designations were encountered in our exploratory borings and descriptions are

presented below.

4.2.1 Quaternary San Luis Ranch Alluvium and Patterson Alluvium

Soils consistent with Quaternary San Luis Ranch and Patterson Alluvium were encountered from ground surface to the maximum explored depth of our explorations. These soils are generally described as stiff to hard, locally cemented, low plastic clay (CL), silty clay (CL), sandy silt (ML), clayey sand (SC) and medium dense silty sand (SM) and well graded sand (SW). These types of soils are expected to generally be present underlying the entire site.

4.3 Groundwater Conditions

Groundwater was not encountered in the recent borings that were advanced to a maximum explored depth of approximately 11.5 feet bgs. Based on depth contours shown on the California Department of Water Resources Sustainable Groundwater Management Act (SGMA) Data Viewer (https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer#gwlevels), groundwater depth in the vicinity of the site is indicated to be on the order of 37± feet depth in (Spring 2023) and high groundwater level between 2011, 2012 and 2013 of 20± ft depth.

While groundwater conditions may vary, especially following periods of sustained precipitation or irrigation, it is generally not anticipated to adversely affect shallow construction activities or the completed improvements, if irrigation is limited and proper site drainage is designed, installed, and maintained per the recommendations of the project civil engineer. However, groundwater could

have the potential to perch within the underlying soils, especially during or following the rainy season. Such occurrences could impact grading and foundation excavation activities.

4.4 Geologic Hazards

Geologic hazards that were considered to have potential impact to site development were evaluated based on field observations and literature review. It appears that geologic hazards at the site are primarily limited to those described below.

4.4.1 Surface Fault Rupture

In accordance with the Alquist-Priolo Earthquake Fault Zoning Act, (ACT), the State of California established Earthquake Fault Zones around known active faults. The purpose of the ACT is to regulate the development of structures intended for human occupancy near active fault traces in order to mitigate hazards associated with surface fault rupture. According to the California Geological Survey (Special Publication 42, Revised 2018), a fault that has had surface displacement within the last 11,700 years is defined as a Holocene-active fault and is either already zoned or pending zonation in accordance with the ACT. There are several other definitions of fault activity that are used to regulate dams, power plants, and other critical facilities, and some agencies designate faults that are documented as older than Holocene (last 11,700 years) and younger than late Quaternary (1.6 million years) as potentially active faults that are subject to local jurisdictional regulations.

Based on the site reconnaissance and review of referenced literature, the site is not located within a local or State-designated Earthquake Fault Zone, no known active fault traces underlie or project toward the site, and no known potentially active fault traces project toward the site. Therefore, the potential for fault surface rupture is considered to be low at the subject site.

4.4.2 Local and Regional Faulting

The United States Geological Survey (USGS), with support of State Geological Surveys, and reviewed published work by various researchers, have developed a Quaternary Fault and Fold Database of faults and associated folds that are believed to be sources of earthquakes with magnitudes greater than 6.0 that have occurred during the Quaternary (the past 1.6 million years). The faults and folds within the database have been categorized into four Classes (Class A-D) based on the level of evidence confirming that a Quaternary fault is of tectonic origin and whether the structure is exposed for mapping or inferred from fault related deformational features.

Class A faults have been mapped and categorized based on age of documented activity ranging from Historical faults (activity within last 150 years), Latest Quaternary faults (activity within last 15,000 years), Late Quaternary (activity within last 130,000 years), to Middle to late Quaternary (activity within last 1.6 million years).

The Class A faults are considered to have the highest potential to generate earthquakes and/or surface rupture, and the earthquake and surface rupture potential generally increases from oldest to youngest. The evidence for Quaternary deformation and/or tectonic activity progressively decreases for Class B and Class C faults. When geologic evidence indicates that a fault is not of tectonic origin it is considered to be a Class D structure. Such evidence includes joints, fractures, landslides, or erosional and fluvial scarps that resemble fault features, but demonstrate a non-tectonic origin.

The nearest known Class A faults are the Great Valley Thrust Fault System (undifferentiated Quaternary age), which is located approximately 6.56 kilometers southwest, the San Joaquin Fault (Late Quaternary age), which is located approximately 8.03 kilometers southwest and the O'Neill Fault System (Late Quaternary age), which is located approximately 10.23 kilometers southwest of the site.

4.4.3 Liquefaction and Seismic Settlement Evaluation

Liquefaction occurs when saturated fine-grained sands or silts lose their physical strengths during earthquake-induced shaking and behave like a liquid. This is due to loss of point-to-point grain contact and transfer of normal stress to the pore water. Liquefaction potential varies with water level, soil type, material gradation, relative density, and probable intensity and duration of ground shaking. Seismic settlement can occur with or without liquefaction; it results from densification of loose soils.

The California Geological Survey (CGS) has designated (http://gmw.consrv.ca.gov/shmp/html/pdf_maps_no.html) certain areas in California as potential liquefaction hazard zones. These are areas considered at risk of liquefaction-related ground failure during a seismic event. At the time of this writing the CGS had not evaluated the potential for liquefaction hazard at or in the vicinity of the project site. However, based on readily available published geologic information, there is no historical record of liquefaction occurring at the site.

Subsurface information obtained during our study was limited to a depth of 11.5 ft and no free groundwater was encountered within such depth. Research using the Groundwater Information Center Interactive Map Application (https://gis.water.ca.gov/app/gicima/) indicates approximate historic high groundwater (estimated by contouring) is indicated at 20± feet depth.

Based on the information discussed above, the relatively low maximum acceleration anticipated for the site, and, no previous record of liquefaction occurrence at the site/vicinity, it is our opinion the potential for liquefaction at the project site is likely relatively low. However, owing to the limited depth of information obtained for our study, it cannot be precluded that the potential for liquefaction may exist below the depth of

groundwater and the limits of exploration. If determining the potential for liquefaction below 20± ft is considered important or required, additional subsurface exploration (including subsurface drilling or CPT to 50± ft depth) and appropriate addendum to this report can be provided by this office (upon agreement for supplemental scope of work).

4.4.4 Landsliding

Landslides are not mapped at or in the vicinity of site area and were not observed or encountered during the recent field exploration. Based on information available on the California Geological Survey (CGS) website the site is not been evaluated seismically induced landsliding. The project site and over one mile of surrounding terrain within the valley is relatively flat-lying; therefore, seismically induced landsliding and/or other (gravity) landslides are not considered a significant hazard at the site.

4.4.5 Flooding

Based on Federal Emergency Management Agency mapping (FEMA Flood Map Number 06047C0850G, Effective on12/2/2008) the site improvement area is located within Flood Hazard Area “Zone X" (unshaded). This area is considered a minimal risk area outside the 1-percent and 0.2-percent-annual-chance floodplain. The flood potential should be reviewed by the project civil engineer.

4.4.6 Expansive Soils

Some of the soils encountered within the depth of influence at the site are described as stiff to hard low plastic clay. Laboratory testing on samples of these soils indicates they have a

Liquid Limit (LL) of 25 to 26 and Plastic Index (PI) of 10 to 13, therefore, they are expected to have a low expansion potential. To insure the differential heave/settlement does not occur below proposed structures and to promote uniformity, over-excavation of soils within one (1) foot below base of proposed footings will be required. Over-excavated soils are considered suitable for re-use as fill/backfill if they are moisture conditioned and properly compacted beneath proposed improvement areas as recommended below and as determined to be necessary during construction.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 General

NATS concludes that the proposed improvements on the site are feasible from a geotechnical standpoint, provided the preliminary recommendations in this report are incorporated into the design and construction of the project. Recommendations for the proposed earthwork and improvements are included in the following sections and Appendix D. However, recommendations in the text of this report supersede those presented in Appendix D should conflicts exist. These preliminary recommendations should either be confirmed as appropriate or updated following required excavations and observations during site preparation.

5.2 Site Preparation

Prior to grading, areas to receive distress sensitive improvements should be cleared of existing

structures, debris, and deleterious materials. Objectionable materials, such as construction or demolition debris and vegetation not suitable for structural backfill should be separated and properly disposed of off-site. Any existing abandoned wells should be properly grout backfilled per County Environmental Health Department requirements.

In the area of improvements, existing undocumented fill, and, unsuitable surficial soils should be removed in their entirety. Over-excavations should extend to a minimum depth of two feet below existing grade, or to the depth of competent native materials, whichever is deeper. If loose, soft, or otherwise unsuitable materials are encountered at the base of over excavations, additional excavation to the depth of suitable material may be necessary.

Remedial excavations should extend laterally at least five feet beyond the limits of the proposed improvements or the distance resulting from a 1:1 (horizontal: vertical) slope extended down to suitable material, where feasible. Where encountered, tree roots, old abandoned utilities, old foundations or other obstructions should be removed entirely.

A geotechnical representative from NATS should observe the exposed ground surface at the base of the over-excavation prior to placement of compacted fill or improvements, to verify the competency of exposed subgrade materials. After approval by this office, the exposed subgrades to receive fill should be scarified a minimum of eight inches, moisture conditioned to 3 to 5 percent

above optimum moisture content, and compacted to at least 90 percent (per ASTM D1557) prior to fill placement.

5.3 Site Excavation

Based on NAT's observations, shallow excavations at the site should generally be feasible using well-maintained heavy-duty construction equipment run by experienced operators.

5.4 Fill Placement and Compaction

General fill and backfill should be compacted to a minimum relative compaction of 90 percent at a minimum three percent above optimum, as evaluated by ASTM D 1557. The optimum lift thickness for fill soil depends on the type of compaction equipment used. Generally, backfill should be placed in uniform, horizontal lifts not exceeding eight inches in loose thickness. Fill placement and compaction should be conducted in conformance with local ordinances, and should be observed and tested by a NATS geotechnical representative.

5.5 Fill Materials

Properly moisture conditioned, low expansion-potential soils derived from on-site materials are considered suitable for reuse on the site as compacted fill. If used, these materials should be approved by the soils engineer and screened of organics and materials generally greater than three inches in maximum dimension. Irreducible materials greater than three inches in maximum dimension should not be used in shallow fills (within three feet of proposed grades). In utility

trenches, adequate bedding should surround pipes. Imported fill should have an Expansion Index of 20 or less (ASTM D 4829). All soils proposed for use in structural or slope areas should be evaluated by the soils engineer before being imported to the site. All fill/backfill placed within structure footprints should be compacted to a minimum relative compaction of 90 percent at a minimum three percent above optimum, as evaluated by ASTM D 1557.

If retaining walls are necessary, backfill located within a 45-degree wedge extending up from the bottom of the wall foundation heel should consist of soil having an Expansion Index of 20 or less (ASTM D 4829) with less than 30 percent passing the No. 200 sieve. The upper 12 to 18 inches of wall backfill should consist of lower permeability soils, in order to reduce surface water infiltration behind walls. The project structural engineer and/or architect should detail proper wall back drains, including permeable gravel drain zones, fills, filter fabric, and perforated drain pipes.

5.6 Temporary Construction Slopes

The following recommended slopes should be relatively stable against deep-seated failure, but may experience localized sloughing. On-site soils are considered Type B and Type C soils with recommended slope ratios as set forth in Table 5.6 below.

TABLE 5.6
RECOMMENDED TEMPORARY SLOPE RATIOS

SOIL TYPE	SLOPE RATIO (Horizontal: vertical)	MAXIMUM HEIGHT

B (San Luis Ranch Alluvium)	1:1 (OR FLATTER)	10 Feet
C (Undocumented Fill)	1.5:1 (OR FLATTER)	5 Feet

Actual field conditions and soil type designations must be verified by a "competent person" while excavations exist, according to Cal-OSHA regulations. In addition, the above sloping recommendations do not allow for surcharge loading at the top of slopes by vehicular traffic, equipment, or materials. Appropriate surcharge setbacks must be maintained from the top of all unshored slopes.

5.7 Foundation and Slab Recommendations

The following recommendations are for preliminary design purposes only. These foundation recommendations should be re-evaluated after review of the project grading and foundation plans, and after completion of rough grading of the building pad areas. Upon completion of rough pad grading, Expansion Index of near surface soils should be verified, and these recommendations should be updated, if necessary.

5.7.1 Foundations

Foundation recommendations presented herein are based on the anticipated low expansion potential of near surface soils after remedial site grading is performed (Expansion Index of 50 or less).

Following the recommended preparatory grading, continuous and isolated spread footings

are anticipated to be suitable for use at this site. For one- or two-story structures, foundation dimensions and reinforcement should be based on allowable bearing values of 2,000 pounds per square foot (psf) for minimum 15-inch-wide footings embedded a minimum of 18 inches below lowest adjacent subgrade elevation. Isolated footings should be at least 24 inches in minimum dimension with same embedment. The allowable bearing value may be increased by one-third for short-duration loading, which includes the effects of wind or seismic forces. Based on the recommended preparatory grading, it is anticipated that all footings will be founded entirely in properly compacted fill materials. Footings should not span cut to fill interfaces.

Minimum reinforcement for continuous footings should consist of four No. 5 reinforcing bars; two placed near the top and two placed near the bottom, or as per the project structural engineer. The structural engineer should design isolated footing reinforcement. An uncorrected subgrade modulus of 130 pounds per cubic inch is considered suitable for elastic foundation design.

The structural engineer should provide recommendations for reinforcement of any spread footings and footings with pipe penetrations. Footing excavations should generally be maintained at above optimum moisture content until concrete placement.

5.7.2 Foundation Settlement

The maximum total static settlement is expected to be on the order of 1.0 inch and the maximum differential settlement is expected to be on the order of 0.5 inch.

5.7.3 Foundation Setback

Footings for structures should be designed such that the horizontal distance from the face of adjacent slopes to the outer edge of the footing is at least 10 feet. In addition, footings should bear beneath a 1:1 plane extended up from the nearest bottom edge of adjacent trenches and/or excavations. Deepening of affected footings may be a suitable means of attaining the prescribed setbacks.

5.7.4 Interior Concrete Slabs

Lightly loaded interior concrete slabs for non-traffic areas should be a minimum of 5.0 inches thick. Minimum slab reinforcement should consist of #4 reinforcing bars placed on maximum 18-inch centers, each way, at or above mid-slab height, but with proper cover. More stringent recommendations based on traffic or other concentrated loading per the project structural engineer supersede these recommendations, as applicable.

In moisture-sensitive floor areas, a suitable vapor retarder of at least 15-mil thickness (with all laps or penetrations sealed or taped) overlying a four-inch layer of consolidated aggregate base or gravel (with SE of 30 or more) should be installed. An optional maximum two-inch layer of similar material may be placed above the vapor retarder to help protect the membrane during steel and concrete placement. This recommended protection is

generally considered typical in the industry. If proposed floor areas or coverings are considered especially sensitive to moisture emissions, additional recommendations from a specialty consultant could be obtained. NATS is not an expert at preventing moisture penetration through slabs. A qualified architect or other experienced professional should be contacted if moisture penetration is a more significant concern.

Slabs subjected to heavier loads, racking, or vehicular traffic will require thicker structural slab sections and/or increased reinforcement. A 110-pci subgrade modulus is considered suitable for elastic design of minimally embedded improvements such as slabs-on-grade.

Subgrade materials should be maintained or brought to a minimum of two percent or greater above optimum moisture content until slab underlayment and concrete are placed.

5.8 Seismic Design Criteria

The seismic ground motion values listed in the table below were derived in accordance with the ASCE 7-16 Standard that is incorporated into the 2022 California Building Code. This was accomplished by establishing the Site Class based on the soil properties at the site, and calculating site coefficients and parameters using the ASCE 7 online Hazard Tool (https://asce7hazardtool.online/). Seismic ground motion values are based on the approximate site coordinates of 37.051012° latitude and –120.837206° longitude (at/near center of project site). These values are intended for the design of structures to resist the effects of earthquake ground

motions.

TABLE 5.8 SEISMIC GROUND MOTION VALUES 2022 CBC AND ASCE 7-16		
PARAMETER	VALUE	2022 CBC/ASCE 7-16 REFERENCE
Site Class	D (Default)	ASCE 16, Chapter 20
Mapped Spectral Response Acceleration Parameter, S_S	1.251	Figure 1613.2.1 (1)
Mapped Spectral Response Acceleration Parameter, S_1	0.423	Figure 1613.2.1 (2)
Seismic Coefficient, F_a	1.2	Table 1613.2.3 (1)
Seismic Coefficient, F_v	-	Table 1613.2.3 (2)
MCE Spectral Response Acceleration Parameter, S_{MS}	1.502	Section 1613.2.3
MCE Spectral Response Acceleration Parameter, S_{M1}	-	Section 1613.2.3
Design Spectral Response Acceleration, Parameter S_{DS}	1.001	Section 1613.2.5(1)
Design Spectral Response Acceleration, Parameter S_{D1}	-	Section 1613.2.5 (2)
Peak Ground Acceleration PGA_M	0.6	ASCE 16, Section 11.8.3

It is anticipated that the project will meet the requirements provided in ASCE 11.4.8, Exception 2, which permits the use of code-based ground motion values if the seismic response coefficient Cs is amplified by 1.5 times for the period range T≥1.5Ts using equations 12.8-3 and 12.8-4. If the proposed improvements have a period in the range exceeding 1.5Ts, then the base shear coefficient must be increased as required by ASCE 7-16.

5.9 Lateral Resistance and Earth Pressures

Lateral loads acting against structures may be resisted by friction between the footings and the

supporting soil or passive pressure acting against structures. If frictional resistance is used, allowable coefficients of friction of 0.28 (total frictional resistance equals the coefficient of friction multiplied by the dead load) for concrete cast directly against compacted fill or native material is recommended. A design passive resistance value of 200 pounds per square foot per foot of depth (with a maximum value of 2,000 pounds per square foot) may be used. The allowable lateral resistance can be taken as the sum of the frictional resistance and the passive resistance, provided the passive resistance does not exceed two-thirds of the total allowable resistance.

If proposed, retaining walls backfilled using granular soils may be designed using the equivalent fluid unit weights given in Table 5.9 below.

TABLE 5.9
EQUIVALENT FLUID UNIT WEIGHTS (G_h)
(pounds per cubic foot)

WALL TYPE	LEVEL BACKFILL	SLOPE BACKFILL 2:1 (HORIZONTAL: VERTICAL)
CANTILEVER WALL (YIELDING)	45	55
RESTRAINED WALL	55	65

Lateral pressures on cantilever retaining walls (yielding walls) over six feet high due to earthquake motions may be calculated based on work by Seed and Whitman (1970). The total lateral earth pressure against a properly drained and backfilled cantilever retaining wall above the groundwater level can be expressed as:

$P_{AE} = P_A + \Delta P_{AE}$

For non-yielding (or "restrained") walls, the total lateral earth pressure may be similarly calculated based on work by Wood (1973):

$P_{KE} = P_K + \Delta P_{KE}$

Where P_A/b = Static Active Earth Pressure = $G_h H^2/2$

P_K/b = Static Restrained Wall Earth Pressure = $G_h H^2/2$

$\Delta P_{AE}/b$ = Dynamic Active Earth Pressure Increment = (3/8) $k_h \gamma H^2$

$\Delta P_{KE}/b$ = Dynamic Restrained Earth Pressure Increment = $k_h \gamma H^2$

b = unit length of wall (usually 1 foot)

k_h = 1/2* PGA_m (PGA_m given previously in Table 5.8)

G_h = Equivalent Fluid Unit Weight

H = Total Height of the retained soil

γ = Total Unit Weight of Soil ≈ 135 pounds per cubic foot

*It is anticipated that the 1/2 reduction factor will be appropriate for proposed walls that are not substantially sensitive to movement during the design seismic event. Proposed walls that are more sensitive to such movement could utilize a 2/3 reduction factor. If any proposed walls require minimal to no movement during the design seismic event, no reduction factor to the peak ground acceleration should be used. The project structural engineer of record should determine the appropriate reduction factor to use (if any) based on the specific proposed wall characteristics.

The static and increment of dynamic earth pressure in both cases may be applied with a line of action located at H/3 above the bottom of the wall (SEAOC, 2013). The values above assume non-expansive backfill and free-draining conditions. Measures should be taken to prevent moisture buildup behind all retaining walls. Drainage measures should include free-draining backfill materials and sloped, perforated drains. These drains should discharge to an appropriate off-site location. Waterproofing should be as specified by the project architect.

5.10 Exterior Flatwork

Flatwork should be installed with crack-control joints at appropriate spacing as designed by the project architect to reduce the potential for cracking in exterior flatwork caused by minor movement of subgrade soils and concrete shrinkage. Additionally, it is recommended that flatwork be installed with at least #4 reinforcing bars at 18-inch centers, each way, at or above mid-height of slab, but with proper concrete cover, or with other reinforcement per the applicable project designer. Flatwork that should be installed with crack control joints includes driveways, sidewalks, and architectural features. All subgrades should be prepared according to the earthwork recommendations provided above before placing concrete. Positive drainage should be established and maintained next to all flatwork. Subgrade materials should be maintained at a minimum of three percent above optimum moisture content until the time of concrete placement.

5.11 Drainage

Surface runoff should be collected and directed away from improvements by means of appropriate erosion-reducing devices and positive drainage should be established around the proposed improvements. Positive drainage should be directed away from improvements at a gradient of at least two percent for a distance of at least five feet. However, the project civil engineers should evaluate the on-site drainage and make necessary provisions to keep surface water from affecting the site.

Generally, NATS recommends against allowing water to infiltrate building pads or adjacent to slopes. Some agencies are encouraging the use of storm-water cleansing devices. Use of such devices tends to increase the possibility of adverse effects associated with high groundwater including slope instability and liquefaction.

5.12 Slopes

Based on anticipated soil strength characteristics, slopes, if proposed, should be constructed at ratios of 2:1 (horizontal: vertical) or flatter. These slope inclinations should exhibit factors of safety greater than 1.5. Although properly constructed slopes on this site should be grossly stable, the soils will be somewhat erodible. Therefore, runoff water should not be permitted to drain over the edges of slopes unless that water is confined to properly designed and constructed drainage facilities. Erosion-resistant vegetation should be maintained on the face of all slopes. Typically, soils along the top portion of a fill slope face will creep laterally. NATS recommends against building distress-sensitive hardscape improvements within five feet of slope crests.

5.13 Controlled Low Strength Materials (CLSM)

Controlled Low Strength Materials (CLSM) may be used in deepened footing excavation areas, building pads, and/or adjacent to retaining walls or other structures, provided the appropriate following recommendations are also incorporated. Minimum over excavation depths recommended herein beneath slabs, flatwork, and other areas may be applicable beneath CLSM if/where CLSM is to be used, and excavation bottoms should be observed by NATS prior to

placement of CLSM. Prior to CLSM placement, the excavation should be free of debris, loose soil materials, and water. Once specific areas to utilize CLSM have been determined, NATS should review the locations to determine if additional recommendations are appropriate.

CLSM should consist of a minimum three-sack cement/sand slurry with a minimum 28-day compressive strength of 100 psi (or equal to or greater than the maximum allowable short term soil bearing pressure provided herein, whichever is higher) as determined by ASTM D4832. If re-excavation is anticipated, the compressive strength of CLSM should generally be limited to a maximum of 150 psi per ACI 229R-99. Where re-excavation is required, two-sack cement/sand slurry may be used to help limit the compressive strength. The allowable soils bearing pressure and coefficient of friction provided herein should still govern foundation design. CLSM may not be used in lieu of structural concrete where required by the structural engineer.

5.14 Vehicular Pavements and Site Improvements

Two recommended pavement sections for auto drive/parking and truck drive/loading areas are presented in the table below. Option 1 is for construction of asphaltic concrete pavements and Option 2 is for construction of concrete pavements. The pavement sections presented below are based on an assumed Resistance "R"- Value based on experience with soils in the vicinity. If desired a sample could be obtained at time grading is near completion and a laboratory R-value good be performed and sections below revised as necessary. All Class II aggregate base should

meet or exceed Caltrans Standard Specifications (including Minimum R-Value=78). For design it is assumed that the upper 12 inches of subgrade and all base materials are compacted to above 95% relative compaction and above optimum moisture content.

TABLE 5.14
RECOMMENDED PAVEMENT THICKNESS

Traffic Area	Assumed Traffic Index	Subgrade "R"-Value	Option 1: Asphalt Pavements		Option 2: PCC Concrete Pavements (inches)
			AC Thickness (inches)	Class II AB Thickness (inches)	
Auto Drive /Parking	5.0	22	3.0	7.0	5.5
Truck Drive /Loading	6.0	22	3.0	11.0	6.0

Please note that these pavement sections may not be acceptable for city or public street repair or improvements. The Traffic Indexes (TI's) used in the calculations of pavement sections was assumed, sections for other TI's can be provided if desired from data in-hand upon your request.

5.15 Plan Review

NATS should be authorized to review the project grading and foundation plans prior to commencement of earthwork in order to provide additional recommendations, if necessary.

5.16 Construction Observation

The recommendations provided in this report are based on preliminary design information for the

proposed construction and the subsurface conditions observed in the soil borings. The interpolated subsurface conditions should be confirmed by NATS during construction with respect to anticipated conditions. Upon completion of precise grading, if necessary, soil samples will be collected to evaluate as-built Expansion Index. Foundation recommendations may be revised upon completion of grading, and laboratory tests results. Additionally, soil samples should be taken in pavement subgrade areas upon rough grading to refine pavement recommendations as necessary.

Recommendations provided in this report are based on the understanding and assumption that NATS will provide the observation and testing services for the project. All earthworks should be observed and tested in accordance with recommendations contained within this report. NATS should evaluate footing excavations before reinforcing steel placement.

6.0 LIMITATIONS OF INVESTIGATION

The field evaluation, laboratory testing and geotechnical analysis presented in this report have been conducted according to current engineering practice and the standard of care exercised by reputable geotechnical consultants performing similar tasks in this area. No other warranty, expressed or implied, is made regarding the conclusions, recommendations and opinions expressed in this report. Variations may exist and conditions not observed or described in this report may be encountered during construction. This report is prepared for the project as described. It is not prepared for any other property or party.

The recommendations provided herein have been developed in order to reduce the post-construction movement of site improvements related to soil settlement. However, even with the design and construction recommendations presented herein, some post-construction movement and associated distress may occur.

The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they are due to natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside NATS's involvement. Therefore, this report is subject to review and should not be relied upon after a period of three years.

NATS's conclusions and recommendations are based on an analysis of the observed conditions. If conditions different from those described in this report are encountered, NATS should be notified and additional recommendations, if required, will be provided subject to NATS remaining as authorized geotechnical consultant of record. This report is for use of the project as described. It should not be utilized for any other project.

NATS appreciates this opportunity to be of service on this project. If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Respectfully submitted,

NORTH AMERICAN TECHNICAL SERVICES, INC.

Sergio Carrera, PE #

T. A. Krause
Staff Engineer

APPENDIX A

REFERENCES

REFERENCES

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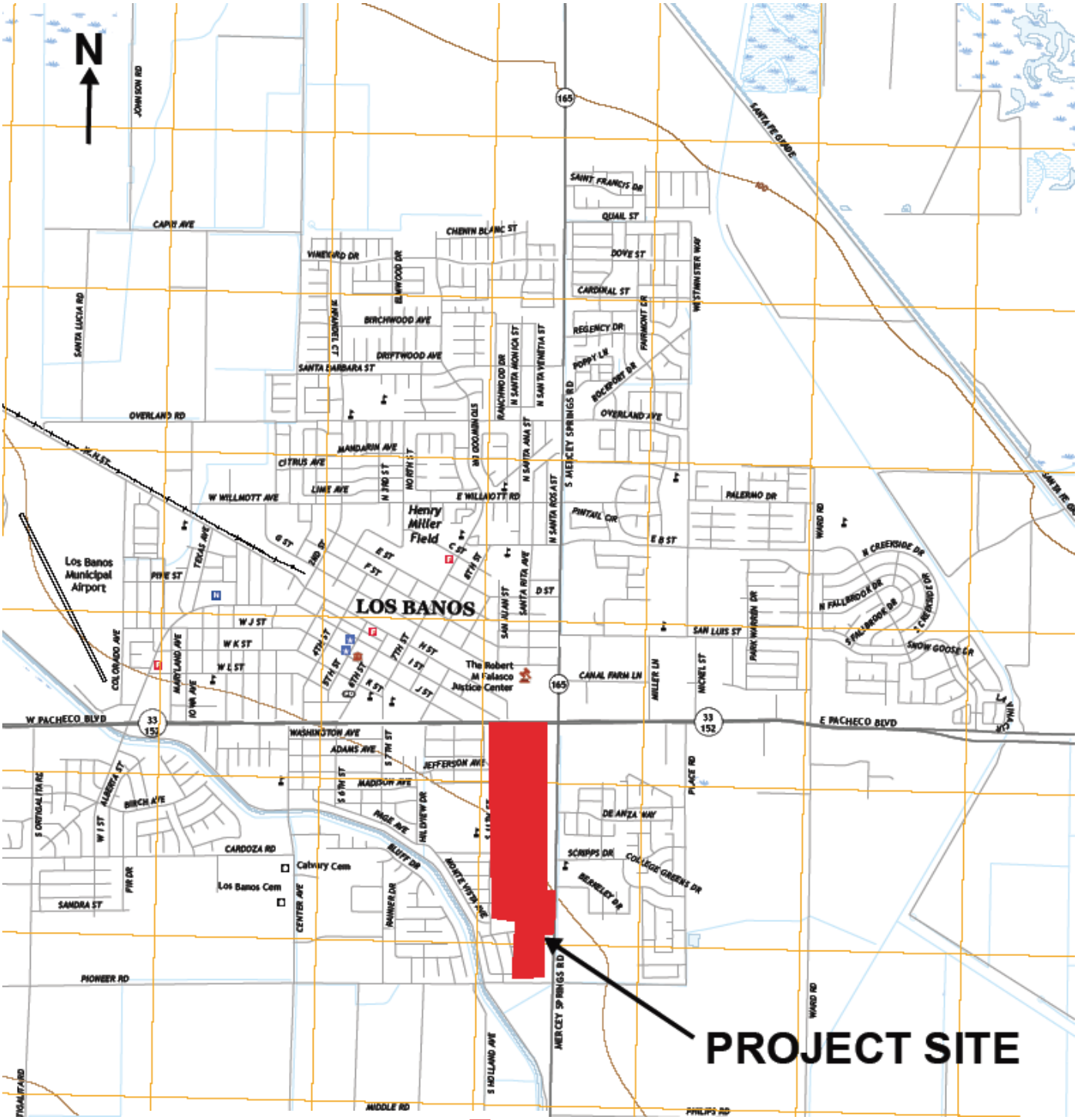
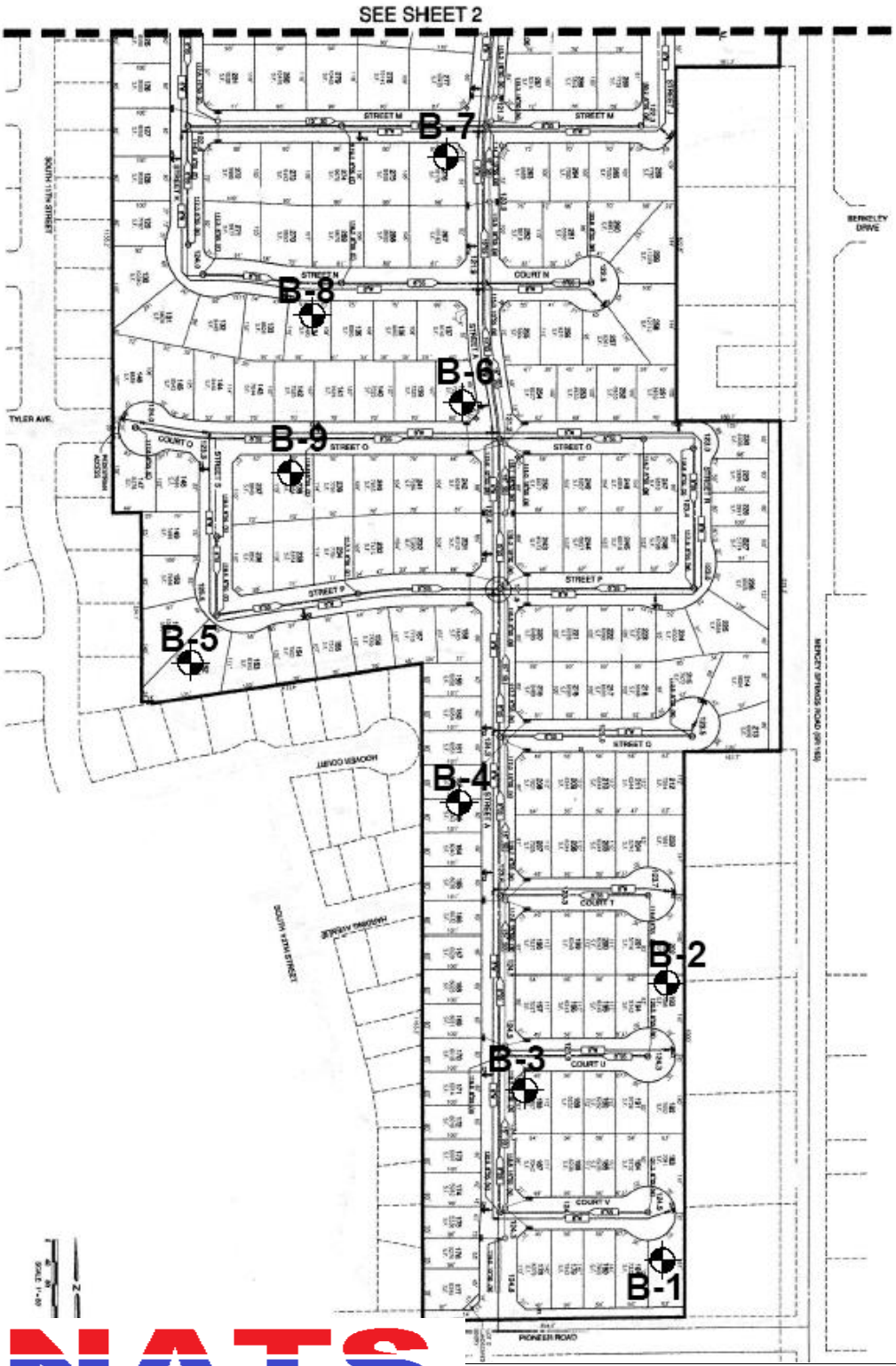
APPENDIX B

BORING LOGS



NATS

SITE INDEX MAP PROPOSED PRESIDENTIAL ESTATES EAST West of Mercy Springs Road Los Banos, California	NATS JOB NO. 24-329G
	SCALE NTS
	DATE 10/11/24
	FIGURE 1

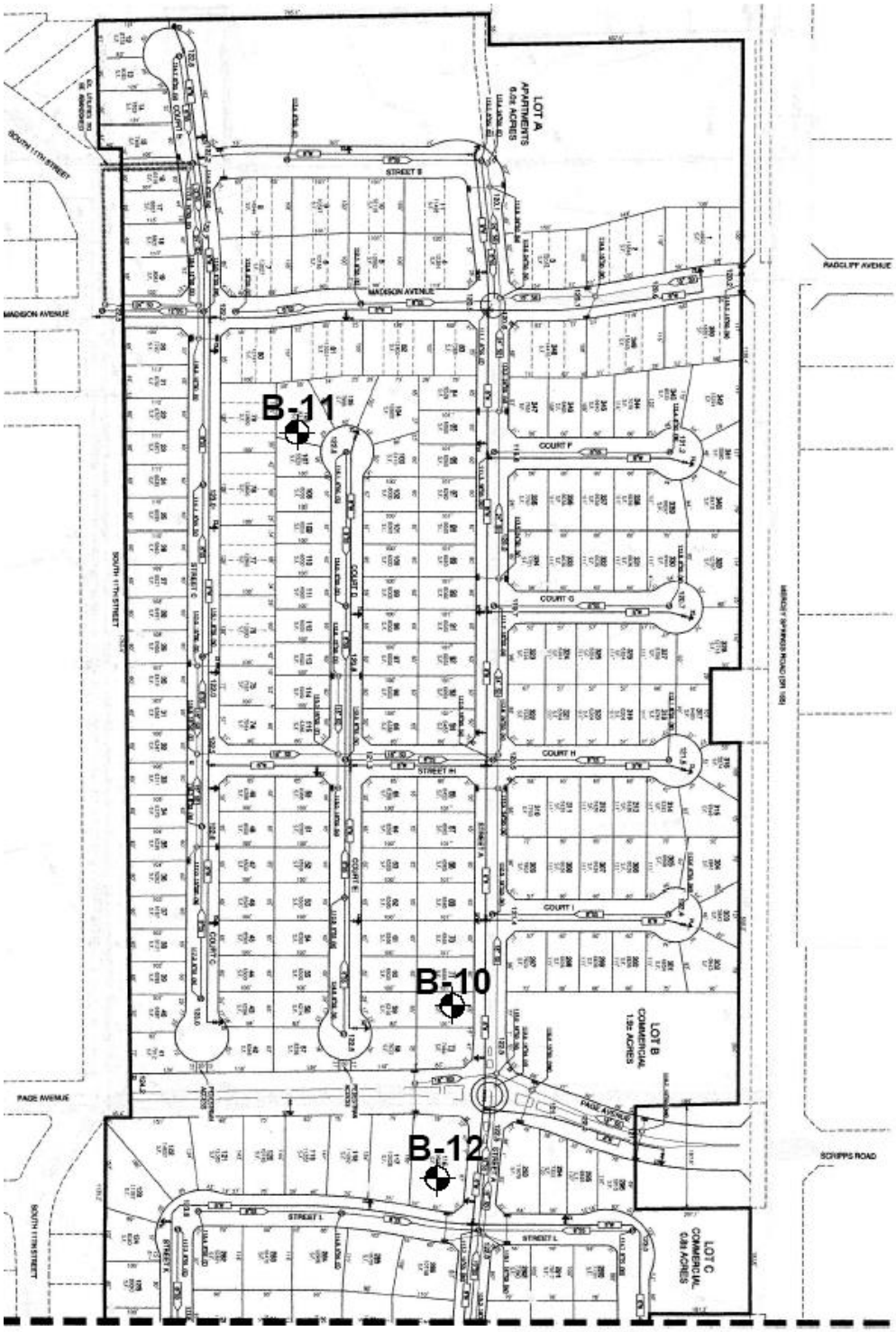


NATS

EXPLORATION MAP

PROPOSED PRESIDENTIAL ESTATES EAST
West of Mercy Springs Road
Los Banos, California

NATS JOB NO.		
24-329G		
SCALE		
NTS		
DATE	FIGURE	SHEET
10/11/24	2	1 of 2



NATS

EXPLORATION MAP

PROPOSED PRESIDENTIAL ESTATES EAST
West of Mercy Springs Road
Los Banos, California

NATS JOB NO.		
24-329G		
SCALE		
NTS		
DATE	FIGURE	SHEET
10/11/24	2	2 of 2

NATS

DEFINITION OF TERMS

PRIMARY DIVISIONS			SYMBOLS	SECONDARY DIVISIONS
COARSE GRAINED SOILS MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVELS MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS < 5% FINES	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES LITTLE OR NO FINES
			GP	POORLY GRADED GRAVELS OR GRAVEL SAND MIXTURES, LITTLE OF NO FINES
		GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES, NON-PLASTIC FINES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES, PLASTIC FINES
	SANDS MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS < 5% FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SP	POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES, NON-PLASTIC FINES
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES, PLASTIC FINES
FINE GRAINED SOILS MORE THAN HALF OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT IS LESS THAN 50		ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, SLIGHTLY PLASTIC CLAYEY SILTS
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY, SANDY, SILTS OR LEAN CLAYS
			OL	ORGANIC SILTS AND ORGANIC CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT IS GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTY CLAYS
HIGHLY ORGANIC SOILS			PT	PEAT AND OTHER HIGHLY ORGANIC SOILS

GRAIN SIZES

BOULDERS	COBBLES	GRAVEL		SAND			SILTS AND CLAYS
		COARSE	FINE	COARSE	MEDIUM	FINE	

12" 3" 3/4" 4 10 40 200

CLEAR SQUARE SIEVE OPENING U.S. STANDARD SIEVE SIZE

ADDITIONAL TESTS

(OTHER THAN TEST PIT AND BORING LOG COLUMN HEADINGS)

MAX- Maximum Dry Density
GS- Grain Size Distribution
SE- Sand Equivalent
EI- Expansion Index
CHM- Sulfate and Chloride Content , pH, Resistivity
COR - Corrosivity
SD- Sample Disturbed
PM- Permeability
SG- Specific Gravity
HA- Hydrometer Analysis
AL- Atterberg Limits
RV- R-Value
CN- Consolidation
CP- Collapse Potential
HC- Hydrocollapse
REM- Remolded
PP- Pocket Penetrometer
WA- Wash Analysis
DS- Direct Shear
UC- Unconfined Compression
MD- Moisture/Density
M- Moisture
SC- Swell Compression
OI- Organic Impurities

FIGURE: BL1

NATS

PROJECT:	DRILLER:	SHEET: of
NATS JOB NO:	DRILL METHOD:	DRILLING DATE:
LOGGED BY:	SAMPLE METHOD:	ELEVATION:

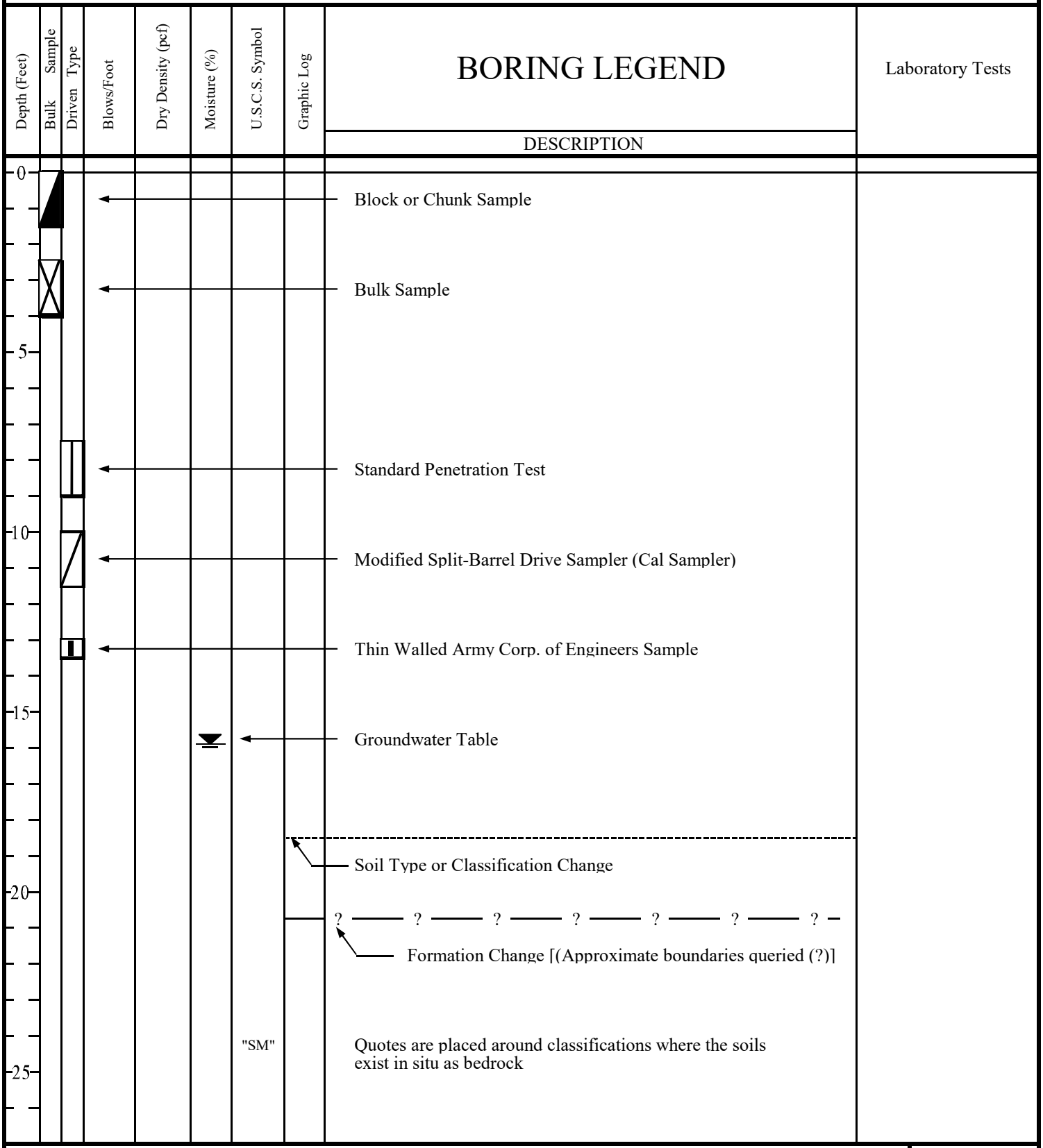


FIGURE: BL2

NATS

PROJECT:	Presidential Estates East, L. Banos	DRILLER:	NATS	SHEET:	1 of 1
NATS JOB NO:	24-329G	DRILL METHOD:	4" Auger	DRILL DATE:	7/29/2024
LOGGED BY:	A.K.	SAMPLE METHOD:	SPT	ELEVATION:	EGS

BORING: B-1

Depth (Feet)	Bulk Sample / Driven Type	Blows/6 Inches	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0		3 4 9			CL		Stiff, brown, damp, low plastic CLAY	74.8%<#200 LL=25, PI=13
5		8 16 30	101.1	14.4	CL		As Above	LL=26, PI=10
					CL		Hard, brown, damp, low plastic CLAY	
10		5 8 13			CL		Very stiff, brown, damp, silty CLAY with trace of sand	PP=2.5-3.0 tsf
							Total depth = 11.5 feet No free ground water encountered Boring Backfilled 7/29/24	
15								
20								
25								

NATS

PROJECT:	Presidential Estates East, L. Banos	DRILLER:	NATS	SHEET:	1 of 1
NATS JOB NO:	24-329G	DRILL METHOD:	4" Auger	DRILL DATE:	7/29/2024
LOGGED BY:	A.K.	SAMPLE METHOD:	SPT	ELEVATION:	EGS

BORING: B-2

Depth (Feet)	Bulk Sample / Driven Type	Blows/6 Inches	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0		6 9 12			CL		Very Stiff, brown, damp, low plastic CLAY	
5		8 12 25			CL		As Above	
					CL		Hard, brown, damp, low plastic CLAY	
10		6 8 16			ML		Very stiff, brown, damp, non-plastic sandy SILT	
							Total depth = 11.5 feet No free ground water encountered Boring Backfilled 7/29/24	
15								
20								
25								

NATS

PROJECT:	Presidential Estates East, L. Banos	DRILLER:	NATS	SHEET:	1 of 1
NATS JOB NO:	24-329G	DRILL METHOD:	4" Auger	DRILL DATE:	7/29/2024
LOGGED BY:	A.K.	SAMPLE METHOD:	SPT	ELEVATION:	EGS

BORING: B-3

Depth (Feet)	Bulk Sample / Driven Type	Blows/6 Inches	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0		2 3 5			CL		Very Stiff, brown, damp, low plastic CLAY	
5		3 10 18	99.8	13.7	SC		Medium dense, brown, damp clayey SAND	41.6%<#200 PP=2.0 tsf
					SM		Medium dense, brown, dry, silty fine SAND	
10		6 7 18			SW		Med dense, gray, dry, fine to coarse SAND	
							Total depth = 11.5 feet No free ground water encountered Boring Backfilled 7/29/24	
15								
20								
25								

NATS

PROJECT:	Presidential Estates East, L. Banos	DRILLER:	NATS	SHEET:	1 of 1
NATS JOB NO:	24-329G	DRILL METHOD:	4" Auger	DRILL DATE:	7/29/2024
LOGGED BY:	A.K.	SAMPLE METHOD:	SPT	ELEVATION:	EGS

BORING: B-4

Depth (Feet)	Bulk Sample	Driven Type	Blows/6 Inches	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0			4 5 7			CL		Stiff, brown, damp, low plastic CLAY	60.1%<#200
5			6 9 20	96.9	15.8	CL		Very stiff, brown, damp, low plastic CLAY	
10			9 9 13			ML		Very stiff, brown, dry, very fine sandy SILT	
								Total depth = 11.5 feet No free ground water encountered Boring Backfilled 7/29/24	
15									
20									
25									

NATS

PROJECT:	Presidential Estates East, L. Banos	DRILLER:	NATS	SHEET:	1 of 1
NATS JOB NO:	24-329G	DRILL METHOD:	4" Auger	DRILL DATE:	7/29/2024
LOGGED BY:	A.K.	SAMPLE METHOD:	SPT	ELEVATION:	EGS

BORING: B-5

Depth (Feet)	Bulk Sample / Driven Type	Blows/6 Inches	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0		4 4 5			ML		Stiff, brown, damp, non-plastic SILT CLAY	Non-Plastic PP=2.0 tsf
5		6 14 26			ML		As Above	PP=4.0-4.5 tsf
					CL		Hard, brown, damp-dry, low plastic CLAY	
10		15 23 30			CL		As Above	PP>4.5 tsf
							Total depth = 11.5 feet No free ground water encountered Boring Backfilled 7/29/24	
15								
20								
25								

NATS

PROJECT:	Presidential Estates East, L. Banos	DRILLER:	NATS	SHEET:	1 of 1
NATS JOB NO:	24-329G	DRILL METHOD:	4" Auger	DRILL DATE:	10/4/2024
LOGGED BY:	A.K.	SAMPLE METHOD:	SPT	ELEVATION:	EGS

BORING: B-6

Depth (Feet)	Bulk Sample	Driven Type	Blows/6 Inches	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0			4 7 9			ML		Very stiff, brown, dry, sandy SILT	
5			4 6 11			ML		As Above	
								Total depth = 6.5 feet No free ground water encountered Boring Backfilled 10/4/24	
10									
15									
20									
25									

NATS

PROJECT:	Presidential Estates East, L. Banos	DRILLER:	NATS	SHEET:	1 of 1
NATS JOB NO:	24-329G	DRILL METHOD:	4" Auger	DRILL DATE:	10/4/2024
LOGGED BY:	A.K.	SAMPLE METHOD:	SPT	ELEVATION:	EGS

BORING: B-7

Depth (Feet)	Bulk Sample	Driven Type	Blows/6 Inches	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0			5 6 11			ML		Very stiff, brown, dry, sandy SILT	
5			3 3 4			ML		Medium stiff, brown, dry, sandy SILT	
								Total depth = 6.5 feet No free ground water encountered Boring Backfilled 10/4/24	
10									
15									
20									
25									

NATS

PROJECT:	Presidential Estates East, L. Banos	DRILLER:	NATS	SHEET:	1 of 1
NATS JOB NO:	24-329G	DRILL METHOD:	4" Auger	DRILL DATE:	10/4/2024
LOGGED BY:	A.K.	SAMPLE METHOD:	SPT	ELEVATION:	EGS

BORING: B-8

Depth (Feet)	Bulk Sample	Driven Type	Blows/6 Inches	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0			7 9 14			ML		Very stiff, brown, dry, sandy SILT	
5			11 30+			ML		Hard, brown, dry, cemented sandy SILT	
								Total depth = 6.0 feet No free ground water encountered Boring Backfilled 10/4/24	
10									
15									
20									
25									

NATS

PROJECT:	Presidential Estates East, L. Banos	DRILLER:	NATS	SHEET:	1 of 1
NATS JOB NO:	24-329G	DRILL METHOD:	4" Auger	DRILL DATE:	10/4/2024
LOGGED BY:	A.K.	SAMPLE METHOD:	SPT	ELEVATION:	EGS

BORING: B-9

Depth (Feet)	Bulk Sample	Driven Type	Blows/6 Inches	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0			4 9 12			CL		Very stiff, brown, moist, silty CLAY	
5			9 30+			ML		Hard, brown, dry, slightly cemented sandy SILT	
								Total depth = 6.0 feet No free ground water encountered Boring Backfilled 10/4/24	
10									
15									
20									
25									

NATS

PROJECT:	Presidential Estates East, L. Banos	DRILLER:	NATS	SHEET:	1 of 1
NATS JOB NO:	24-329G	DRILL METHOD:	4" Auger	DRILL DATE:	10/4/2024
LOGGED BY:	A.K.	SAMPLE METHOD:	SPT	ELEVATION:	EGS

BORING: B-10

Depth (Feet)	Bulk Sample	Driven Type	Blows/6 Inches	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0			5 9 12			ML		Very stiff, brown, dry, sandy SILT	
5			4 8 18			ML		As Above	
								Total depth = 6.5 feet No free ground water encountered Boring Backfilled 10/4/24	
10									
15									
20									
25									

NATS

PROJECT:	Presidential Estates East, L. Banos	DRILLER:	NATS	SHEET:	1 of 1
NATS JOB NO:	24-329G	DRILL METHOD:	4" Auger	DRILL DATE:	10/4/2024
LOGGED BY:	A.K.	SAMPLE METHOD:	SPT	ELEVATION:	EGS

BORING: B-11

Depth (Feet)	Bulk Sample / Driven Type	Blows/6 Inches	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0		7 8 10			ML		Very stiff, brown, dry, sandy SILT	
5		6 10 30+			ML		Hard, brown, dry, sandy SILT	
							Total depth = 6.5 feet No free ground water encountered Boring Backfilled 10/4/24	
10								
15								
20								
25								

NATS

PROJECT:	Presidential Estates East, L. Banos	DRILLER:	NATS	SHEET:	1 of 1
NATS JOB NO:	24-329G	DRILL METHOD:	4" Auger	DRILL DATE:	7/29/2024
LOGGED BY:	A.K.	SAMPLE METHOD:	SPT	ELEVATION:	EGS

BORING: B-12

Depth (Feet)	Bulk Sample / Driven Type	Blows/6 Inches	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0		5 5 7			CL		Stiff, brown, damp, low plastic CLAY	PP=3.5-4.5 tsf
5		6 9 23			CL		As Above	PP>4.5 tsf
					CL		Hard, brown, dry, low plastic CLAY with calcium carbonate stringers	
10		10 7 10			SM		Medium dense, brown, dry, silty fine SAND	
							Total depth = 11.5 feet No free ground water encountered Boring Backfilled 7/29/24	
15								
20								
25								

APPENDIX C

LABORATORY METHODS AND RESULTS

APPENDIX C
LABORATORY METHODS AND RESULTS

Laboratory Testing Program

Laboratory tests are being performed on representative soil samples to detect their relative engineering properties. Tests are being performed following test methods of the American Society for Testing Materials or other accepted standards. The following presents a brief description of the various test methods being used.

Classification

Soils were classified visually according to the Unified Soil Classification System. Visual classifications were supplemented by laboratory testing of selected samples according to ASTM D2487. The soil classifications are shown on the Exploration Logs in Appendix B.

Atterberg Limits

Atterberg Limits were performed on selected representative samples according to ASTM D 4318.

In-Place Moisture and Density

The in-place moisture content and densities of selected samples were determined using relatively undisturbed soil samples.

US Sieve No. 200 Wash Analysis

The amount of material finer than the No. 200 sieve in soil by washing was performed on selected representative samples according to ASTM D 1140-17.

NATS

LABORATORY TEST RESULTS

200 WASH ANALYSIS

LOCATION	DEPTH (feet)	PERCENT PASSING #200 SIEVE	CLASSIFICATION
B-1/1'	1.0-2.5	74.0	CL
B-3/5'	5.0-6.5	41.6	SC
B-4/1'	1.0-2.5	60.1	CL

MOISTURE & DENSITY

ASTM D 4829

LOCATION	DEPTH (feet)	MOISTURE %	DENSITY PCF
B-1/5'	5.0-6.5	14.4	101.1
B-3/5'	5.0-6.5	13.7	99.8
B-4/5'	5.0-6.5	15.8	96.9

ATTERBERG LIMITS

ASTM D4318

LOCATION	DEPTH (feet)	LIQUID LIMIT	PLASTIC INDEX
B-1/1'	1.0-2.5	25	13
B-1/5'	5.0-6.5	26	10
B-5/1'	1.0-2.5	NA	NP

APPENDIX D

STANDARD SPECIFICATIONS FOR GRADING

Section 1 - General

North American Technical Services, Inc. (NATS) presents the following standard recommendations for grading and other associated operations on construction projects. These guidelines should be considered a portion of the project specifications. Recommendations contained in the body of the previously presented soils report shall supersede the recommendations and or requirements as specified herein. The project geotechnical consultant shall interpret disputes arising out of interpretation of the recommendations contained in the soils report or specifications contained herein.

Section 2 - Responsibilities of Project Personnel

The geotechnical consultant should provide observation and testing services sufficient to general conformance with project specifications and standard grading practices. The geotechnical consultant should report any deviations to the client or his authorized representative.

The Client should be chiefly responsible for all aspects of the project. He or his authorized representative has the responsibility of reviewing the findings and recommendations of the geotechnical consultant. He shall authorize or cause to have authorized the Contractor and/or other consultants to perform work and/or provide services. During grading the Client or his authorized representative should remain on-site or should remain reasonably accessible to all concerned parties in order to make decisions necessary to maintain the flow of the project.

The Contractor is responsible for the safety of the project and satisfactory completion of all grading and other associated operations on construction projects, including, but not limited to, earth work in accordance with the project plans, specifications and controlling agency requirements.

Section 3 - Preconstruction Meeting

A preconstruction site meeting should be arranged by the owner and/or client and should include the grading contractor, design engineer, geotechnical consultant, owner's representative and representatives of the appropriate governing authorities.

Section 4 - Site Preparation

The client or contractor should obtain the required approvals from the controlling authorities for the project prior, during and/or after demolition, site preparation and removals, etc. The appropriate approvals should be obtained prior to proceeding with grading operations.

Clearing and grubbing should consist of the removal of vegetation such as brush, grass, woods, stumps, trees, root of trees and otherwise deleterious natural materials from the areas to be graded. Clearing and grubbing should extend to the outside of all proposed excavation and fill areas.

Demolition should include removal of buildings, structures, foundations, reservoirs, utilities (including underground pipelines, septic tanks, leach fields, seepage pits, cisterns, mining shafts, tunnels, etc.) and other man-made surface and subsurface improvements from the areas to be graded. Demolition of utilities should include proper capping and/or rerouting pipelines at the project perimeter and cutoff and capping of wells in accordance with the requirements of the governing authorities and the recommendations of the geotechnical consultant at the time of demolition.

Trees, plants or man-made improvements not planned to be removed or demolished should be protected by the contractor from damage or injury.

Debris generated during clearing, grubbing and/or demolition operations should be wasted from areas to be graded and disposed off-site. Clearing, grubbing and demolition operations should be performed under the observation of the geotechnical consultant.

Section 5 - Site Protection

Protection of the site during the period of grading should be the responsibility of the contractor. Unless other provisions are made in writing and agreed upon among the concerned parties, completion of a portion of the project should not be considered to preclude that portion or adjacent areas from the requirements for site protection until such time as the entire project is complete as identified by the geotechnical consultant, the client and the regulating agencies.

Precautions should be taken during the performance of site clearing, excavations and grading to protect the work site from flooding, ponding or inundation by poor or improper surface drainage. Temporary provisions should be made during the rainy season to adequately direct surface drainage away from and off the work site. Where low areas cannot be avoided, pumps should be kept on hand to continually remove water during periods of rainfall.

Rain related damage should be considered to include, but may not be limited to, erosion, silting, saturation, swelling, structural distress and other adverse conditions as determined by the geotechnical consultant. Soil adversely affected should be classified as unsuitable materials and should be subject to overexcavation and replacement with compacted fill or other remedial grading as recommended by the geotechnical consultant.

The contractor should be responsible for the stability of all temporary excavations. Recommendations by the geotechnical consultant pertaining to temporary excavations (e.g., backcuts) are made in consideration of stability of the completed project and, therefore, should not be considered to preclude the responsibilities of the contractor. Recommendations by the geotechnical consultant should not be considered to preclude requirements that are more restrictive by the regulating agencies. The contractor should provide during periods of extensive rainfall plastic sheeting to prevent unprotected slopes from becoming saturated and unstable. When deemed appropriate by the geotechnical consultant or governing agencies the contractor shall install checkdams, desilting basins, sand bags or other drainage control measures.

In relatively level areas and/or slope areas, where saturated soil and/or erosion gullies exist to depths of greater than 1.0 foot; they should be overexcavated and replaced as compacted fill in accordance with the applicable specifications. Where affected materials exist to depths of 1.0 foot or less below proposed finished grade, remedial grading by moisture conditioning in-place, followed by thorough recompaction in accordance with the applicable grading guidelines herein may be attempted. If the desired results are not achieved, all affected materials should be overexcavated and replaced as compacted fill in accordance with the slope repair recommendations herein. If field conditions dictate, the geotechnical consultant may recommend other slope repair procedures.

Section 6 - Excavations

6.1 Unsuitable Materials

Materials that are unsuitable should be excavated under observation and recommendations of the geotechnical consultant. Unsuitable materials include, but may not be limited to, dry, loose, soft, wet, organic compressible natural soils and fractured, weathered, soft bedrock and nonengineered or otherwise deleterious fill materials.

Material identified by the geotechnical consultant as unsatisfactory due to its moisture conditions should be overexcavated; moisture conditioned as needed, to a uniform at or above optimum moisture condition before placement as compacted fill.

If during the course of grading adverse geotechnical conditions are exposed which were not anticipated in the preliminary soil report as determined by the geotechnical consultant additional exploration, analysis, and treatment of these problems may be recommended.

6.2 Cut Slopes

Unless otherwise recommended by the geotechnical consultant and approved by the regulating agencies, permanent cut slopes should not be steeper than 2:1 (horizontal: vertical).

The geotechnical consultant should observe cut slope excavation and if these excavations expose loose cohesionless, significantly fractured or otherwise unsuitable material, the materials should be overexcavated and replaced with a compacted stabilization fill. If encountered specific cross section details should be obtained from the Geotechnical Consultant.

When extensive cut slopes are excavated or these cut slopes are made in the direction of the prevailing drainage, a non-erodible diversion swale (brow ditch) should be provided at the top of the slope.

6.3 Pad Areas

All lot pad areas, including side yard terrace containing both cut and fill materials, transitions, located less than 3 feet deep should be overexcavated to a depth of 3 feet and replaced with a uniform compacted fill blanket of 3 feet. Actual depth of overexcavation may vary and should be delineated by the geotechnical consultant during grading, especially where deep or drastic transitions are present.

For pad areas created above cut or natural slopes, positive drainage should be established away from the top-of-slope. This may be accomplished utilizing a berm drainage swale and/or an appropriate pad gradient. A gradient in soil areas away from the top-of-slopes of 2 percent or greater is recommended.

Section 7 - Compacted Fill

All fill materials should have fill quality, placement, conditioning and compaction as specified below or as approved by the geotechnical consultant.

7.1 Fill Material Quality

Excavated on-site or import materials which are acceptable to the geotechnical consultant may be utilized as compacted fill, provided trash, vegetation and other deleterious materials are removed prior to placement. All import materials anticipated for use on-site should be sampled tested and approved prior to and placement is in conformance with the requirements outlined.

Rocks 12 inches in maximum and smaller may be utilized within compacted fill provided sufficient fill material is placed and thoroughly compacted over and around all rock to effectively fill rock voids. The amount of rock should not exceed 40 percent by dry weight passing the 3/4-inch sieve. The geotechnical consultant may vary those requirements as field conditions dictate.

Where rocks greater than 12 inches but less than four feet of maximum dimension are generated during grading, or otherwise desired to be placed within an engineered fill, special handling in accordance with the recommendations below. Rocks greater than four feet should be broken down or disposed off-site.

7.2 Placement of Fill

Prior to placement of fill material, the geotechnical consultant should observe and approve the area to receive fill. After observation and approval, the exposed ground surface should be scarified to a depth of 6 to 8 inches. The scarified material should be conditioned (i.e. moisture added or air dried by continued discing) to achieve a moisture content at or slightly above optimum moisture conditions and compacted to a minimum of 90 percent of the maximum density or as otherwise recommended in the soils report or by appropriate government agencies.

Compacted fill should then be placed in thin horizontal lifts not exceeding eight inches in loose thickness prior to compaction. Each lift should be moisture conditioned as needed, thoroughly blended to achieve a consistent moisture content at or slightly above optimum and thoroughly compacted by mechanical methods to a minimum of 90 percent of laboratory maximum dry density. Each lift should be treated in a like manner until the desired finished grades are achieved.

The contractor should have suitable and sufficient mechanical compaction equipment and watering apparatus on the job site to handle the amount of fill being placed in consideration of moisture retention properties of the materials and weather conditions.

When placing fill in horizontal lifts adjacent to areas sloping steeper than 5:1 (horizontal: vertical), horizontal keys and vertical benches should be excavated into the adjacent slope area. Keying and benching should be sufficient to provide at least six-foot wide benches and a minimum of four feet of vertical bench height within the firm natural ground, firm bedrock or engineered compacted fill. No compacted fill should be placed in an area after keying and benching until the geotechnical consultant has reviewed the area. Material generated by the benching operation should be moved sufficiently away from

the bench area to allow for the recommended review of the horizontal bench prior to placement of fill.

Within a single fill area where grading procedures dictate two or more separate fills, temporary slopes (false slopes) may be created. When placing fill adjacent to a false slope, benching should be conducted in the same manner as above described. At least a 3-foot vertical bench should be established within the firm core of adjacent approved compacted fill prior to placement of additional fill. Benching should proceed in at least 3-foot vertical increments until the desired finished grades are achieved.

Prior to placement of additional compacted fill following an overnight or other grading delay, the exposed surface or previously compacted fill should be processed by scarification, moisture conditioning as needed to at or slightly above optimum moisture content, thoroughly blended and recompacted to a minimum of 90 percent of laboratory maximum dry density. Where unsuitable materials exist to depths of greater than one foot, the unsuitable materials should be over-excavated.

Following a period of flooding, rainfall or overwatering by other means, no additional fill should be placed until damage assessments have been made and remedial grading performed as described herein.

Rocks 12 inch in maximum dimension and smaller may be utilized in the compacted fill provided the fill is placed and thoroughly compacted over and around all rock. No oversize material should be used within 3 feet of finished pad grade and within 1 foot of other compacted fill areas. Rocks 12 inches up to four feet maximum dimension should be placed below the upper 10 feet of any fill and should not be closer than 15 feet to any slope face. These recommendations could vary as locations of improvements dictate. Where practical, oversized material should not be placed below areas where structures or deep utilities are proposed. Oversized material should be placed in windrows on a clean, overexcavated or unyielding compacted fill or firm natural ground surface. Select native or imported granular soil (S.E. 30 or higher) should be placed and thoroughly flooded over and around all windrowed rock, such that voids are filled. Windrows of oversized material should be staggered so those successive strata of oversized material are not in the same vertical plane.

It may be possible to dispose of individual larger rock as field conditions dictate and as recommended by the geotechnical consultant at the time of placement.

The contractor should assist the geotechnical consultant and/or his representative by digging test pits for removal determinations and/or for testing compacted fill. The contractor should provide this work at no additional cost to the owner or contractor's client.

Fill should be tested by the geotechnical consultant for compliance with the recommended relative compaction and moisture conditions. Field density testing should conform to ASTM Method of Test D 1556-00, D 2922-04. Tests should be conducted at a minimum of approximately two vertical feet or approximately 1,000 to 2,000 cubic yards of fill placed. Actual test intervals may vary as field conditions dictate. Fill found not to be in conformance with the grading recommendations should be removed or otherwise handled as recommended by the geotechnical consultant.

7.3 Fill Slopes

Unless otherwise recommended by the geotechnical consultant and approved by the regulating agencies, permanent fill slopes should not be steeper than 2:1 (horizontal: vertical).

Except as specifically recommended in these grading guidelines compacted fill slopes should be over-built two to five feet and cut back to grade, exposing the firm, compacted fill inner core. The actual amount of overbuilding may vary as field conditions dictate. If the desired results are not achieved, the existing slopes should be overexcavated and reconstructed under the guidelines of the geotechnical consultant. The degree of overbuilding shall be increased until the desired compacted slope surface condition is achieved. Care should be taken by the contractor to provide thorough mechanical compaction to the outer edge of the overbuilt slope surface.

At the discretion of the geotechnical consultant, slope face compaction may be attempted by conventional construction procedures including backrolling. The procedure must create a firmly compacted material throughout the entire depth of the slope face to the surface of the previously compacted firm fill intercore.

During grading operations, care should be taken to extend compactive effort to the outer edge of the slope. Each lift should extend horizontally to the desired finished slope surface or more as needed to ultimately established desired grades. Grade during construction should not be allowed to roll off at the edge of the slope. It may be helpful to elevate slightly the outer edge of the slope. Slough resulting from the placement of individual lifts should not be allowed to drift down over previous lifts. At intervals not

exceeding four feet in vertical slope height or the capability of available equipment, whichever is less, fill slopes should be thoroughly dozer trackrolled.

For pad areas above fill slopes, positive drainage should be established away from the top-of-slope. This may be accomplished using a berm and pad gradient of at least two percent.

Section 8 - Trench Backfill

Utility and/or other excavation of trench backfill should, unless otherwise recommended, be compacted by mechanical means. Unless otherwise recommended, the degree of compaction should be a minimum of 90 percent of the laboratory maximum density.

Within slab areas, but outside the influence of foundations, trenches up to one foot wide and two feet deep may be backfilled with sand and consolidated by jetting, flooding or by mechanical means. If on-site materials are utilized, they should be wheel-rolled, tamped or otherwise compacted to a firm condition. For minor interior trenches, density testing may be deleted or spot testing may be elected if deemed necessary, based on review of backfill operations during construction.

If utility contractors indicate that it is undesirable to use compaction equipment in close proximity to a buried conduit, the contractor may elect the utilization of light weight mechanical compaction equipment and/or shading of the conduit with clean, granular material, which should be thoroughly jetted in-place above the conduit, prior to initiating mechanical compaction procedures. Other methods of utility trench compaction may also be appropriate, upon review of the geotechnical consultant at the time of construction.

In cases where clean granular materials are proposed for use in lieu of native materials or where flooding or jetting is proposed, the procedures should be considered subject to review by the geotechnical consultant. Clean granular backfill and/or bedding are not recommended in slope areas.

Section 9 - Drainage

Where deemed appropriate by the geotechnical consultant, canyon subdrain systems should be installed in accordance with NATS recommendations during grading.

Typical subdrains for compacted fill buttresses, slope stabilization or sidehill masses, should be installed in accordance with the specifications.

Roof, pad and slope drainage should be directed away from slopes and areas of structures to suitable disposal areas via non-erodible devices (i.e., gutters, downspouts, and concrete swales).

For drainage in extensively landscaped areas near structures, (i.e., within four feet) a minimum of 5 percent gradient away from the structure should be maintained. Pad drainage of at least 2 percent should be maintained over the remainder of the site.

Drainage patterns established at the time of fine grading should be maintained throughout the life of the project. Property owners should be made aware that altering drainage patterns could be detrimental to slope stability and foundation performance.

Section 10 - Slope Maintenance

10.1 - Landscape Plants

To enhance surficial slope stability, slope planting should be accomplished at the completion of grading. Slope planting should consist of deep-rooting vegetation requiring little watering. Plants native to the southern California area and plants relative to native plants are generally desirable. Plants native to other semi-arid and arid areas may also be appropriate. A Landscape Architect should be the best party to consult regarding actual types of plants and planting configuration.

10.2 - Irrigation

Irrigation pipes should be anchored to slope faces, not placed in trenches excavated into slope faces.

Slope irrigation should be minimized. If automatic timing devices are utilized on irrigation systems, provisions should be made for interrupting normal irrigation during periods of rainfall.

10.3 - Repair

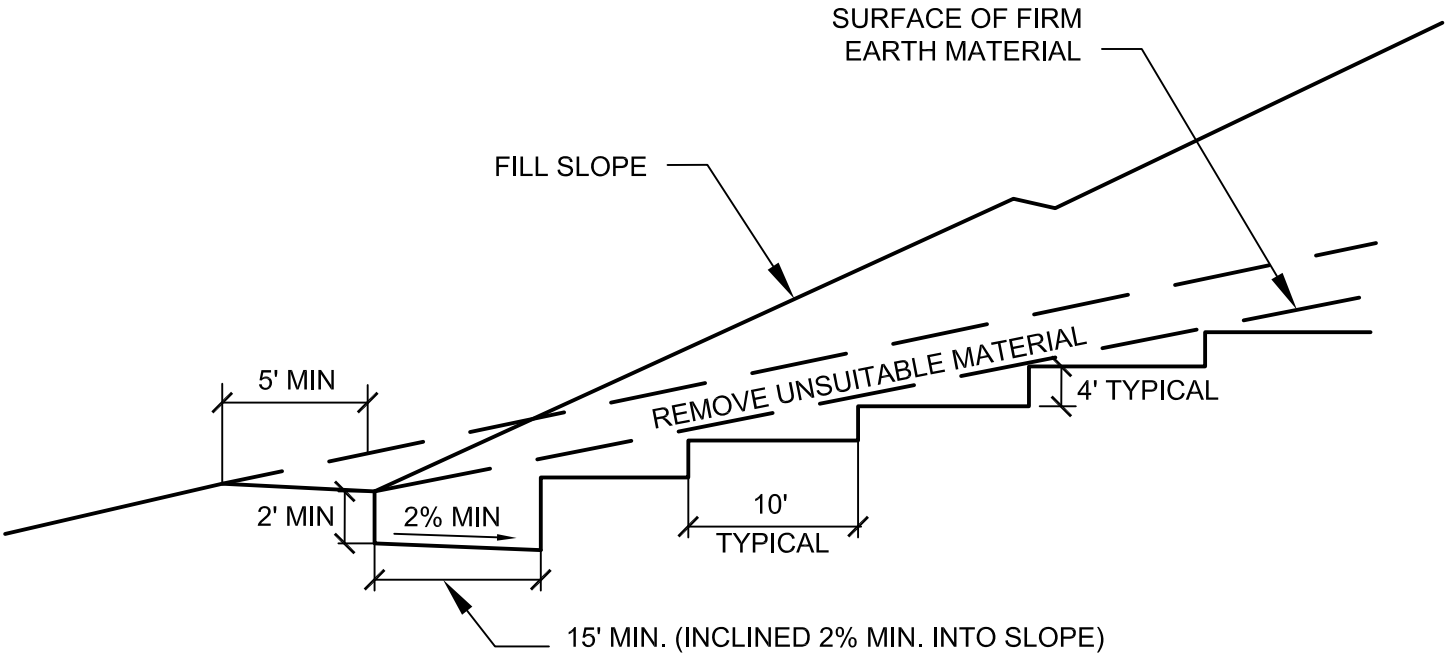
As a precautionary measure, plastic sheeting should be readily available, or kept on hand, to protect all slope areas from saturation by periods of heavy or prolonged rainfall. This measure is strongly recommended, beginning with the period prior to landscape planting.

If slope failures occur, the geotechnical consultant should be contacted for a field review of site conditions and development of recommendations for evaluation and repair.

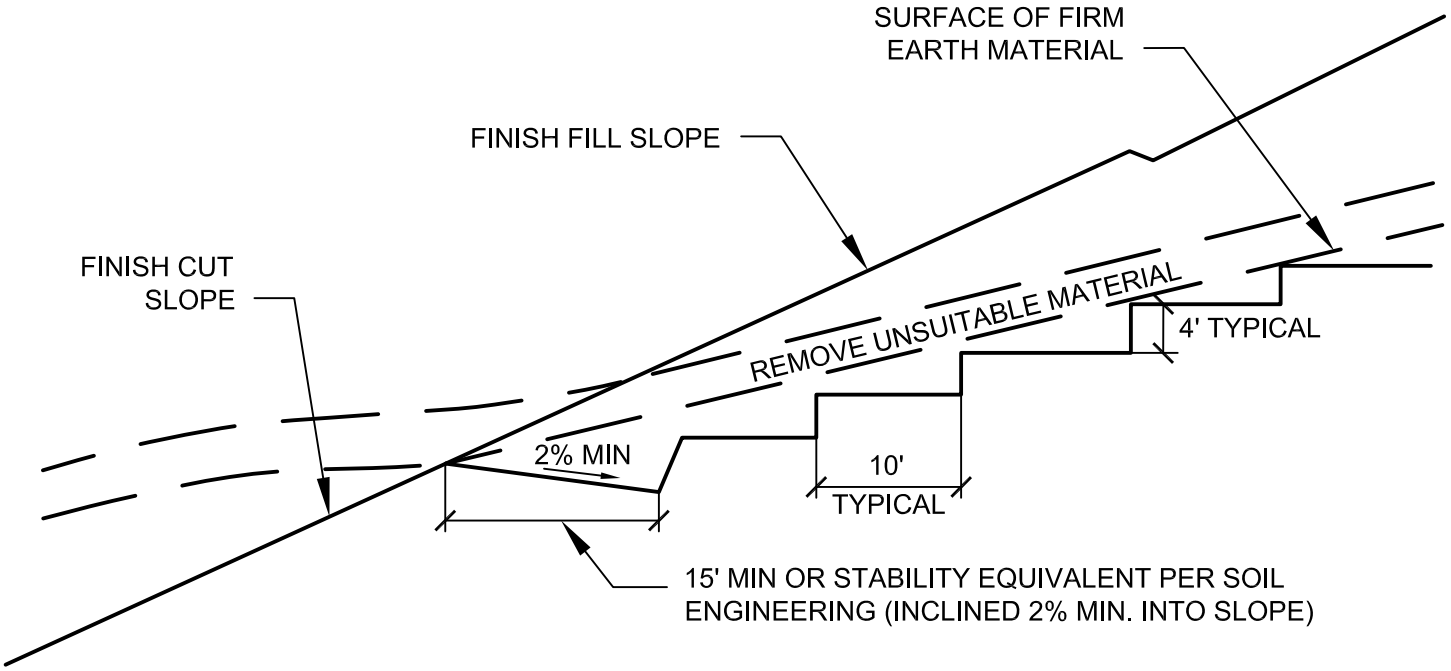
If slope failures occur as a result of exposure to period of heavy rainfall, the failure areas and currently unaffected areas should be covered with plastic sheeting to protect against additional saturation.

In the accompanying Standard Details, appropriate repair procedures are illustrated for superficial slope failures (i.e., occurring typically within the outer one foot to three feet of a slope face).

BENCHING FILL OVER NATURAL

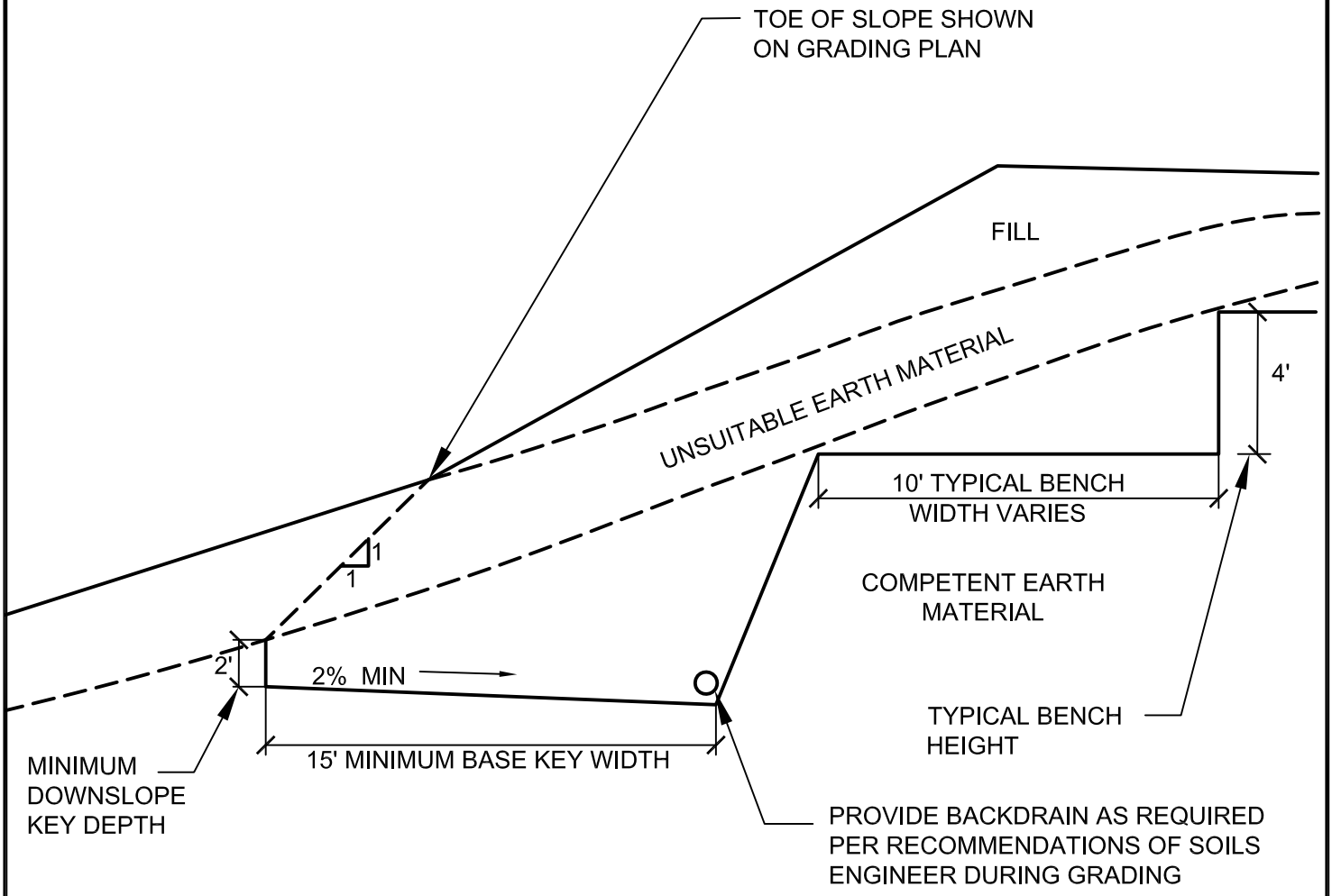


BENCHING FILL OVER CUT



NOT TO SCALE

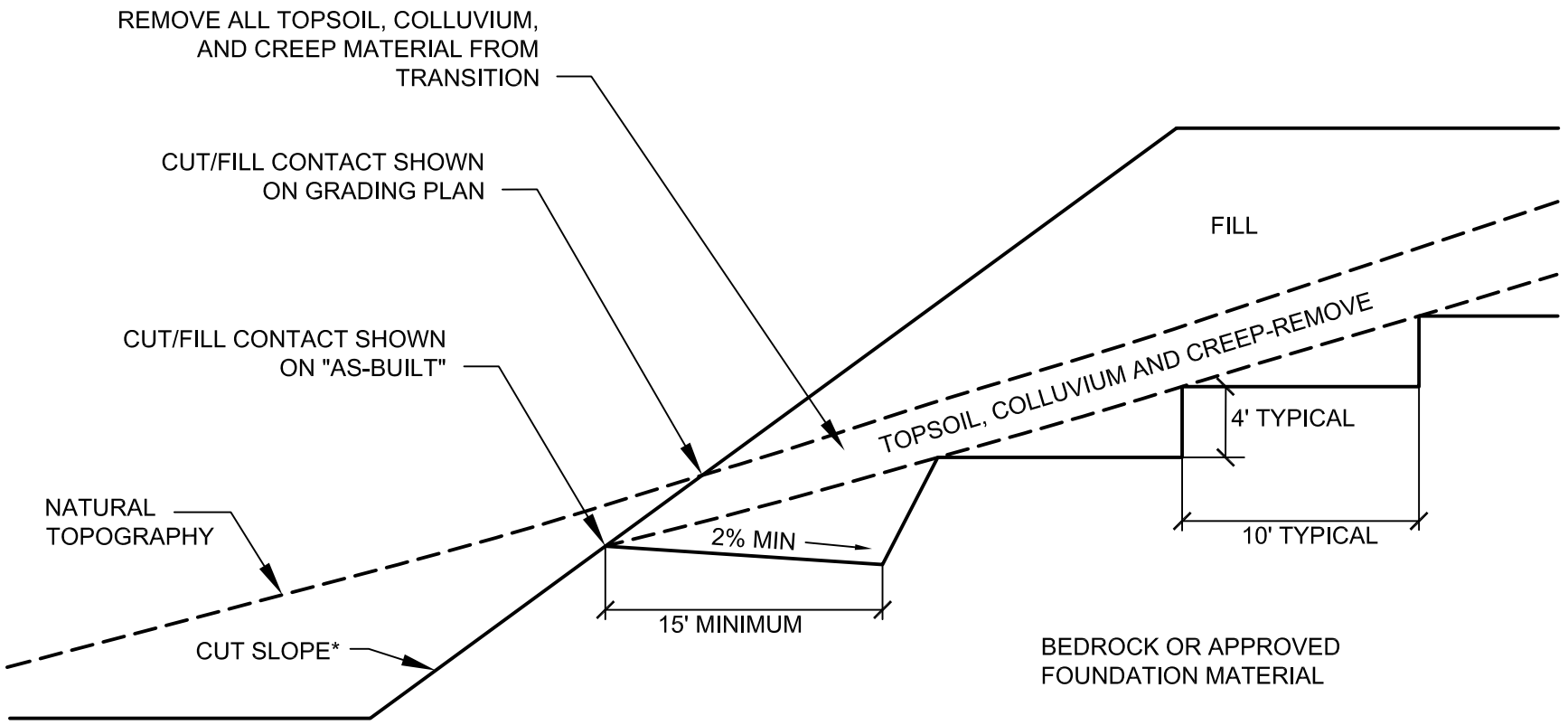
BENCHING FOR COMPACTED FILL DETAIL



WHERE NATURAL SLOPE GRADIENT IS 5:1 OR LESS, BENCHING IS NOT NECESSARY. FILL IS NOT TO BE PLACED ON COMPRESSIBLE OR UNSUITABLE MATERIAL.

NOT TO SCALE

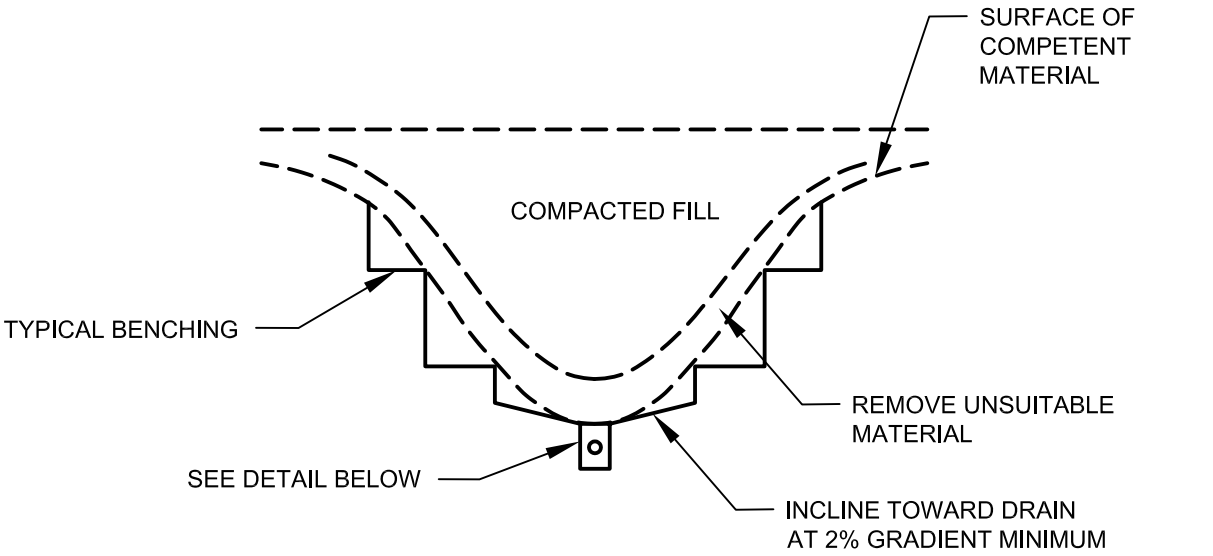
FILL SLOPE ABOVE NATURAL GROUND DETAIL



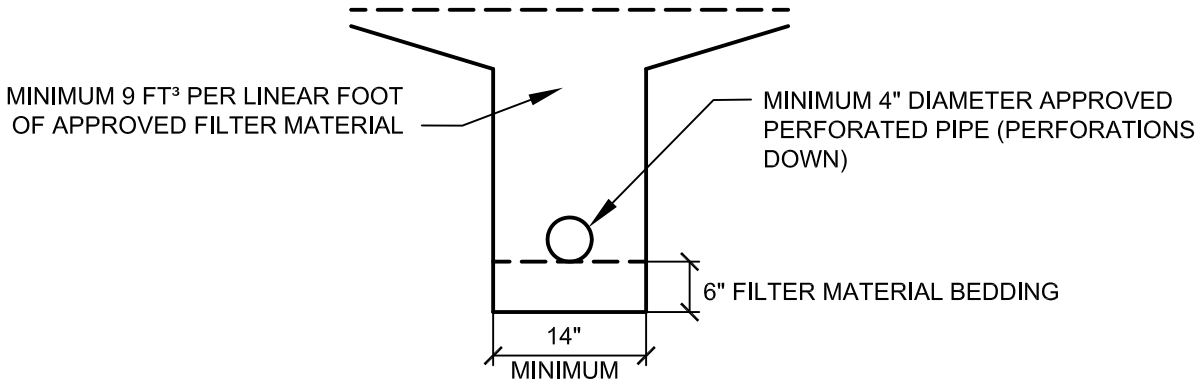
*NOTE: CUT SLOPE PORTION SHOULD BE MADE PRIOR TO PLACEMENT OF FILL

NOT TO SCALE

FILL SLOPE ABOVE CUT SLOPE DETAIL



DETAIL



FILTER MATERIAL TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUAL:

SIEVE SIZE	PERCENTAGE PASSING
1"	100
¾"	90-100
⅜"	40-100
NO. 4	25-40
NO. 30	18-33
NO. 8	5-15
NO. 50	0-7
NO. 200	0-3

APPROVED PIPE TO BE SCHEDULE 40 POLY-VINYL-CHLORIDE (P.V.C.) OR APPROVED EQUAL. MINIMUM CRUSH STRENGTH 1000 psi

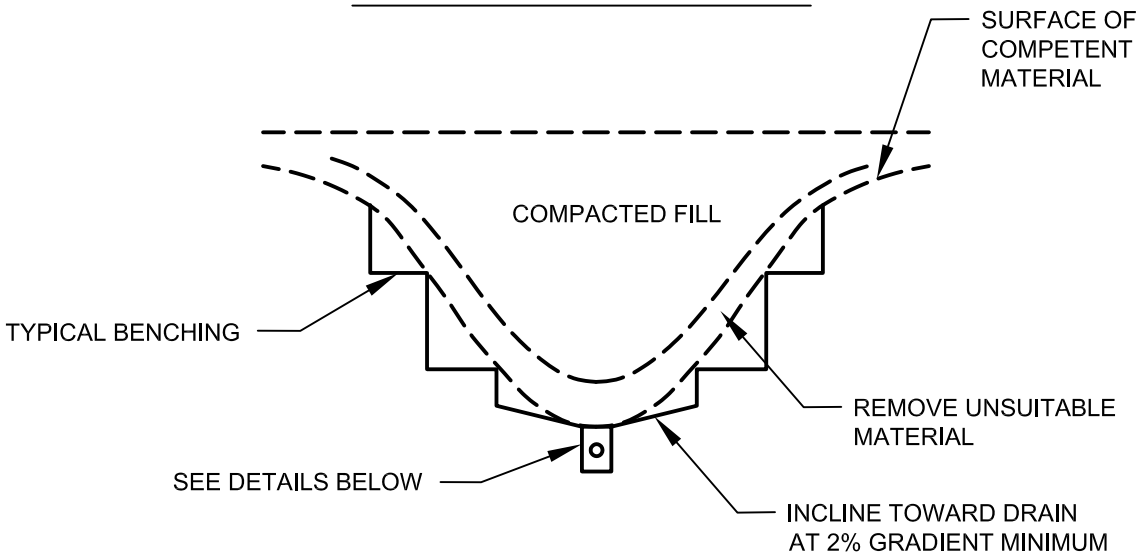
PIPE DIAMETER TO MEET THE FOLLOWING CRITERIA, SUBJECT TO FIELD REVIEW BASED ON ACTUAL GEOTECHNICAL CONDITIONS ENCOUNTERED DURING GRADING

LENGTH OF RUN	PIPE DIAMETER
INITIAL 500'	4"
500' TO 1500'	6"
> 1500'	8"

NOT TO SCALE

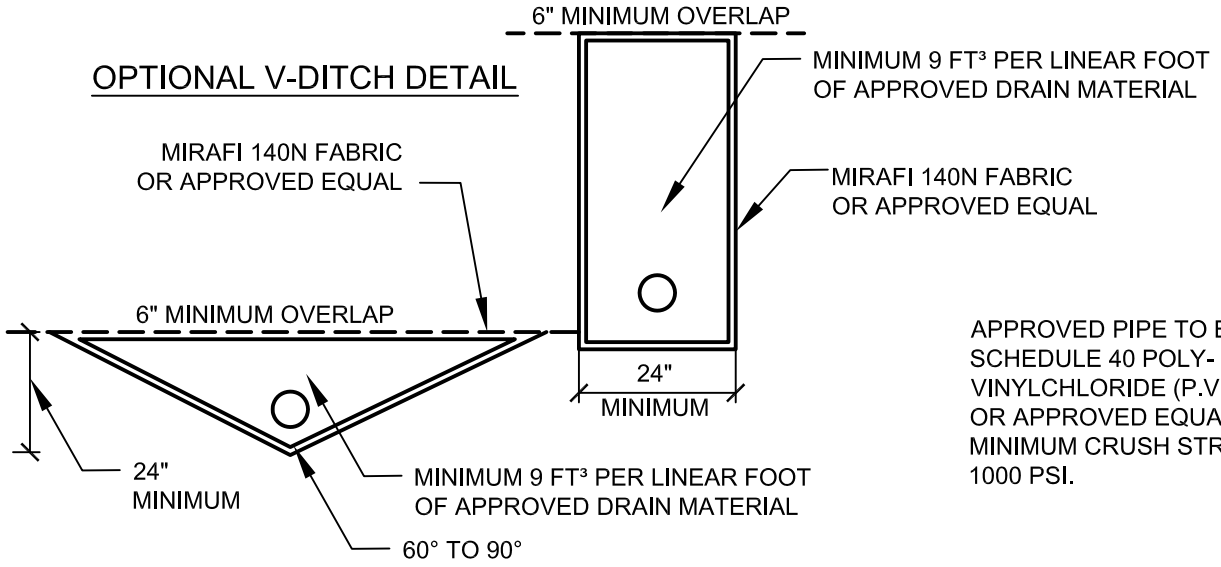
TYPICAL CANYON SUBDRAIN DETAIL

CANYON SUBDRAIN DETAILS



TRENCH DETAILS

OPTIONAL V-DITCH DETAIL



APPROVED PIPE TO BE SCHEDULE 40 POLY-VINYLCHLORIDE (P.V.C.) OR APPROVED EQUAL. MINIMUM CRUSH STRENGTH 1000 PSI.

DRAIN MATERIAL TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUAL:

SIEVE SIZE	PERCENTAGE PASSING
1 ½"	88-100
1"	5-40
¾"	0-17
⅜"	0-7
NO. 200	0-3

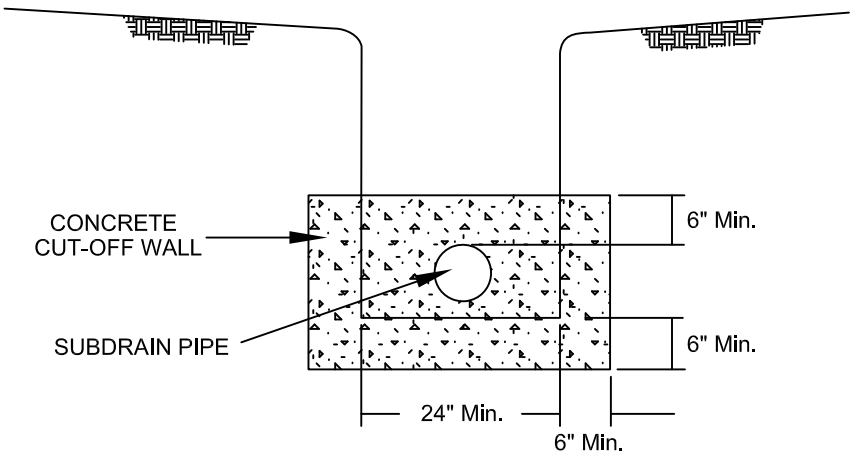
PIPE DIAMETER TO MEET THE FOLLOWING CRITERIA, SUBJECT TO FIELD REVIEW BASED ON ACTUAL GEOTECHNICAL CONDITIONS ENCOUNTERED DURING GRADING

LENGTH OF RUN	PIPE DIAMETER
INITIAL 500'	4"
500' TO 1500'	6"
> 1500'	8"

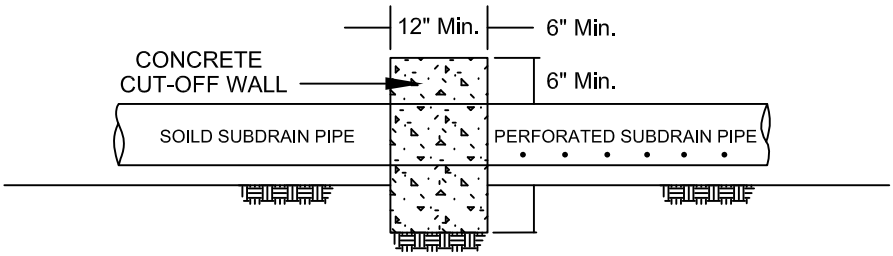
NOT TO SCALE

GEOFABRIC SUBDRAIN

FRONT VIEW



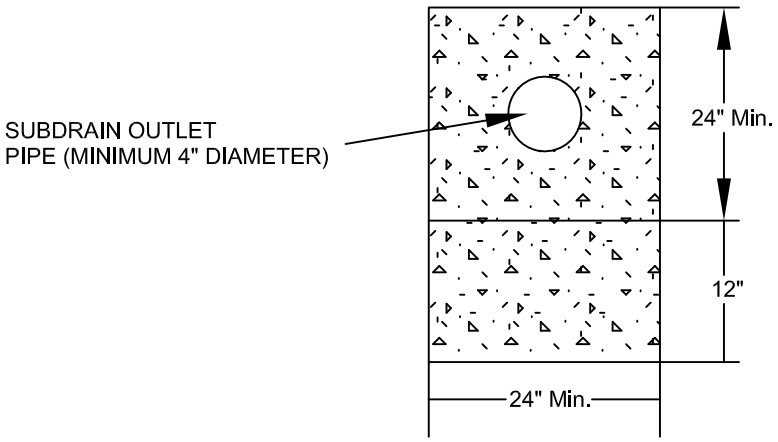
SIDE VIEW



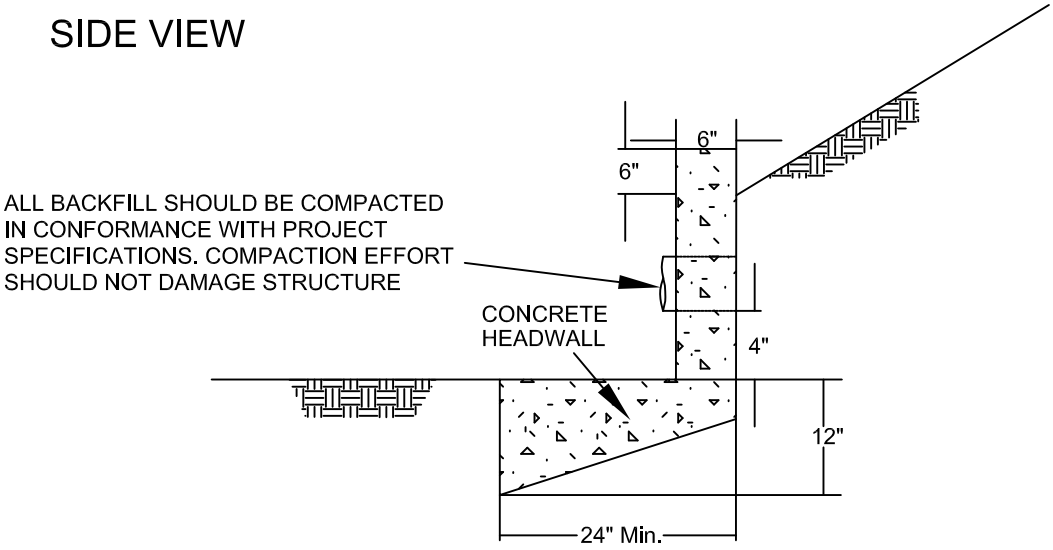
NOT TO SCALE

RECOMMENDED SUBDRAIN CUT-OFF WALL

FRONT VIEW



SIDE VIEW



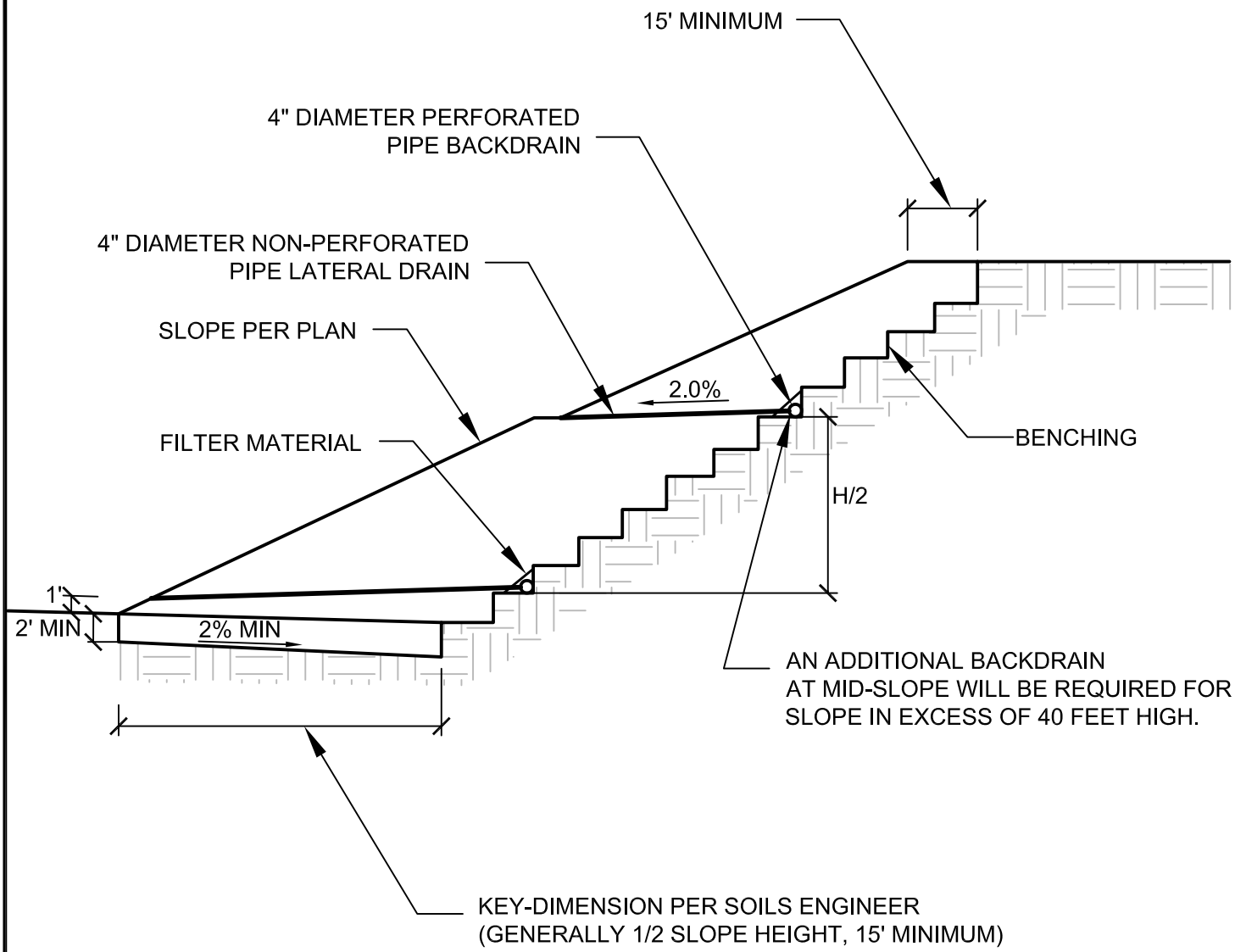
NOTE: HEADWALL SHOULD OUTLET AT TOE OF SLOPE
OR INTO CONTROLLED SURFACE DRAINAGE DEVICE

ALL DISCHARGE SHOULD BE CONTROLLED

THIS DETAIL IS A MINIMUM DESIGN AND MAY BE
MODIFIED DEPENDING UPON ENCOUNTERED
CONDITIONS AND LOCAL REQUIREMENTS

NOT TO SCALE

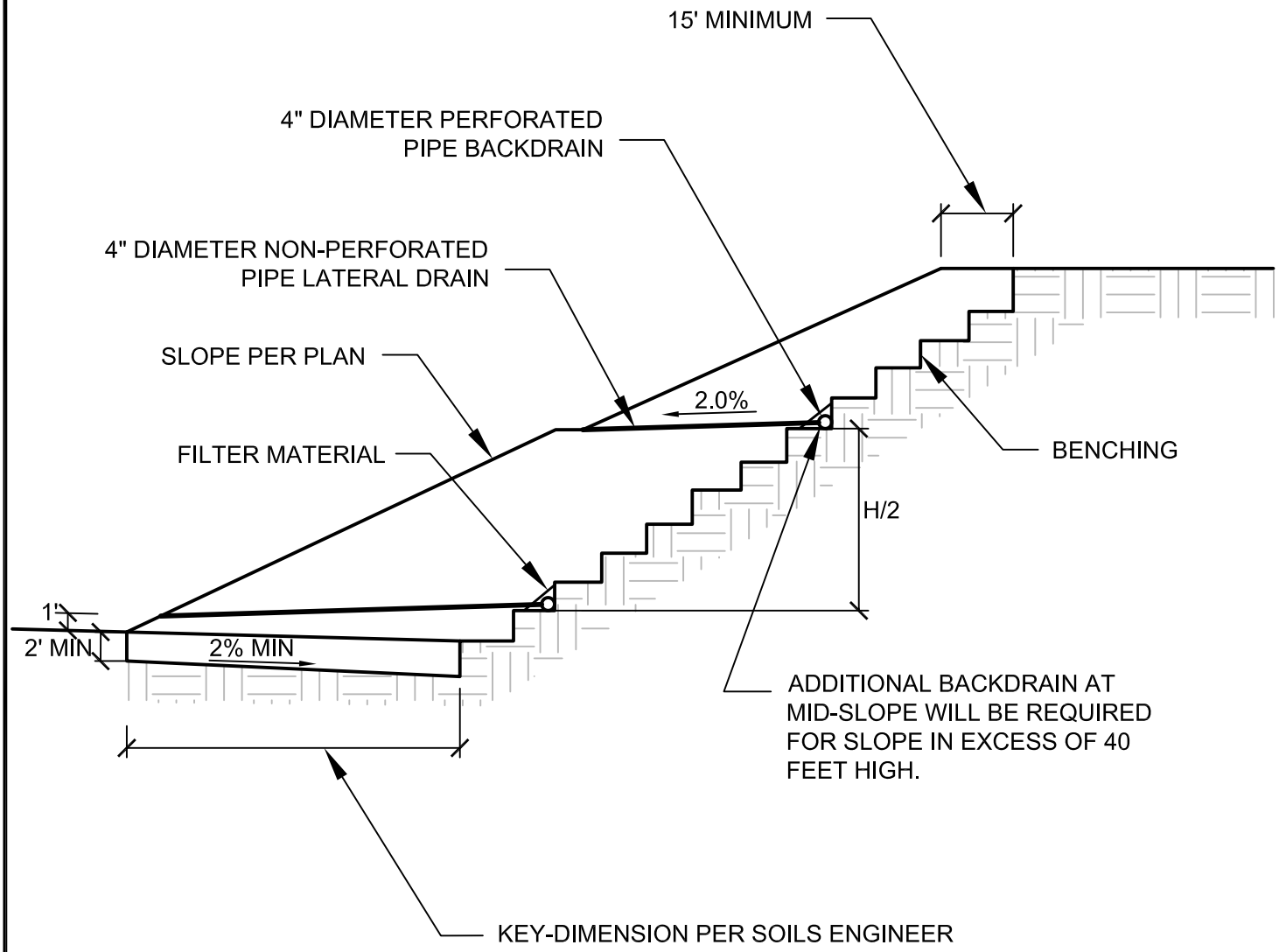
TYPICAL SUBDRAIN OUTLET HEADWALL DETAIL



DIMENSIONS ARE MINIMUM RECOMMENDED

NOT TO SCALE

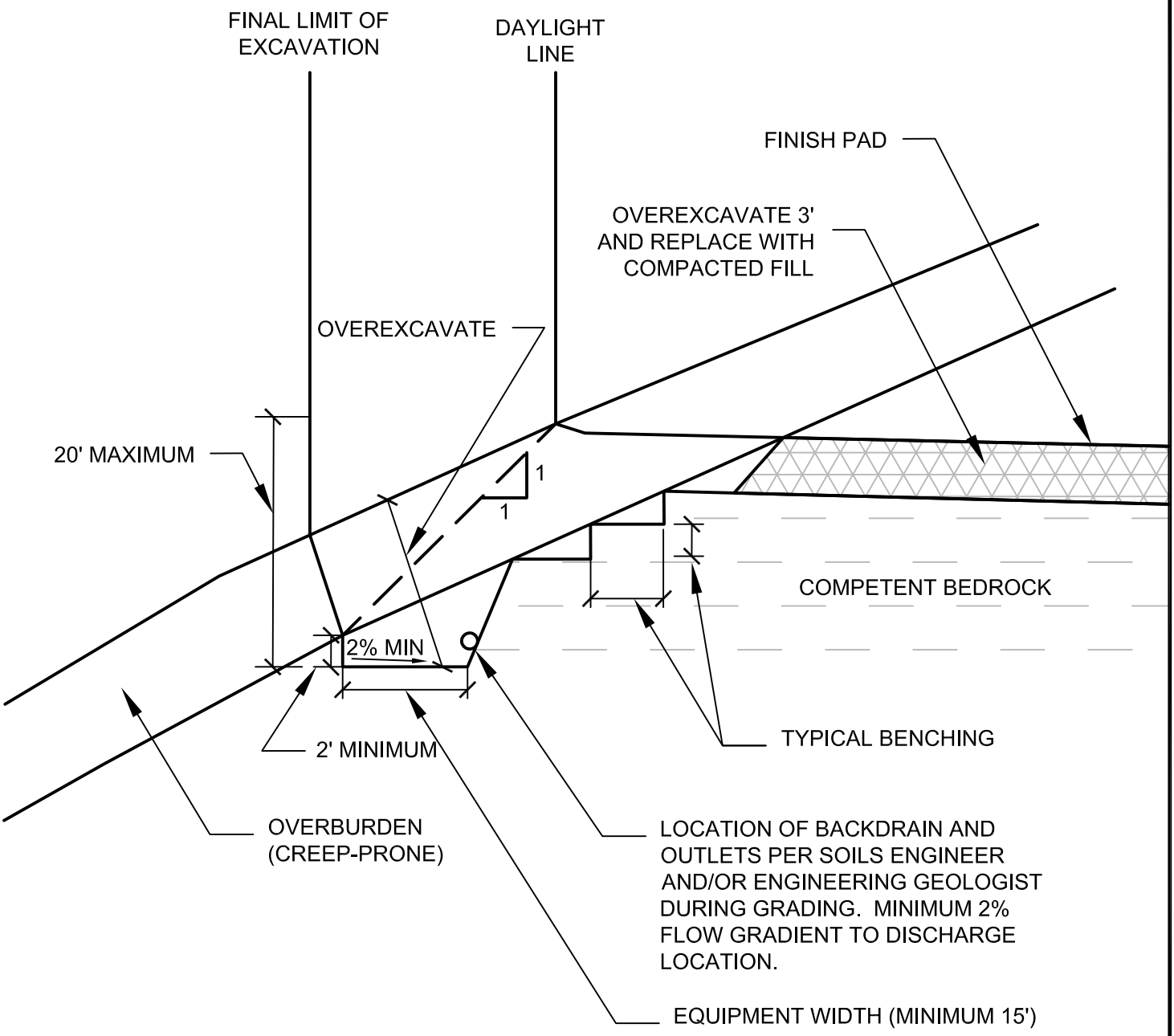
TYPICAL SLOPE STABILIZATION FILL DETAIL



DIMENSIONS ARE MINIMUM RECOMMENDED

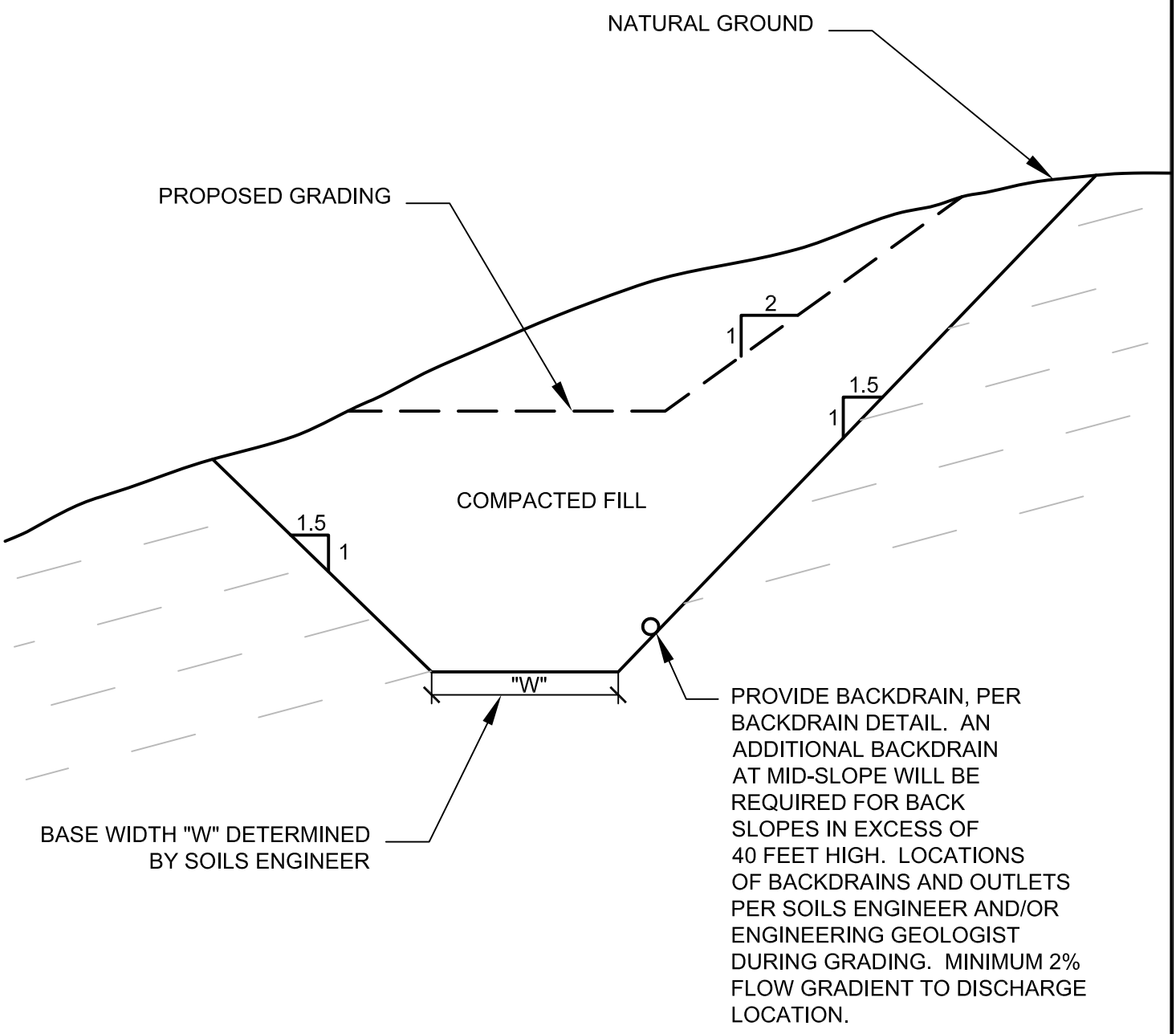
NOT TO SCALE

TYPICAL BUTTRESS FILL DETAIL



NOT TO SCALE

DAYLIGHT SHEAR KEY DETAIL



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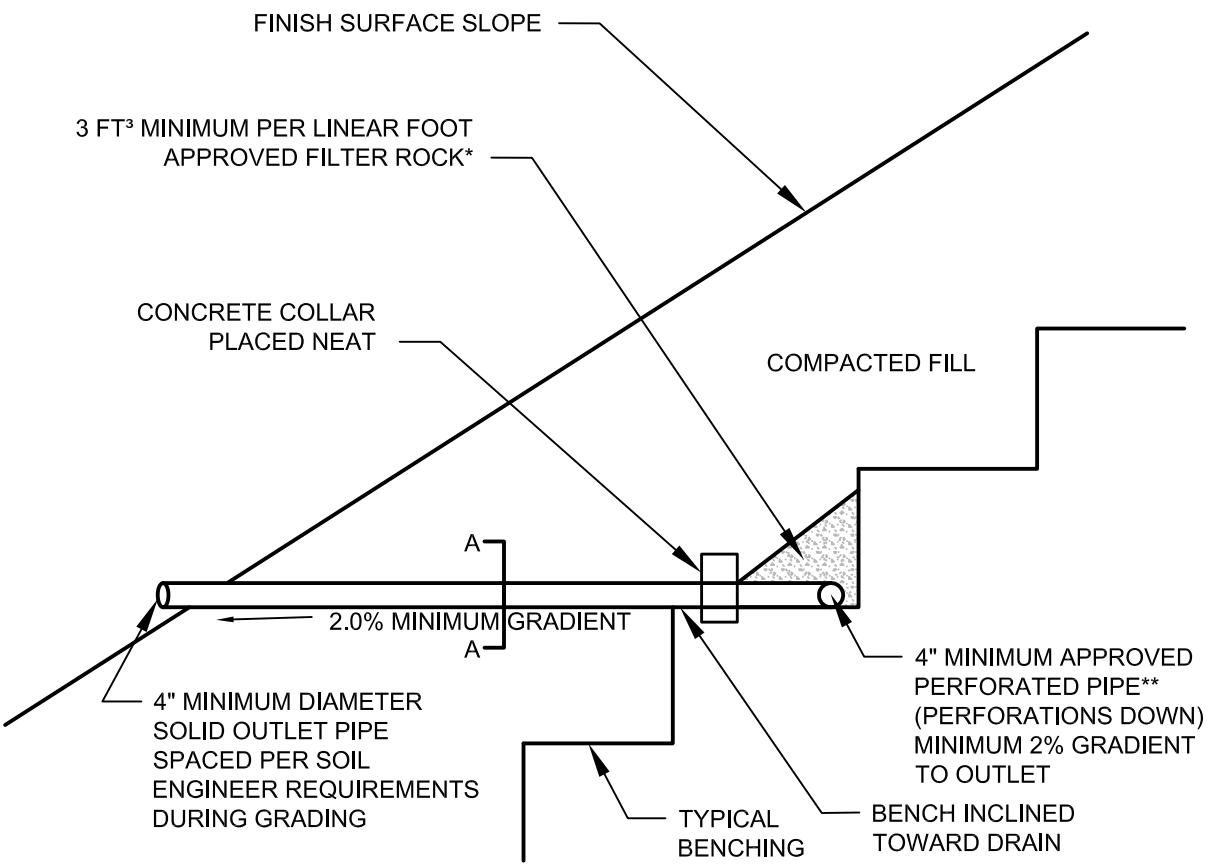
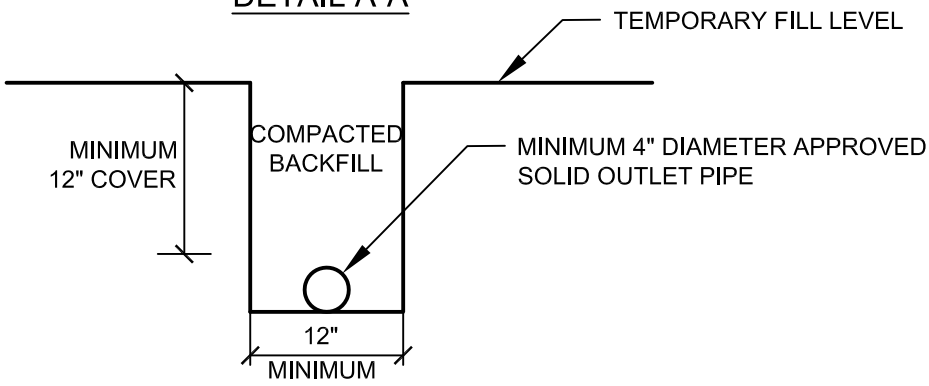
TYPICAL SHEAR KEY DETAIL



DETAIL A-A



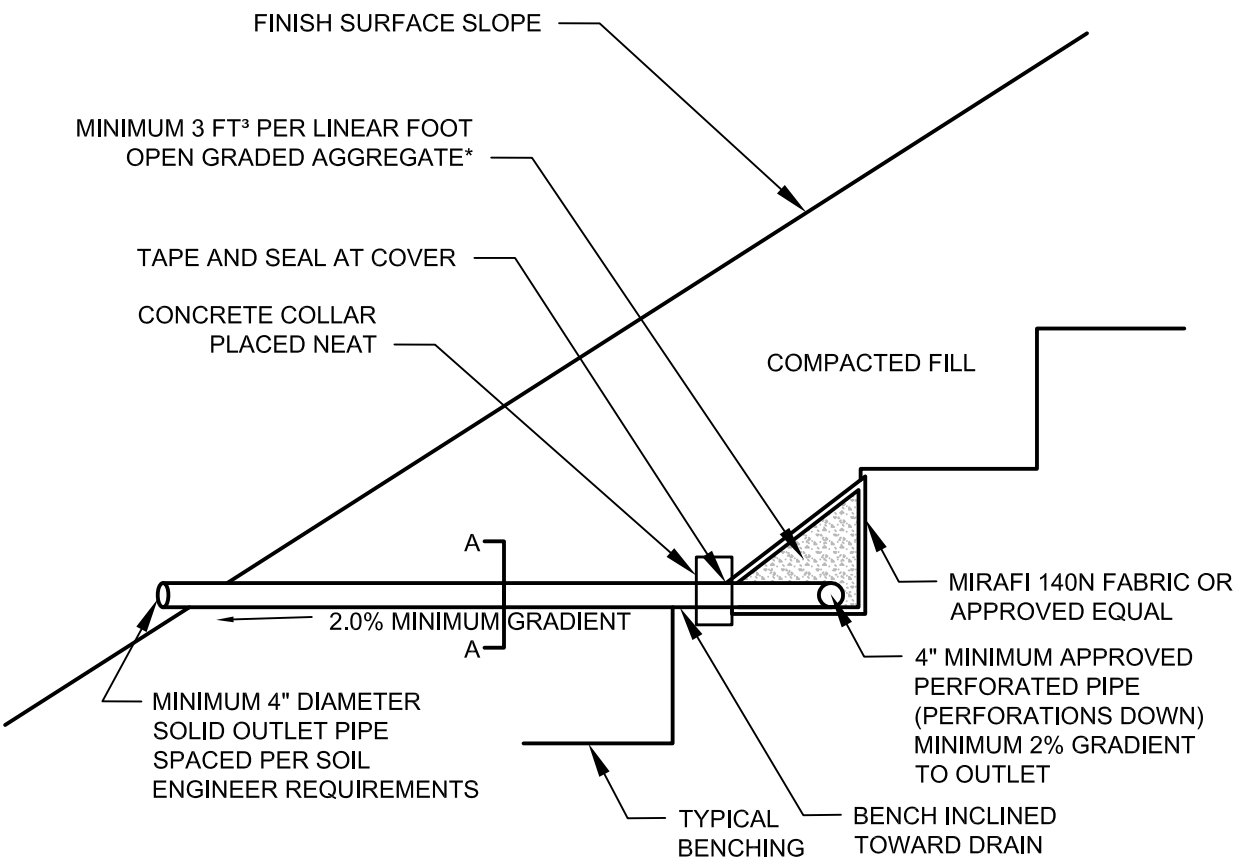
**APPROVED PIPE TYPE:
SCHEDULE 40 POLYVINYL CHLORIDE
(P.V.C.) OR APPROVED EQUAL.
MINIMUM CRUSH STRENGTH 1000 PSI

*FILTER ROCK TO MEET FOLLOWING
SPECIFICATIONS OR APPROVED EQUAL:

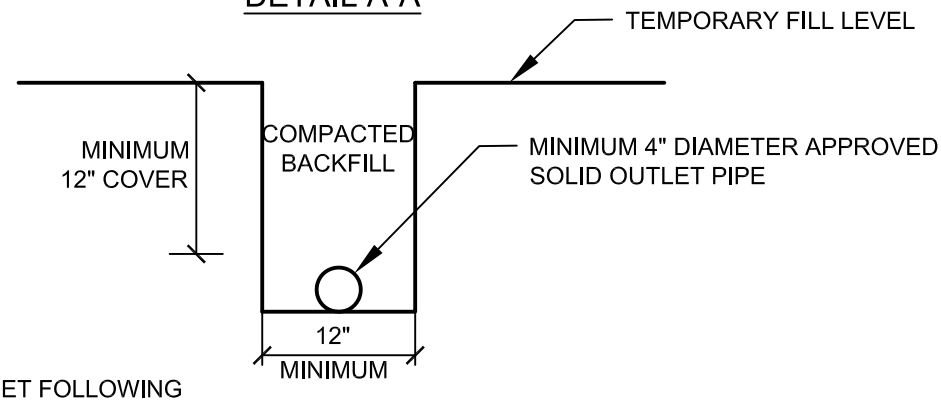
SIEVE SIZE	PERCENTAGE PASSING
1"	100
¾"	90-100
⅜"	40-100
NO. 4	25-40
NO. 30	5-15
NO. 50	0-7
NO. 200	0-3

NOT TO SCALE

TYPICAL BACKDRAIN DETAIL



DETAIL A-A

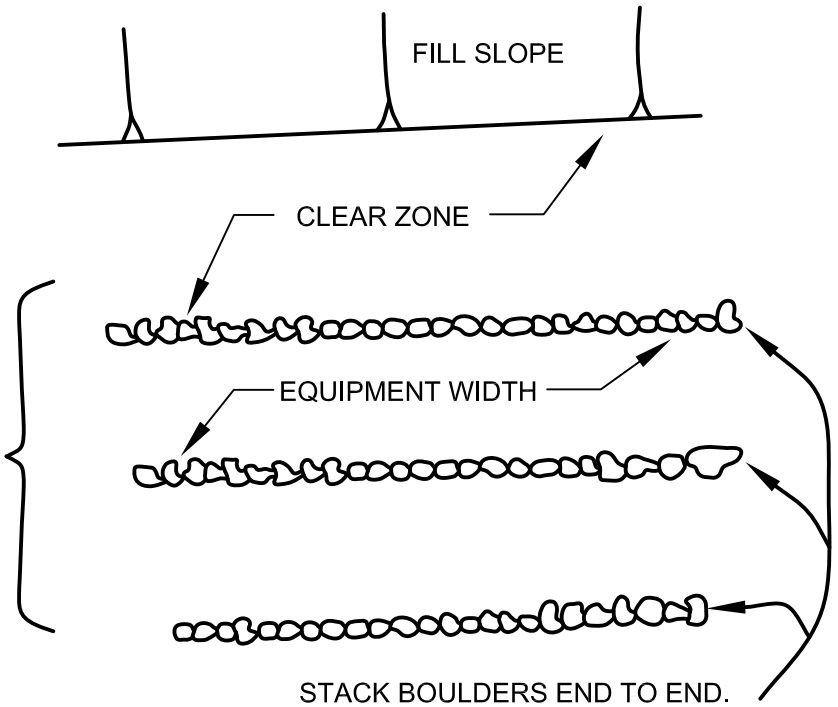


*NOTE: AGGREGATE TO MEET FOLLOWING SPECIFICATIONS OR APPROVED EQUAL:

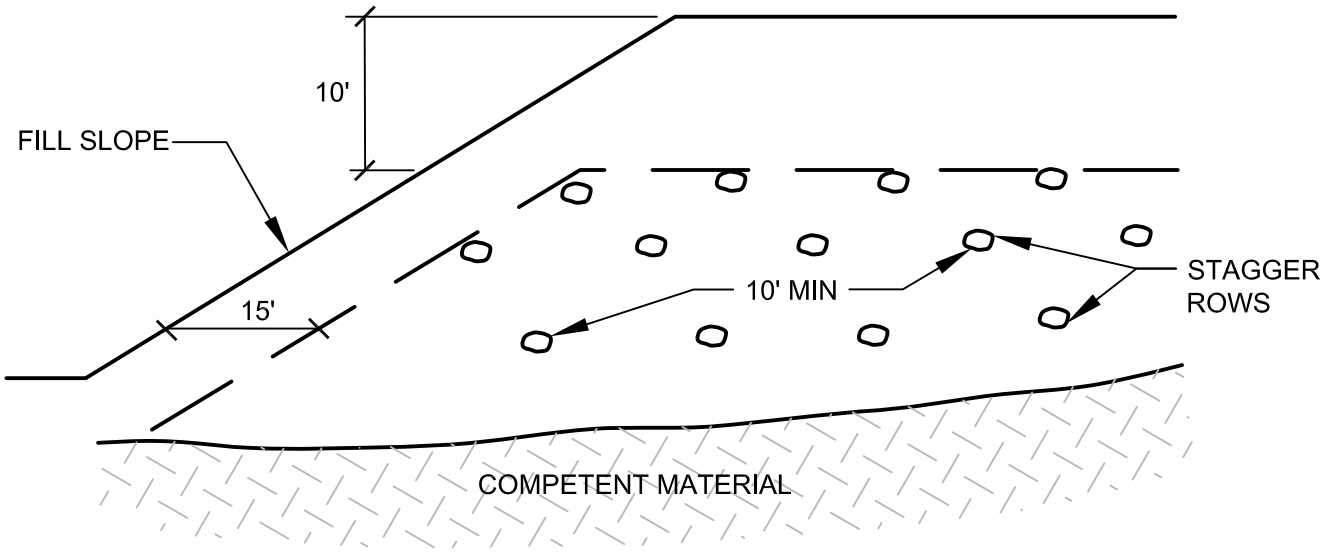
SIEVE SIZE	PERCENTAGE PASSING
1 ½"	100
1"	5-40
¾"	0-17
⅜"	0-7
NO. 200	0-3

NOT TO SCALE

BACKDRAIN DETAIL (GEOFRABIC)

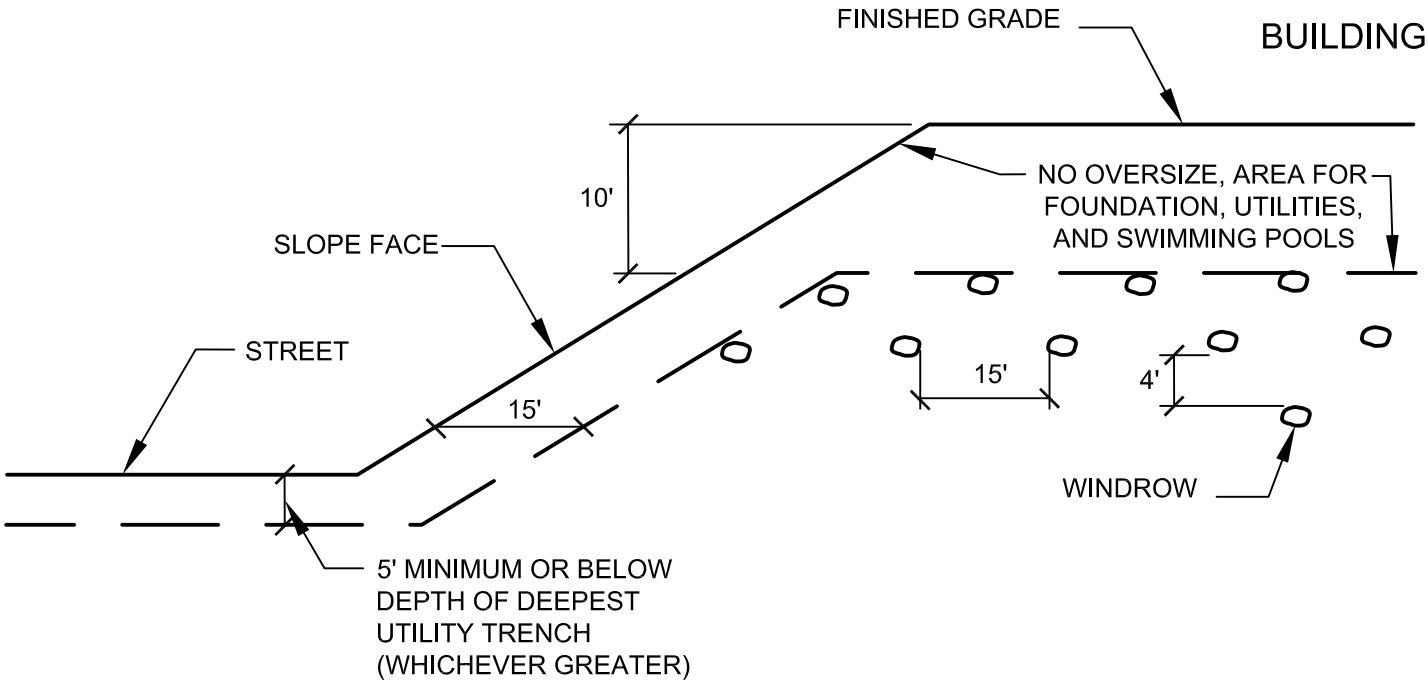


SOIL SHALL BE PUSHED OVER ROCKS AND FLOODED INTO VOIDS. COMPACT AROUND AND OVER EACH WINDROW.

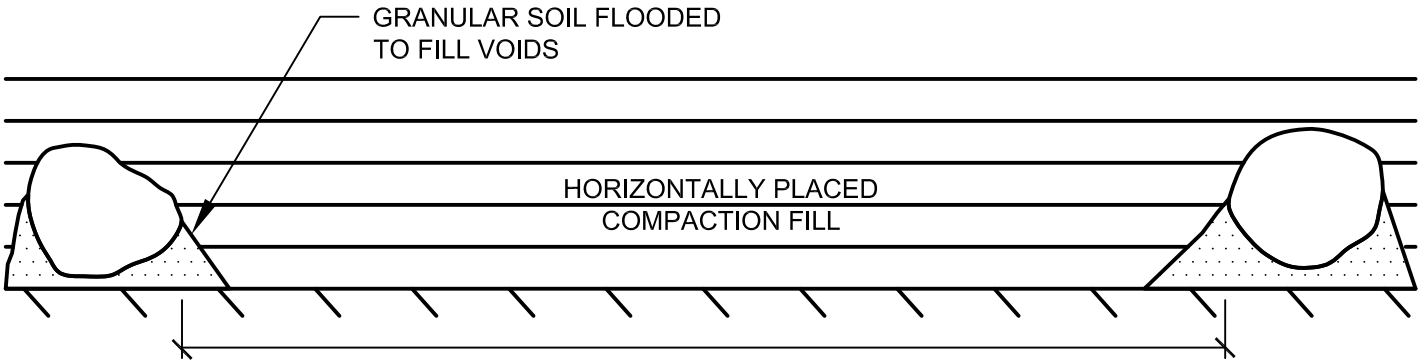


NOT TO SCALE

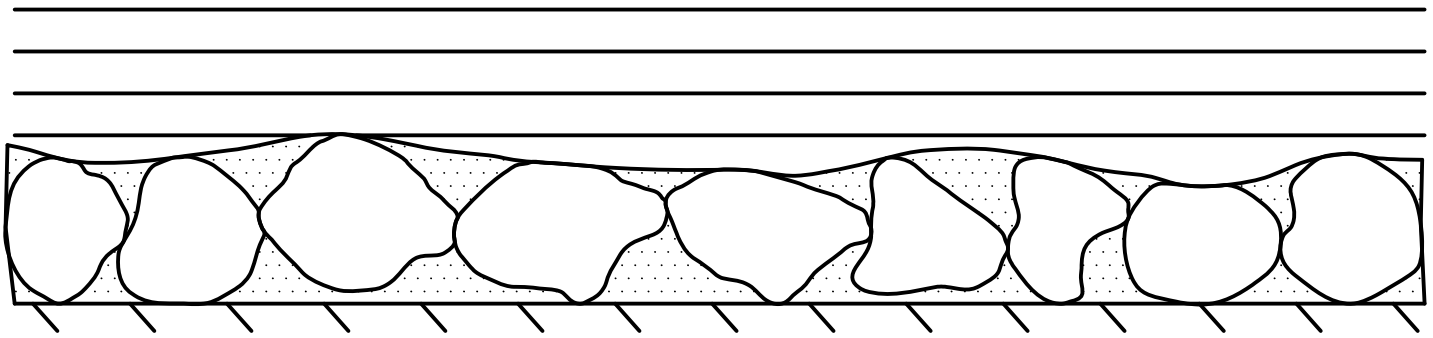
ROCK DISPOSAL DETAIL



TYPICAL WINDROW DETAIL (EDGE VIEW)



PROFILE VIEW

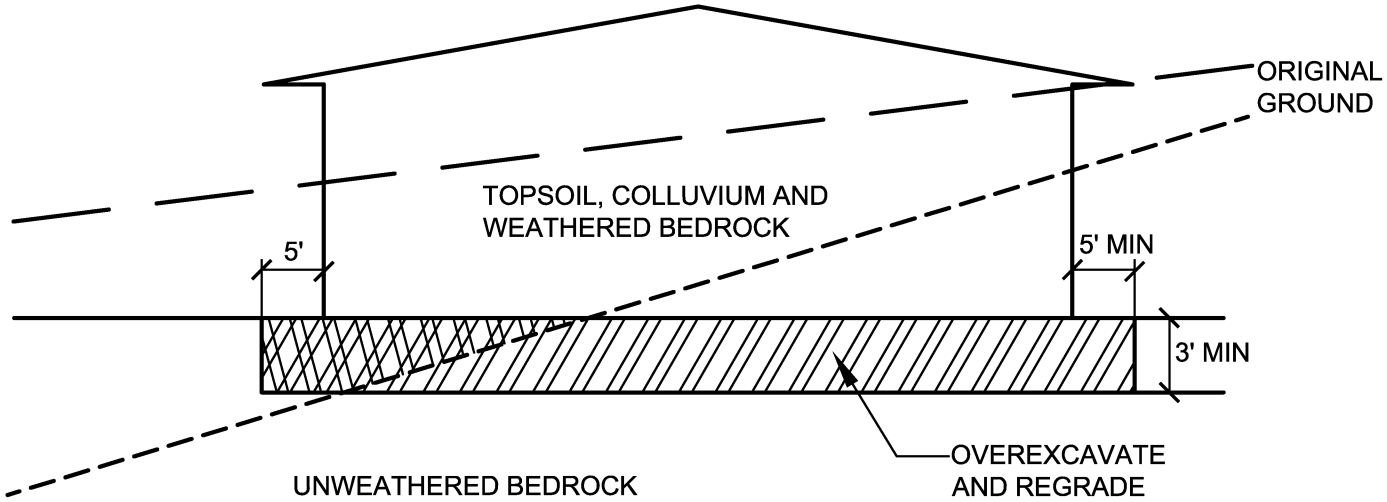


NOT TO SCALE

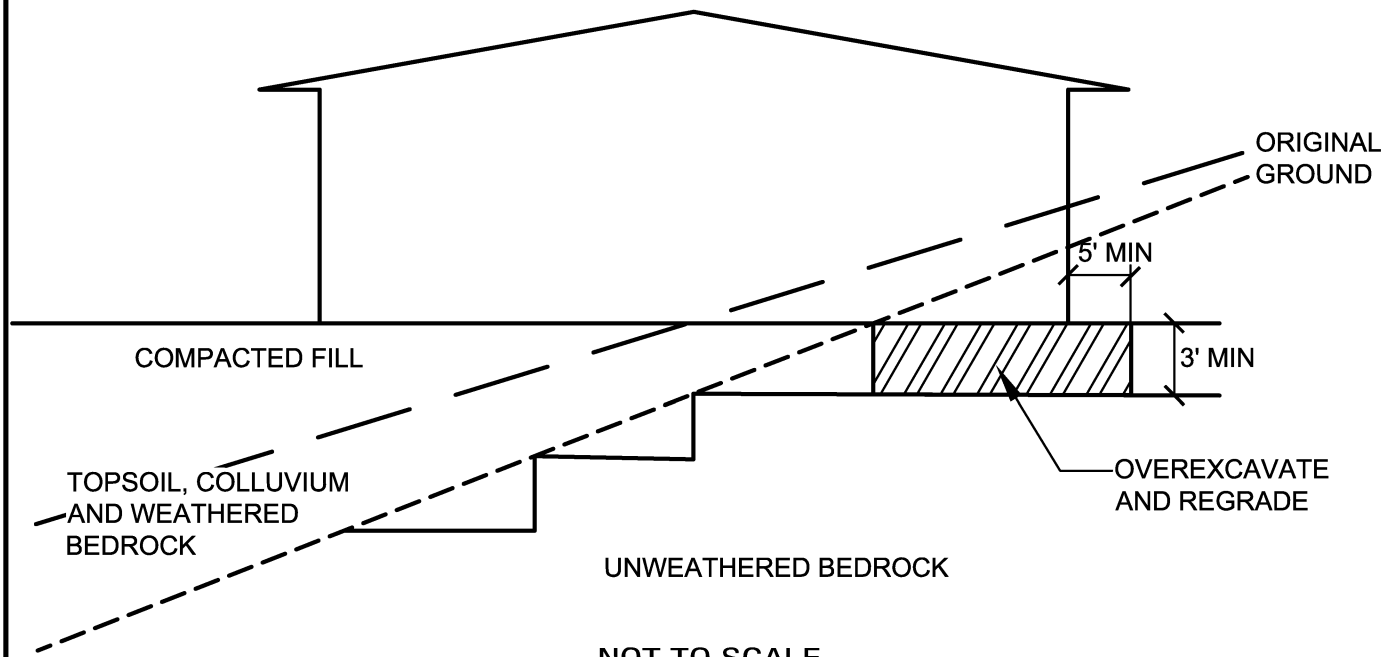
ROCK DISPOSAL DETAIL

GENERAL GRADING RECOMMENDATIONS

CUT LOT



CUT/FILL LOT (TRANSITION)



NOT TO SCALE

TRANSITION LOT DETAIL

Appendix E

Environmental Noise and Vibration Assessment, dated September 25, 2025, prepared by Bollard Acoustical Consultants, Inc.

Environmental Noise & Vibration Assessment

Presidential Estates East Specific Plan

Los Banos, California

BAC Job #2018-127

Prepared For:

Stonefield Home

Attn: Tiffanie Marshall
923 E Pacheco Blvd, Ste C
Los Banos, CA 93635

Prepared By:

Bollard Acoustical Consultants, Inc.

Dario Gotchet
Principal Consultant
Board Elected Member, INCE-USA (ID#20964)

September 25, 2025

BOLLARD
Acoustical Consultants

Introduction

The Presidential Estates East development (project) is located within the City of Los Banos just west of Highway 165 (Mercey Springs Road). The project offers a variety of housing types including single family homes (371 dwellings units) on lots ranging between 6,000 to 8,400 square feet, high density apartments of approximately 120 units, and opportunities for retail and workspaces that encourage pedestrian oriented living. The 110.3-acre project details out and builds upon the Los Banos plan and policies presented in the Los Banos General Plan. Existing land uses in the immediate project vicinity consist of single-family residential land uses to the south, west and east, Los Banos High School to the west, Mercey Springs Elementary School and agricultural lands to the east, commercial uses to the northeast (retail / grocery store uses), and industrial land use to the north (formerly a cheese plant). The project area with aerial imagery is shown in Figure 1. The tentative maps for the northern and southern portions of the project area are presented in Figures 2 and 3, respectively.

The purposes of this assessment are to quantify the existing noise and vibration environments, identify potential noise and vibration impacts resulting from the project, identify appropriate mitigation measures, and provide a quantitative and qualitative analysis of potential noise and vibration impacts associated with the project. Specifically, impacts are identified if project-related activities are shown to have the potential to cause a substantial increase in ambient noise levels at existing or proposed sensitive land uses in the project vicinity, generate excessive vibration levels at nearby sensitive uses, or result in noise levels that would exceed applicable federal, state, or local standards at existing or proposed sensitive uses.

Noise and Vibration Fundamentals

Noise

Noise is often described as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard and are designated as sound. The number of pressure variations per second is called the frequency of sound and is expressed as cycles per second, or Hertz (Hz). Definitions of acoustical terminology are provided in Appendix A.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals of pressure) as a point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB. Another useful aspect of the decibel scale is that changes in decibel levels correspond closely to human perception of relative loudness. Noise levels associated with common noise sources are provided in Figure 4.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable and can be approximated by filtering the frequency response of a sound level meter by means of the standardized A-weighting network. There is a

strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}). The L_{eq} is the foundation of the day-night average noise descriptor, DNL (or L_{dn}), and shows very good correlation with community response to noise. DNL is based on the average noise level over a 24-hour day, with a +10-decibel weighting applied to noise occurring during nighttime hours (10:00 p.m. to 7:00 a.m.). The nighttime weighting, or *penalty*, is based on the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because DNL represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

Vibration

Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that noise is generally considered to be pressure waves transmitted through air, while vibration is usually associated with transmission through the ground or structures. As with noise, vibration consists of amplitude and frequency. A person's response to vibration will depend on their individual sensitivity as well as the amplitude and frequency of the source.

Vibration can be described in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration in terms of velocity in inches per second peak particle velocity (IPS, PPV) or root-mean-square (VdB, RMS). Standards pertaining to perception as well as damage to structures have been developed for vibration in terms of peak particle velocity as well as RMS velocities. In terms of PPV, vibration levels below approximately 0.25 ips are typically considered to be below the threshold of perception (Caltrans 2020), and velocity levels below 0.5 ips PPV are typically considered to be below the thresholds for damage to residential structures.

Human response to vibration is difficult to quantify. Vibration can be felt or heard well below the levels that produce any damage to structures. The duration of the event has an effect on human response, as does frequency. Generally, as duration and vibration frequency increase, the potential for adverse human response increases. According to the Transportation and Construction-Induced Vibration Guidance Manual (Caltrans, June 2004), operation of construction equipment and construction techniques generate ground vibration. Traffic traveling on roadways can also be a source of such vibration. At high enough amplitudes, ground vibration has the potential to damage structures and/or cause cosmetic damage. Ground vibration can also be a source of annoyance to individuals who live or work close to vibration-generating activities. However, traffic rarely generates vibration amplitudes high enough to cause structural or cosmetic damage.

Legend

- Project Area Boundary (Approximate)
- Long-Term Ambient Noise Survey Site
- Short-Term Ambient Noise & Vibration Survey Site

N

Scale (Feet)

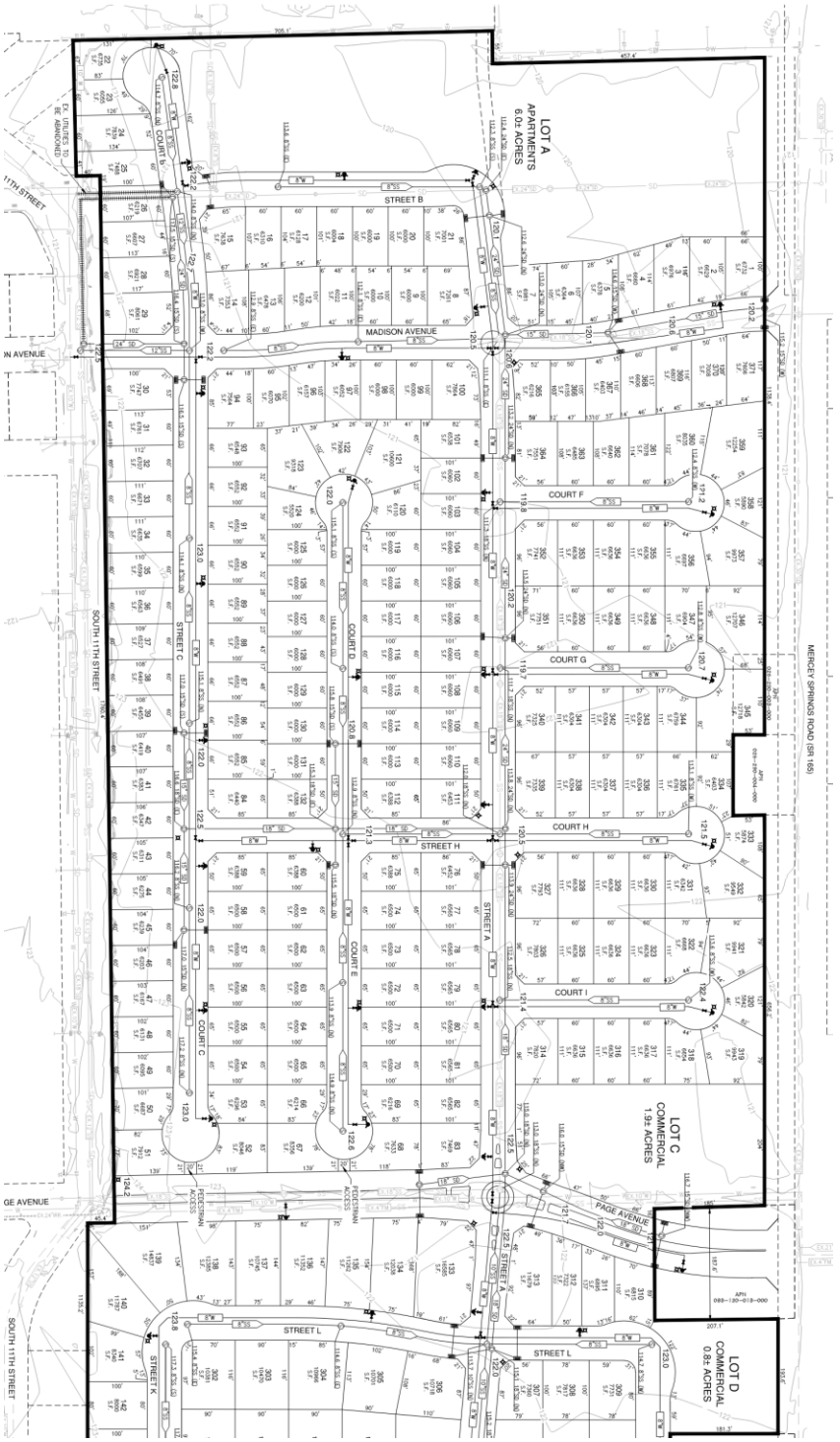
0 250 500

Presidential Estates East
Los Banos, California

Project Area

Figure 1

BOLLARD Acoustical Consultants



Legend

Project Area Boundary

N

Scale (Feet)

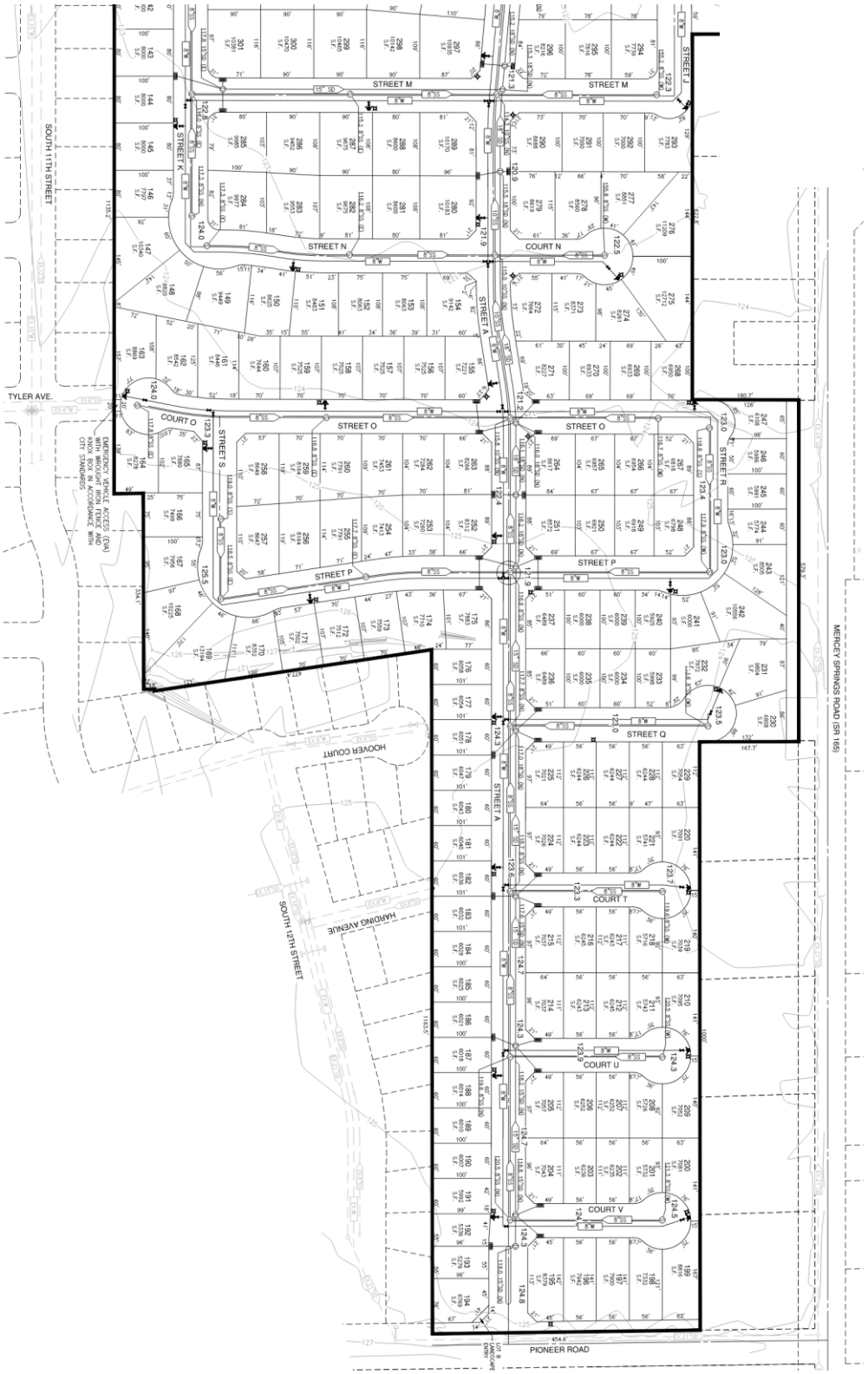
0 150 300

Presidential Estates East
Los Banos, California

Vesting Tentative Map – North

Figure 2

BOLLARD
Acoustical Consultants



Legend

Project Area Boundary

N

Scale (Feet)

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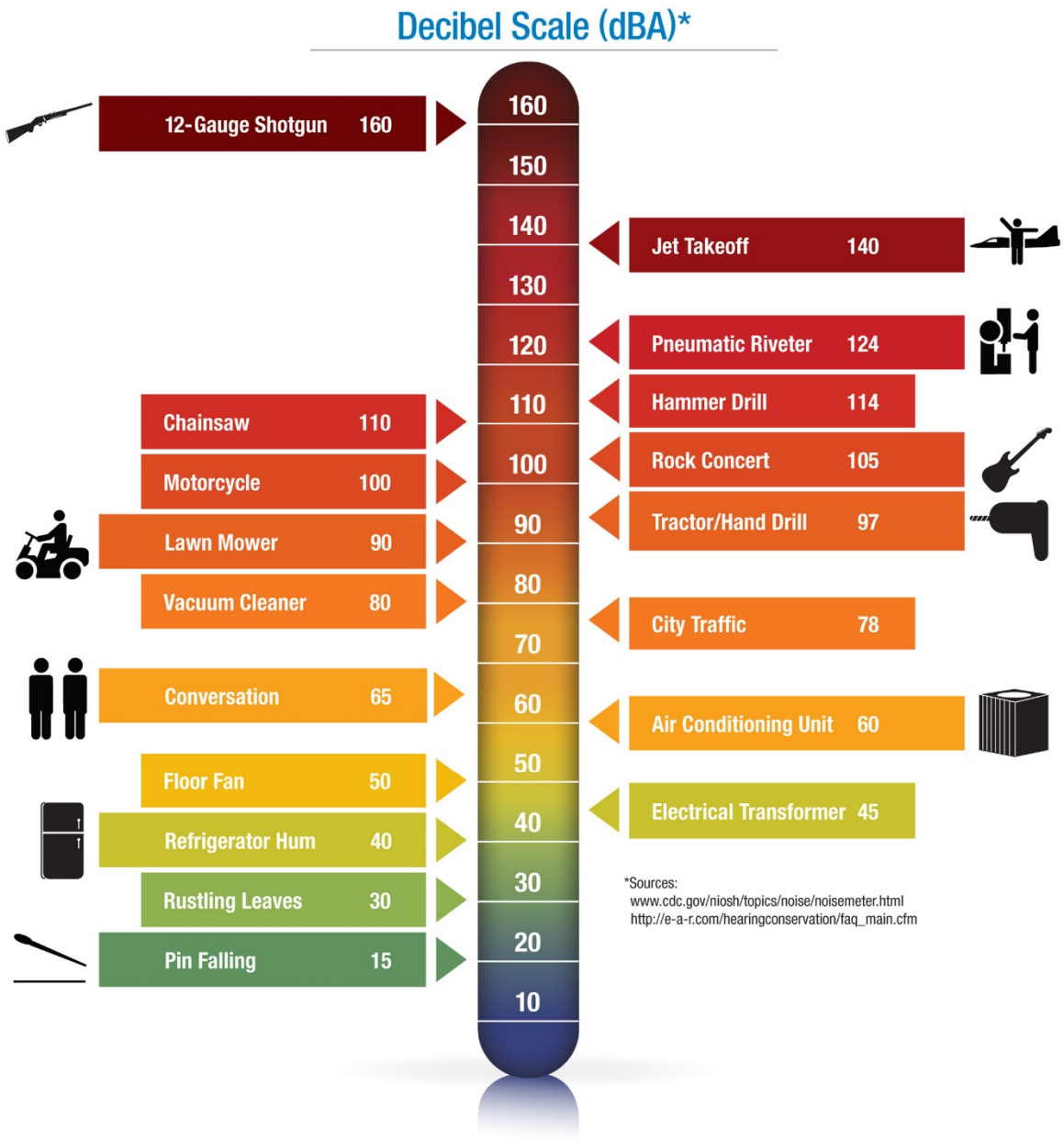
Presidential Estates East
Los Banos, California

Vesting Tentative Map – South

Figure 3

BOLLARD Acoustical Consultants

Figure 4
Noise Levels Associated with Common Noise Sources



Environmental Setting – Existing Ambient Noise and Vibration Environment

Noise-Sensitive Land Uses in the Project Vicinity

Noise-sensitive land uses are generally defined as locations where people reside or where the presence of unwanted sound could adversely affect the primary intended use of the land. Places where people live, sleep, recreate, worship, and study are generally considered to be sensitive to noise because intrusive noise can be disruptive to these activities. The off-site existing noise-sensitive land uses which would potentially be affected by the project consist primarily of residential and school uses. Specifically, single-family residential and school land uses are located to the south, east and west of the project site, as shown in Figure 1.

Existing Overall Ambient Noise Environment within the Project Vicinity

The existing ambient noise environment within the immediate project vicinity is defined primarily by traffic on Mercey Springs Road (State Route 165) and Pioneer Road. To quantify the existing ambient noise environment within the immediate project vicinity, BAC conducted short-term (10-minute) ambient noise level measurements on June 12th, 2025, and long-term (continuous) ambient noise level measurements Thursday, June 5th through Saturday, June 7th, 2025. The ambient noise survey locations are shown in Figure 1. Photographs of the noise survey sites are provided in Appendix B.

Larson Davis Laboratories (LDL) Model precision integrating (Type 1) sound level meters were used to complete the noise level surveys. The meters were calibrated immediately before use with an LDL Model CA200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all specifications of the American National Standards Institute requirements for Type 1 sound level meters (ANSI S1.4). The results of the long-term ambient noise survey are shown numerically and graphically in Appendices C and D (respectively) and are summarized in Table 1. The short-term noise survey results are summarized in Table 2.

Table 1
Summary of Long-Term Ambient Noise Survey Results – June 5-7, 2025[1]

			Average Measured Hourly Noise Levels (dB)			
			Daytime[3]		Nighttime[4]	
Survey Site[2]	Date	DNL (dB)	L_{50}	L_{max}	L_{50}	L_{max}
LT-1: Along Mercey Springs Rd	6/5 – 6/6	69	64	82	47	79
	6/6 – 6/7	68	62	83	46	80
LT-2: Northwest project area	Friday, June 6	56	48	63	48	61
	Saturday, June 7	56	48	64	48	66

[1] Detailed summaries of the noise monitoring results are provided in Appendices C and D.
[2] Long-term noise survey site locations are shown in Figure 1.
[3] Daytime hours: 7:00 a.m. to 10:00 p.m.
[4] Nighttime hours: 10:00 p.m. to 7:00 a.m.

Source: BAC 2025

Table 2
Summary of Short-Term Ambient Noise Survey Results – June 12, 2025

Survey Site[1]	Time	Measured Noise Levels (dB)	
		L_{50}	L_{max}
ST-1: Northeast project area near commercial	1:58 p.m.	45	56
ST-2: Northeast project area near Mercey Springs Rd	2:16 p.m.	59	71
ST-3: Southern project area near Pioneer Rd	2:46 p.m.	58	71
ST-4: Northwest project area near industrial	1:27 p.m.	46	52

[1] Short-term noise survey site locations are shown in Figure 1.

Source: BAC 2025

As indicated in Table 1, measured existing day-night average (DNL) and average hourly (L_{50} and L_{max}) noise levels were generally consistent during the 48-hour monitoring period (i.e., a relatively small range of measured values). Results from the short-term ambient noise surveys summarized in Table 2 indicate that measured median ambient noise levels ranged from 45 dB L_{50} to 59 dB L_{50} while maximum noise levels ranged from 52 dB L_{max} to 71 dB L_{max}.

Existing Ambient Vibration Environment within the Project Vicinity

During BAC site visits, vibration levels were below the threshold of perception within the project area and vicinity. Nonetheless, to quantify existing vibration levels in the project vicinity, BAC conducted short-term (10-minute) vibration surveys within the project area on June 12th, 2025. The locations of the short-term vibration survey sites are shown in Figure 1 (sites ST-1 through ST-4).

A Larson-Davis Laboratories (LDL) precision integrating sound level meter equipped with a vibration transducer was used to complete the measurements. The results are summarized in Table 3.

Table 3
Summary of Short-Term Ambient Vibration Survey Results – June 12, 2025

Survey Site[1]	Time	Average Measured Vibration Level, PPV (in/sec)[2]
ST-1: Northeast project area near commercial	1:58 p.m.	<0.001
ST-2: Northeast project area near Mercey Springs Rd	2:16 p.m.	0.002
ST-3: Southern project area near Pioneer Rd	2:46 p.m.	0.001
ST-4: Northwest project area near industrial	1:27 p.m.	<0.001

[1] Short-term vibration survey site locations are shown in Figure 1.
[2] PPV=Peak Particle Velocity

Source: BAC 2025

Table 3 data indicate that measured vibration levels within the project vicinity were below the threshold of human perception (<0.001 PP to 0.002 PPV), which is consistent with the BAC staff observations.

Existing Traffic Noise Levels Along Project Area Roadway Network

To predict traffic noise levels along existing roadway networks with multiple segments, modelling is commonly used rather than monitoring. The FHWA Traffic Noise Model (FHWA-RD-77-108) was used to quantify existing traffic noise levels at the existing sensitive land uses nearest to the project area roadway network. The FHWA Model was also used to quantify the distances to the 60, 65 and 70 dB DNL traffic noise contours for these roadways. The FHWA Model predicts hourly average (L_{eq}) values for free-flowing traffic conditions. Estimates of the hourly distribution of traffic for a typical 24-hour period were used to develop DNL values from L_{eq} values.

Existing traffic data in the form of AM and PM peak hour intersection turning movements were obtained from the traffic impact analysis prepared by the project transportation consultant (Fehr & Peers). Those data were converted to Average Daily Traffic (ADT) segment volumes by applying a factor of 5 to the sum of AM and PM peak hour conditions. Other inputs were derived from published Caltrans truck data, BAC observations, and file data for similar roadways. The existing traffic noise levels at the distances representing the nearest noise-sensitive land uses to the project area roadways and distances from the centerlines of selected roadways to the 60 dB, 65 dB and 70 dB DNL contours are summarized in Table 4. Appendix E contains the FHWA Model inputs for existing conditions.

Table 4
Existing Traffic Noise Levels at Nearest Receptors and Distances to DNL Contours

#	Roadway	Segment Description	DNL at Nearest Sensitive Receptor	Distance to Contour (ft)		
				70 dB DNL	65 dB DNL	60 dB DNL
1	Pacheco Blvd	West of 6th St	62	28	60	128
2	Pacheco Blvd	6th St to 7th St	61	27	58	125
3	Pacheco Blvd	7th St to 11th St	60	23	50	107
4	Pacheco Blvd	11th St to H St	51	14	30	64
5	Pacheco Blvd	H St to Mercey Springs Rd	68	69	148	319
6	Pacheco Blvd	Mercey Springs Rd to Place Rd	57	29	62	133
7	Pacheco Blvd	East of Place Rd	59	37	80	172
8	Mercey Springs Rd	North of B St	64	23	49	107
9	Mercey Springs Rd	B St to Pacheco Blvd	66	46	100	216
10	Mercey Springs Rd	Pacheco Blvd to Madison Ave	59	57	124	267
11	Mercey Springs Rd	Madison Ave to Scripps Dr	66	27	57	124
12	Mercey Springs Rd	Scripps Dr to Pioneer Rd	67	50	108	233
13	Mercey Springs Rd	South of Pioneer Rd	65	23	50	108
14	6th St	North of Pacheco Blvd	54	8	17	37
15	6th St	South of Pacheco Blvd	55	5	11	23
16	7th St	North of Pacheco Blvd	55	8	17	37
17	7th St	South of Pacheco Blvd	54	7	15	32
18	11th St	Pacheco Blvd to Jefferson Ave	58	7	16	34
19	11th St	Jefferson Ave to Page Ave	58	8	17	36

Table 4
Existing Traffic Noise Levels at Nearest Receptors and Distances to DNL Contours

#	Roadway	Segment Description	DNL at Nearest Sensitive Receptor	Distance to Contour (ft)		
				70 dB DNL	65 dB DNL	60 dB DNL
20	11th St	Page Ave to Pioneer Rd	57	7	15	32
21	H St	North of Pacheco Blvd	56	11	24	51
22	Place Rd	South of Pacheco Blvd	52	6	13	28
23	B St	West of Mercey Springs Rd	59	16	33	72
24	B St	East of Mercey Springs Rd	53	8	16	35
25	Scripps Dr	East of Mercey Springs Rd	53	4	10	21
26	Pioneer Rd	West of 11th St	67	33	71	153
27	Pioneer Rd	11th St to Mercey Springs Rd	65	22	48	102
28	Jefferson Ave	West of 11th St	41	1	3	6
29	Page Ave	West of 11th St	56	6	13	27

Source: FHWA-RD-77-108, Fehr & Peers, Caltrans, BAC

Criteria for Acceptable Noise and Vibration Exposure

Federal

Standards for acceptable noise and vibration exposure in the City of Los Banos are contained within the City's General Plan and /or within the City's Municipal Code. The criteria which are applicable to this project are reproduced below.

Federal Transit Administration (FTA)

Although no standardized criteria have been developed for assessing construction noise impacts, The Federal Transit Administration's *Transit Noise and Vibration Impact Assessment Manual* contains guidance for use in assessing potential noise associated with project construction.

Where local noise ordinances provide guidance with respect to construction noise, they typically relate to nuisance and hours of allowed activity, and sometimes specify limits in terms of maximum levels, but are generally not practical for assessing the impact of a construction project. The following guidelines can be considered reasonable criteria for assessment: construction noise levels of 90 dBA L_{eq} and 80 dBA L_{eq}[1] at residential land uses during daytime and nighttime hours, respectively. If these criteria are exceeded, there may be adverse community reaction.

[1] Table 7-2 of the *Transit Noise and Vibration Impact Assessment Manual* (FTA Report No. 0123, September 2018)

State of California

California Environmental Quality Act (CEQA)

Appendix G of the CEQA Guidelines asks whether the project would result in any of the following to determine whether a significant noise or vibration impact would occur:

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 other applicable standards of other agencies; or

B. Generation of excessive groundborne vibration or groundborne noise levels; or

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, the project expose people residing or working in the project area to excessive noise levels.

It should be noted that audibility is not a test of significance according to CEQA. As indicated in the Appendix G criteria listed above, to be considered significant, noise associated with a project must either exceed established standards or be an excessive or substantial increase in noise levels.

California Department of Transportation (Caltrans)

The City of Los Banos does not currently have adopted standards for groundborne vibration. As a result, the vibration impact criteria developed by the California Department of Transportation (Caltrans) was applied to the project. The Caltrans guidance criteria for building structure and vibration annoyance are presented in Tables 5 and 6, respectively.

Table 5
Caltrans Guidance for Building Structure Vibration Criteria

Structure and Condition	Limiting PPV (in/sec)
Historic and some old buildings	0.5
Residential structures	0.5
New residential structures	1.0
Industrial buildings	2.0
Bridges	2.0
PPV = Peak Particle Velocity	

Source: 2020 Caltrans Transportation and Construction Vibration Guidance Manual, Table 14

Table 6
Caltrans Guidance for Vibration Annoyance Potential Criteria

	Maximum PPV (in/sec)	
Human Response	**Transient Sources**	**Continuous/Frequent Intermittent Sources**
Severe/very disturbing	2.0	0.4 to 3.6
Strongly perceptible	0.9	0.1
Distinctly perceptible	0.24	0.035
Barely/slightly perceptible	0.035	0.012

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent sources include pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers and vibratory compaction equipment.

PPV = Peak Particle Velocity

Source: 2020 Caltrans Transportation and Construction Vibration Guidance Manual, Tables 4 & 6

Local

Los Banos General Plan 2042

The Safety and Noise Element of the Los Banos General Plan 2042 provides policies and implementing actions to ensure that City residents are not subjected to noise beyond acceptable levels. Specific General Plan policies and implementing actions of relevance to the CEQA evaluation for the project are reproduced below.

Policy S-P8.1 Use the community noise level exposure standards, shown in Figure 7-10 (Figure 5 of this report), as review criteria for new land uses.

Policy S-P8.2 Require a noise study and mitigation measures for all projects that have noise exposure greater than "normally acceptable" levels based on Table 7-3 (not reproduced in this document). Require that new multi-family and single-family housing projects, hotels, and motels exposed to a Community Noise Equivalent Level (CNEL) of 60 dB or greater have a detailed acoustical analysis describing how the project will provide an interior CNEL of 45 dB or less, pursuant to Title 24, Part 2, of the California Code of Regulations. These measures may include, but are not limited to, the following actions:

- Screen and control noise sources, such as parking and loading facilities, outdoor activities and mechanical equipment;
- Increase setbacks for noise sources from adjacent dwellings;
- Install fences, walls, and landscaping that serve as noise buffers;
- Used forced-air mechanical ventilation and soundproofing materials and double-glazed windows, or a combination thereof; and
- Control hours of operation, including deliveries and trash pickup, to minimize noise impacts.

Policy S-P8.3 Promote the use of noise attenuation measures to improve the acoustic environment inside residences where existing single-family residential development is located on an arterial street.

Policy S-P8.4 Discourage sound walls, except along freeways, unless they are needed as a measure of last resort. In all other instances, permit sound walls only upon finding that alternative noise attenuation measures are not available. As an alternative to sound walls, use "quiet pavement" such as rubberized asphalt or open-grade asphalt concrete overlays. Roadway noise reduction of up to 6-7 dBA compared to conventional asphalt overlay may be possible, but the effective lifespan of such pavement should be considered.

Policy S-P8.5 Protect especially sensitive uses, including schools, hospitals, and senior care facilities, from excessive noise.

Policy S-P8.6 Require the use of Best Available Control Technology (BACT) to minimize noise from all stationary sources as well as mobile/temporary sources, such as operation of construction equipment.

Action S-A8.1 Prohibit long-term (traffic) noise increases above the following at existing sensitive receptor property lines, or new uses that generate noise levels at a sensitive receptor property line:

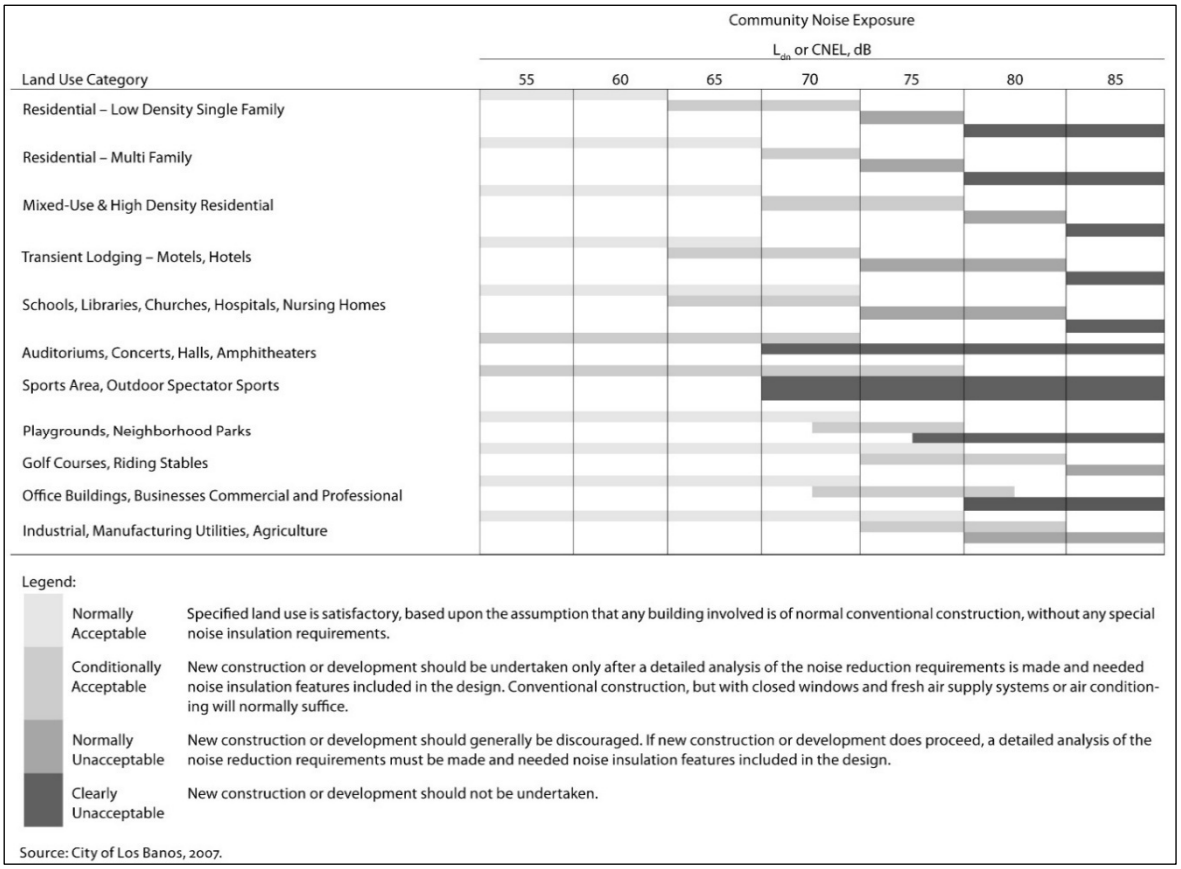
- Greater than 1.5 dBA CNEL increase for ambient noise environments of 65 dBA CNEL and higher;
- Greater than 3 dBA CNEL increase for ambient noise environments of 60 dBA CNEL to 64 dB CNEL; and
- Greater than 5 dBA CNEL increase for ambient noise environments of less than 60 dBA CNEL.

For projects that exceed these noise increases due to project-generated traffic noise, a "fair share" fund shall be considered where projects exceeding these increases pay into a fund for roadway improvements (e.g., repaving with quiet pavement to reduce traffic noise levels).

Action S-A8.2 Work with the Los Banos Airport to minimize noise impacts of flight operations on existing noise-sensitive development.

Action S-A8.3 The City shall establish and adopt a list of construction best management practices to be implemented during the construction phase and incorporated into Los Banos Municipal Code Article 27, Noise Control, to protect noise sensitive receptors (e.g., residences, schools, and hospitals) from the temporary effects of construction noise. The City of Los Banos Building Department shall verify that construction best management practices, as appropriate, are on the demolition, grading, and construction plans prior to issuance of demolition, grading and/or building permits.

Figure 5
Land Use Compatibility Guidelines for Community Noise Environments



Los Banos Municipal Code

The provisions of the Los Banos Municipal Code of relevance to the CEQA evaluation for the project are reproduced below.

9-3.2704 Exterior Noise Standards

(a) It is unlawful for any person at any location within the City to create any noise, or to allow the creation of any noise, on property owned, leased, occupied, or otherwise controlled by such person which noise causes the exterior noise level, when measured on any other property, to exceed the noise level standards set forth in the following table:

Receiving Land Use

Noise Metric	Cumulative Number of Minutes in Any One-Hour Time Period	Residential, Schools, Hospitals, Churches, Libraries	
		Daytime (7 AM to 10 PM)	Nighttime (10 PM to 7 AM)
L_{50}	30	55	45
L_{25}	15	60	50
L_{08}	5	65	55
L_{02}	1	70	60
L_{max}	0	75	65

(b) In the event the measured ambient noise level without the alleged offensive source in operation exceeds an applicable noise level standard in the table set forth in subsection (a) of this section, the applicable standard or standards shall be adjusted so as to equal the ambient noise level.

(c) Each of the noise level standards specified in the table set forth in subsection (a) of this section shall be reduced by five dB for pure tone noises, noises consisting primary of speech or music, or for recurring impulsive noises.

9-3.2706 Noise source exemptions.

The following activities shall be exempted from the provisions of this chapter:

(a) Activities conducted in public parks, public playgrounds, and public or private school grounds, including, but not limited to, school athletic, school entertainment, or civic events;

(c) Noise sources associated with construction provided such activities do not take place before 7:00 a.m. or after 9:00 p.m. on any day, except Saturday or Sunday, or before 8:00 a.m. or after 5:00 p.m. on Saturday or Sunday;

(d) Noise sources associated with the maintenance of residential property provided such activities take place between the hours of 7:00 a.m. and 9:00 p.m. on any day, except Saturday or Sunday, or between the hours of 8:00 a.m. and 9:00 p.m. on Saturday or Sunday;

(e) Noise sources associated with the collection of waste or garbage from property devoted to commercial or industrial uses;

(f) Noise sources associated with existing food processing, agricultural packing, dairy or other industrial or commercial operations provided the noise levels generated by such operations do not exceed current levels. Any new construction or expansion (but not the repair or replacement of existing equipment) of such operations shall not exceed the exterior noise level standards set forth in Section 9-3.2704 of this article.

Impacts and Mitigation Measures

Thresholds of Significance

Based on CEQA guidelines and adopted City of Los Banos General Plan and Municipal Code noise standards, noise and vibration impacts at sensitive areas of existing uses in the project vicinity are considered significant if the following were to result from the project:

- Increases in exterior ambient noise levels resulting from project traffic of greater than 5 dBA CNEL where baseline ambient conditions at sensitive receptor locations are currently less than 60 dB CNEL (General Plan Action S-A8.1 criteria).
- Increases in exterior ambient noise levels resulting from project traffic of greater than 3 dBA CNEL where baseline ambient conditions at sensitive receptor locations are currently 60 dBA CNEL to 64 dBA CNEL (General Plan Action S-A8.1 criteria).
- Increases in exterior ambient noise levels resulting from project traffic greater than 1.5 dBA CNEL where baseline ambient conditions at sensitive receptor locations are currently 65 dB CNEL and higher (General Plan Action S-A8.1 criteria).
- Transient vibration levels associated with project construction exceeding the Caltrans vibration criteria for damage to residential structures of 0.5 inches/second (Table 5).
- Transient vibration levels associated with project construction exceeding the strongly perceptible Caltrans vibration criteria of 0.9 inches/second for assessing annoyance (Table 6).
- Construction noise levels exceeding the Federal Transit Administration (FTA) reasonable noise impact assessment criteria of 90 dBA L_{eq} during daytime hours and 80 dBA L_{eq} during nighttime hours.
- Noise levels from project-related stationary (non-transportation) noise sources exceeding the noise standards established in Section 9-3.2704 of the Los Banos Municipal Code.
- Noise levels from operations at the Los Banos Municipal Airport exceeding applicable Los Banos General Plan or Merced County Airport Land Use Compatibility Plan noise level criteria applicable to transportation noise sources (aircraft) affecting residential uses.

Noise Impacts from Project-Generated Increases in Off-Site Traffic

With development of the project, traffic volumes on the local roadway network will increase. Those increases in daily traffic volumes will result in a corresponding increase in traffic noise levels at existing uses located along those roadways. Impacts 1 and 2 evaluate increases in off-site traffic noise levels which would result from the project.

Impact 1: Increases in Existing Traffic Noise Levels due to the Project

The FHWA Traffic Noise Model (FHWA-RD-77-108) was used to quantify increases in existing traffic noise levels at the existing sensitive land uses nearest to the project area roadway network. The FHWA Model predicts hourly L_{eq} values for free-flowing traffic conditions. Estimates of the hourly distribution of traffic for a typical 24-hour period were used to develop DNL values from L_{eq} values.

Traffic data in the form of peak hour intersection turning movements were obtained from traffic impact analysis prepared by the project transportation consultant (Fehr & Peers). Those data were converted to Average Daily Traffic (ADT) segment volumes by applying a factor of 5 to the sum of AM and PM peak hour conditions. Other inputs were derived from published Caltrans truck data, BAC observations, and file data for similar roadways. Appendices E and F contain the FHWA Model inputs for Existing No Project and Existing Plus Project conditions, respectively. The Existing No Project and Existing Plus Project traffic noise levels at the distances representing the nearest existing sensitive land uses to the roadway segments analyzed within the project roadway network are summarized in Table 7. Table 7 also shows the thresholds for determination of a significant traffic noise increase, whether the roadway segment contains sensitive uses, and whether significant noise impacts are identified for each segment. A significant impact would be identified only along segments where the project-related traffic noise level increase would exceed applicable significance threshold and where sensitive receptors are present along the roadway segment.

It should be noted that the FHWA Model does not account for non-traffic ambient noise sources such as nearby wildlife or other anthropogenic noise sources within an area. Consideration of such sources typically results in higher ambient noise levels (i.e., existing no project) than those predicted by the FHWA Model alone.

Table 7
Predicted Traffic Noise Level Increases at Existing Sensitive Receptors – Existing vs. Existing Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB) E	Predicted DNL (dB) E+P	Increase (dB)	Significance Threshold (dB)[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
1	Pacheco Blvd	West of 6th St	61.6	61.7	0.1	3.0	No	**Yes**	No
2	Pacheco Blvd	6th St to 7th St	61.5	61.6	0.1	3.0	No	**Yes**	No
3	Pacheco Blvd	7th St to 11th St	60.5	60.7	0.2	3.0	No	**Yes**	No
4	Pacheco Blvd	11th St to H St	51.2	51.4	0.2	5.0	No	**Yes**	No
5	Pacheco Blvd	H St to Mercey Springs Rd	67.5	67.8	0.2	1.5	No	No	No
6	Pacheco Blvd	Mercey Springs Rd to Place Rd	57.3	57.5	0.1	5.0	No	**Yes**	No
7	Pacheco Blvd	East of Place Rd	59.0	59.2	0.2	5.0	No	**Yes**	No
8	Mercey Springs Rd	North of B St	63.7	63.9	0.1	3.0	No	**Yes**	No
9	Mercey Springs Rd	B St to Pacheco Blvd	66.1	66.2	0.2	1.5	No	**Yes**	No
10	Mercey Springs Rd	Pacheco Blvd to Madison Ave	59.2	59.9	0.7	5.0	No	**Yes**	No
11	Mercey Springs Rd	Madison Ave to Scripps Dr	65.9	66.6	0.7	1.5	No	**Yes**	No
12	Mercey Springs Rd	Scripps Dr to Pioneer Rd	67.0	67.1	0.2	1.5	No	**Yes**	No
13	Mercey Springs Rd	South of Pioneer Rd	65.0	65.3	0.2	3.0	No	**Yes**	No
14	6th St	North of Pacheco Blvd	53.5	54.0	0.5	5.0	No	**Yes**	No
15	6th St	South of Pacheco Blvd	55.0	55.4	0.3	5.0	No	**Yes**	No
16	7th St	North of Pacheco Blvd	54.9	55.4	0.5	5.0	No	**Yes**	No
17	7th St	South of Pacheco Blvd	54.5	54.7	0.2	5.0	No	**Yes**	No
18	11th St	Pacheco Blvd to Jefferson Ave	57.5	58.6	1.1	5.0	No	**Yes**	No
19	11th St	Jefferson Ave to Page Ave	57.8	59.0	1.2	5.0	No	**Yes**	No
20	11th St	Page Ave to Pioneer Rd	57.0	57.4	0.4	5.0	No	**Yes**	No
21	H St	North of Pacheco Blvd	55.6	56.3	0.7	5.0	No	**Yes**	No
22	Place Rd	South of Pacheco Blvd	51.8	52.0	0.2	5.0	No	No	No
23	B St	West of Mercey Springs Rd	59.3	59.4	0.1	5.0	No	**Yes**	No
24	B St	East of Mercey Springs Rd	53.2	53.3	0.1	5.0	No	**Yes**	No
25	Scripps Dr	East of Mercey Springs Rd	53.1	53.4	0.3	5.0	No	**Yes**	No
26	Pioneer Rd	West of 11th St	67.3	67.5	0.2	1.5	No	**Yes**	No
27	Pioneer Rd	11th St to Mercey Springs Rd	64.7	65.0	0.3	3.0	No	**Yes**	No
28	Jefferson Ave	West of 11th St	40.6	41.5	1.0	5.0	No	**Yes**	No
29	Page Ave	West of 11th St	56.0	56.7	0.7	5.0	No	**Yes**	No

[1] Los Banos General Plan Action S-A8.1 increase significance criteria.
[2] Noise sensitive receptors identified as existing residences, schools, churches, hospitals, and senior care facilities.
[3] A significant impact is identified only along segments where the project-related traffic noise level increase would exceed applicable significance threshold and where sensitive receptors are present along the roadway segment.

Source: FHWA-RD-77-108, Fehr & Peers, Caltrans, BAC

As shown in Table 7, project-generated traffic noise level increases would not result in significant noise impacts at existing noise-sensitive receptors located along the project area roadway network in the Existing No Project vs. Existing Plus Project conditions analysis. As a result, this impact is identified as being ***less than significant***.

Impact 2: Increases in Cumulative Traffic Noise Levels due to the Project

The FHWA Traffic Noise Model (FHWA-RD-77-108) was used to quantify increases in future (cumulative) traffic noise levels at the nearest existing noise-sensitive receptors located along the project area roadway network. This analysis first assesses whether a cumulative roadway noise impact would occur by comparing existing no-project conditions to cumulative plus project conditions. If a cumulative roadway noise impact is identified, it is further evaluated to assess whether the proposed project would make a cumulatively considerable contribution to the cumulative impact. This process is completed through a comparison of the roadway noise associated with the cumulative no-project scenario against the cumulative plus project.

Table 8 compares Existing No Project traffic noise levels against Cumulative Plus Project traffic noise levels and includes a determination regarding whether the corresponding increase in traffic noise exposure over time is considerable. Table 9 compares Cumulative No Project traffic noise levels against Cumulative Plus Project conditions to determine if the project's contribution to the cumulative noise environment is considerable. Appendices G and H contain the FHWA Model inputs for Cumulative No Project and Cumulative Plus Project conditions.

Table 8
Predicted Traffic Noise Level Increases at Existing Sensitive Receptors – Existing vs. Cumulative Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB) E	Predicted DNL (dB) C+P	Increase (dB)	Significance Threshold (dB)[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
1	Pacheco Blvd	West of 6th St	61.6	63.6	2.0	3.0	No	**Yes**	No
2	Pacheco Blvd	6th St to 7th St	61.5	63.4	1.9	3.0	No	**Yes**	No
3	Pacheco Blvd	7th St to 11th St	60.5	62.6	2.1	3.0	No	**Yes**	No
4	Pacheco Blvd	11th St to H St	51.2	52.7	1.5	5.0	No	**Yes**	No
5	Pacheco Blvd	H St to Mercey Springs Rd	67.5	69.0	1.5	1.5	**Yes**	No	No
6	Pacheco Blvd	Mercey Springs Rd to Place Rd	57.3	59.0	1.7	5.0	No	**Yes**	No
7	Pacheco Blvd	East of Place Rd	59.0	61.2	2.2	5.0	No	**Yes**	No
8	Mercey Springs Rd	North of B St	63.7	64.6	0.9	3.0	No	**Yes**	No
9	Mercey Springs Rd	B St to Pacheco Blvd	66.1	67.2	1.1	1.5	No	**Yes**	No
10	Mercey Springs Rd	Pacheco Blvd to Madison Ave	59.2	59.6	0.3	5.0	No	**Yes**	No
11	Mercey Springs Rd	Madison Ave to Scripps Dr	65.9	66.3	0.3	1.5	No	**Yes**	No
12	Mercey Springs Rd	Scripps Dr to Pioneer Rd	67.0	68.0	1.0	1.5	No	**Yes**	No
13	Mercey Springs Rd	South of Pioneer Rd	65.0	68.2	3.2	3.0	**Yes**	**Yes**	**Yes**
14	6th St	North of Pacheco Blvd	53.5	55.8	2.3	5.0	No	**Yes**	No
15	6th St	South of Pacheco Blvd	55.0	56.5	1.4	5.0	No	**Yes**	No
16	7th St	North of Pacheco Blvd	54.9	56.1	1.2	5.0	No	**Yes**	No
17	7th St	South of Pacheco Blvd	54.5	55.4	0.9	5.0	No	**Yes**	No
18	11th St	Pacheco Blvd to Jefferson Ave	57.5	60.2	2.7	5.0	No	**Yes**	No
19	11th St	Jefferson Ave to Page Ave	57.8	59.4	1.6	5.0	No	**Yes**	No
20	11th St	Page Ave to Pioneer Rd	57.0	57.5	0.5	5.0	No	**Yes**	No
21	H St	North of Pacheco Blvd	55.6	57.8	2.1	5.0	No	**Yes**	No
22	Place Rd	South of Pacheco Blvd	51.8	52.8	1.0	5.0	No	No	No
23	B St	West of Mercey Springs Rd	59.3	59.9	0.6	5.0	No	**Yes**	No
24	B St	East of Mercey Springs Rd	53.2	54.1	0.9	5.0	No	**Yes**	No
25	Scripps Dr	East of Mercey Springs Rd	53.1	54.2	1.1	5.0	No	**Yes**	No
26	Pioneer Rd	West of 11th St	67.3	70.7	3.4	1.5	**Yes**	**Yes**	**Yes**
27	Pioneer Rd	11th St to Mercey Springs Rd	64.7	68.2	3.5	3.0	**Yes**	**Yes**	**Yes**
28	Jefferson Ave	West of 11th St	40.6	43.7	3.1	5.0	No	**Yes**	No
29	Page Ave	West of 11th St	56.0	57.0	1.0	5.0	No	**Yes**	No

[1] Los Banos General Plan Action S-A8.1 increase significance criteria.
[2] Noise sensitive receptors identified as existing residences, schools, churches, hospitals, and senior care facilities.
[3] A significant impact is identified only along segments where the project-related traffic noise level increase would exceed applicable significance threshold and where sensitive receptors are present along the roadway segment.

Source: FHWA-RD-77-108, Fehr & Peers, Caltrans, BAC

Table 9
Predicted Traffic Noise Level Increases at Existing Sensitive Receptors – Cumulative vs. Cumulative Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB) C	Predicted DNL (dB) C+P	Increase (dB)	Significance Threshold (dB)[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
13	Mercey Springs Rd	South of Pioneer Rd	68.1	68.2	0.1	1.5	No	**Yes**	No
26	Pioneer Rd	West of 11th St	70.6	70.7	0.1	1.5	No	**Yes**	No
27	Pioneer Rd	11th St to Mercey Springs Rd	68.1	68.2	0.1	1.5	No	**Yes**	No

[1] Los Banos General Plan Action S-A8.1 increase significance criteria
[2] Noise sensitive receptors identified as existing residences, schools, churches, hospitals, and senior care facilities.
[3] A significant impact is identified only along segments where the project-related traffic noise level increase would exceed applicable significance threshold and where sensitive receptors are present along the roadway segment.

Source: FHWA-RD-77-108, Fehr & Peers, Caltrans, BAC

As indicated in Table 8, project-generated traffic is calculated to exceed the applicable Los Banos General Plan Action S-A8.1 increase significance criterion along three of the analyzed roadway segments containing existing noise-sensitive receptors (segments 13, 26 and 27). However, as shown in Table 9, the project-generated increases along those roadway segments are not calculated to have a cumulatively considerable contribution to the cumulative impact relative to the applicable General Plan Action S-A8.1 impact significance criterion. Based on the analyses presented above, off-site traffic noise level impacts related to increases in traffic resulting from the implementation of the project are identified as being ***less than significant***.

Impact 3: Project Commercial Operations Noise at Existing Sensitive Uses

According to the project site plans, a 1.9-acre lot and a 0.8-acre lot adjacent to Mercey Springs Road are proposed to be developed for neighborhood commercial land uses (Lots C and D in Figure 2). Per the Los Banos General Plan, areas zoned as neighborhood commercial are intended to provide small-scale office space or retail stores that are accessible by pedestrians and automobiles. These commercial uses would bring the possibility of noise impacts associated with operations of roof-mounted air handling units associated with building heating, ventilation and air-conditioning (HVAC), refuse collection, and truck deliveries. The nearest existing sensitive use to proposed commercial Lot C is located approximately 160 feet to the northeast (property line of a single-family residence across Mercey Springs Road). The closest existing sensitive use to proposed commercial Lot D is located approximately 100 feet to the east (property line of Mercey Springs Elementary School).

Section 9-3.2704(b) of the City of Los Banos Municipal Code states if measured ambient noise levels exceed the established noise level limits, the applicable standard shall be adjusted so as to equal the measured ambient noise level. The ambient noise data presented in Table 1 indicate that average measured hourly noise levels at Site LT-1, located approximately 50 feet from the centerline of Mercey Springs Road, were elevated during the entire monitoring period (daytime and nighttime). The measured elevated noise levels are believed to be primarily attributed to traffic.

The property boundary for Mercey Springs Elementary School is located approximately 50 feet from the centerline of Mercey Springs Road – the same distance to the roadway as Site LT-1. Based on the measured elevated ambient noise level environment adjacent to Mercey Springs Road, it is expected that noise levels associated with future commercial operations within proposed Lots C and D would be below the ambient noise level environment at the nearest existing sensitive uses (i.e., residences and Mercey Springs Elementary School) – which would satisfy the noise level criteria identified in Section 9-3.2704(b) of the City of Los Banos Municipal Code. Based on the analysis above, this impact is identified as being ***less than significant***.

Noise Impacts Associated with Project On-Site Construction Activities

Impact 4: On-Site Construction Activity Noise Generation

During project construction, heavy equipment would be used for demolition of existing structures, grading, excavation, paving, and building construction. These activities would increase ambient

noise levels in the immediate project vicinity. Construction noise levels generated at the project site would vary depending on the type and amount of equipment in use at any time, the location where that equipment is operating, and how well the equipment is maintained. Noise exposure at existing, off-site, sensitive receptors would also vary depending on the proximity of equipment activities to the receptor, the degree of shielding present between the construction equipment and receptor (i.e., soundwalls), etc.

Table 10 provides the range of maximum noise levels for equipment commonly used in general construction projects at full-power operation at distance of 50 feet. Not all of these construction activities would be required of this project.

Table 10
Maximum Reference Noise Levels for Common Construction Equipment

Equipment Description	Maximum Noise Level at 50 Feet (dBA)
Air Compressor	80
Backhoe	80
Ballast Equalizer	82
Ballast Tamper	83
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Crane, Mobile	83
Dozer	85
Generator	82
Grader	85
Impact Wrench	85
Jack Hammer	88
Loader	80
Paver	85
Pneumatic Tool	85
Pump	77
Rail Saw	90
Saw	76
Scarifier	83
Scraper	85
Shovel	82
Spike Driver	77
Tie Cutter	84
Tie Inserter	85
Truck	84

Source: 2018 Federal Transit Administration Noise and Vibration Impact Assessment Manual, Table 7-1

The nearest existing sensitive receptors to the project site have been identified as residences located to the west. The distances from these residences to the most significant sources of on-site construction would vary depending on the phase of construction. For a general assessment of potential construction noise impacts, the FTA recommends utilizing the noise emission levels shown in Table 10, adjusting those levels for the percentage of the hour the equipment would be

operating, correcting for distance by assuming mobile equipment operates at the center of the project, and considering ground effects where appropriate.

For this project, there will be periods of time when the construction equipment is located closer to existing residences than the effective center of the project site, so calculating construction noise from the center of the site is not considered appropriate for this evaluation. However, because the noisiest construction equipment tends to be mobile (i.e. earthmoving equipment), calculating construction noise levels using the closest point of construction activity to existing residences is also not considered appropriate. For this evaluation, a distance of 50 feet was conservatively assumed for the construction noise evaluation distance.

After correction for usage and multiple equipment operating concurrently, project construction noise was calculated using the Federal Highway Administration's Roadway Construction Noise Model (RCNM), to be approximately 85 dBA L_{eq}. The RCNM analysis conservatively assumed concurrent operation of a dozer, front loader, compactor, backhoe, and grader at a distance of 50 feet from the nearest residence. While an estimated construction noise level of 85 dBA L_{eq} would be considered satisfactory relative to FTA noise standards during daytime hours, this level would be considered excessive during nighttime hours.

Section 9-3.2706(c) of the City of Los Banos Municipal Code exempts noise sources associated with construction provided such activities do not take place before 7:00 a.m. or after 9:00 p.m. on any day, except Saturday or Sunday, or before 8:00 a.m. or after 5:00 p.m. on Saturday or Sunday. Provided construction activities within the project area occur pursuant to the Municipal Code Section 9-3.2706(c), project construction activities would be exempt, and this impact would be identified as less than significant. However, if construction activities are proposed during the hours not exempted by the Municipal Code, noise levels generated by construction activities could result in annoyance at nearby existing residential uses. As a result, this impact is identified as being **potentially significant**.

Mitigation for Impact 4:

MM 4 The following measures shall be incorporated into the project on-site construction operations:

- Noise-generating construction activities within the project area shall occur pursuant to the hours and days exempted in Section 9-3.2706(c) of the Los Banos Municipal Code.
- All noise-producing project equipment and vehicles using internal-combustion engines shall be equipped with manufacturers-recommended mufflers and be maintained in good working condition.
- All mobile or fixed noise-producing equipment used on the project site that are regulated for noise output by a federal, state, or local agency shall comply with such regulations while in the course of project activity.
- Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be located as far as practicable from existing residences.

- In the event that unusual circumstances or emergencies prevent certain project construction activities from complying with Section 9-3.2706(c) of the Los Banos Municipal Code, then a noise control plan shall be developed to ensure that sufficient mitigation is implemented during project construction to ensure adverse noise impacts are avoided.

Impact Significance After Implementation of MM 4: *Less than Significant*

Vibration Impacts Associated with the Project

Impact 5: On-Site Project Construction Vibration Levels

During on-site construction, heavy equipment would be used for grading, excavation, paving, and building construction, which would generate localized vibration in the immediate vicinity of the construction. The nearest existing sensitive structures have been identified as newer engineered residential structures (not highly susceptible to damage by vibration), located as close as 30 feet from where construction activities could potentially occur within the project area.

Table 11 includes the range of vibration levels for equipment commonly used in general construction projects at a distance of 25 feet. Table 11 data also include projected equipment vibration levels at the aforementioned existing nearby residential structures located approximately 20 feet away.

Table 11
Reference and Projected Vibration Source Amplitudes for Typical Construction Equipment

Equipment	Reference PPV at 25 Feet (in/sec)	Projected PPV at 30 Feet (in/sec)
Hoe ram	0.089	0.068
Large bulldozer	0.089	0.068
Caisson drilling	0.089	0.068
Loaded trucks	0.076	0.058
Jackhammer	0.035	0.027
Small bulldozer	0.003	0.002
PPV = Peak Particle Velocity		

Source: 2018 FTA Transit Noise and Vibration Impact Assessment Manual (Table 7-4) and BAC calculations

Table 11 data indicate that vibration levels generated from construction activities within the project area at the nearest existing residences located approximately 30 feet away are predicted to be well below the Caltrans threshold for damage to residential structures of 0.5 in/sec PPV shown in Table 5 (building structure vibration criteria). In addition, the projected transient equipment vibration levels in Table 11 would also be below the Caltrans threshold of 0.9 in/sec PPV for “strongly perceptible” human response shown in Table 6 (vibration annoyance potential threshold criteria).

Because vibration levels due to proposed project construction are predicted to be satisfactory relative to the applicable Caltrans groundborne impact vibration criteria at the nearest existing

residences to proposed project construction (approximately 30 feet away), this impact is identified as being ***less than significant***.

Noise Impacts Upon the Project

The California Supreme Court issued an opinion in *California Building Industry Association v. Bay Area Air Quality Management District (2015)* holding that CEQA is primarily concerned with the impacts of a project on the environment and generally does not require agencies to analyze the impact of existing conditions on a project's future users or residents. Nevertheless, the City of Los Banos has policies that address existing/future conditions affecting the proposed project, which are discussed in the following sections. The following section includes analyses of future traffic noise exposure at proposed residential uses within the project area and recommended improvement measures to ensure consistency with applicable City of Los Banos noise requirements.

Issue 1: Future Exterior Traffic Noise Levels at Proposed Residences

Single-Family Residential Lots

The FHWA Traffic Noise Model (FHWA-RD-77-108) was used with future traffic data to predict future exterior traffic noise levels at the proposed single-family residential lots of the development. Future (Cumulative Plus Project) traffic data in the form of AM and PM peak hour intersection turning movements were obtained from the traffic impact analysis prepared by the project transportation consultant (Fehr & Peers). Those data were converted to Average Daily Traffic (ADT) segment volumes by applying a factor of 5 to the sum of AM and PM peak hour conditions. Other inputs were derived from published Caltrans truck data, BAC observations, and file data for similar roadways. Using the provided site plans (for scaling distances), future traffic noise levels were predicted at the closest single-family residential outdoor activity areas (i.e., backyards) of the development and the results from that analysis are provided in Table 12. Detailed FHWA Model inputs and results are provided in Appendix I.

Table 12
Predicted Future Exterior Traffic Noise Levels – Single-Family Residential Lots[1]

Roadway	Receiver Description	Predicted Future DNL (dB)[3]
Mercey Springs Road (North of Scripps Rd)	Nearest Backyards	68
	Nearest 1st Floor Exterior Facades	67
	Nearest 2nd Floor Exterior Facades	69
Mercey Springs Road (South of Scripps Rd)	Nearest Backyards	68
	Nearest 1st Floor Exterior Facades	67
	Nearest 2nd Floor Exterior Facades	69
Pioneer Road	Nearest Backyards	66
	Nearest 1st Floor Exterior Facades	65
	Nearest 2nd Floor Exterior Facades	67

[1] A complete listing of FHWA Model inputs and results are provided in Appendix I.
[2] Distances measured from said location to the roadway centerlines.
[3] A +3 dB offset was applied at 2nd floor exterior facades to account for reduced ground absorption of sound at elevated locations.

Source: BAC 2025

The Los Banos General Plan establishes a normally acceptable exterior noise level standard of 60 dB DNL/CNEL for single-family residential uses affected by transportation noise sources (Figure 5 of this report). As shown in Table 12, future Mercey Springs Road and Pioneer Road traffic noise level exposure is predicted to exceed the General Plan 60 dB DNL exterior noise level standard at the outdoor areas (backyards) of the residences proposed nearest to the roadways.

To reduce future Mercey Springs Road and Pioneer Road traffic noise level exposure to a state of compliance with the General Plan 60 dB DNL exterior noise level standard at the closest proposed single-family residential lots to the roadways, the following specific improvement measure is recommended for the project:

1. The construction of traffic noise barriers ranging from 6-feet to 8-feet in height along Mercey Springs Road and Pioneer Road at the locations illustrated in Figures 6 and 7. Barrier insertion loss calculation worksheets are provided as Appendix J.

   The traffic noise barriers can take the form of earthen berms, solid walls, or a combination of the two. Appropriate materials for noise walls include precast concrete or masonry block. Other materials may be acceptable provided they have a density of approximately 4 pounds per square foot. The recommended barrier height range is consistent with traffic noise barrier heights currently constructed for newer residential developments within the project vicinity along Mercey Springs Road and Pioneer Road.

   Grading plans were not available at the time of preparing this report. As a result, the recommended barrier heights indicated in Figures 6 and 7 assume that the difference in elevation between the roadways and proposed adjacent single-family residential outdoor areas are within ± 2 feet. Should differences in elevations be greater than ± 2 feet at those locations, an additional analysis would be warranted. Nonetheless, the barriers heights shown in Figures 6 and 7 are relative to outdoor area/pad *or* roadway elevation, whichever is greater.

<u>Multi-Family Residential Lot</u>

According to the project site plans, the project proposes the development of multi-family residential uses (apartments) along the north and northeast project property boundary. Figure 2 shows the location of the proposed apartments (Lot A). Although the project site plans contain the general location of the proposed multi-family residential lot, the specific locations of the residences and common outdoor activity areas are currently not known. The Los Banos General Plan establishes a normally acceptable exterior noise level standard of 65 dB DNL for multi-family residential uses affected by transportation noise sources (Figure 5 of this report).

The FHWA Traffic Noise Model (FHWA-RD-77-108) was used with future traffic data to predict future exterior traffic noise levels at the proposed multi-family residential lot of the development (Lot A). The results from that analysis indicate that the future Mercey Springs Road exterior traffic noise level is predicted to be 65 dB DNL at a distance of approximately 130 feet from the centerline of the roadway. Thus, future Mercey Springs Road traffic noise exposure would exceed the Los Banos General Plan 65 dB DNL exterior noise level standard should the common outdoor

activity area(s) of the proposed multi-family residential lot be located within 130 feet from the centerline of Mercey Springs Road.

To satisfy the Los Banos General Plan 65 dB DNL exterior noise level standard at the common outdoor activity area(s) of the proposed multi-family residential lot (Lot A), implementation of one of the following two specific measures is recommended for the project site design:

1. Ensure that the common outdoor area(s) of the proposed multi-family residential lot maintains a minimum setback distance of 130 feet from the centerline of Mercey Springs Road.

   OR

2. Should the common outdoor area(s) of the proposed multi-family residential lot be proposed within 130 feet from the centerline of Mercey Springs Road, ensure that the placement and orientation of proposed structures completely shield the common outdoor area(s) from view of the roadway.

Issue 2: Future Interior Traffic Noise Levels at Proposed Residences

Single-Family Residential Lots

Standard residential construction (stucco siding, STC-27 windows, door weather-stripping, exterior wall insulation, composition plywood roof), *typically* results in an exterior to interior noise reduction of approximately 25 dB with windows closed and approximately 15 dB with windows open. Therefore, provided that future traffic noise levels do not exceed 70 dB DNL at exterior building facades of proposed single-family residences, standard construction would normally be adequate to comply with the Los Banos General Plan 45 dB DNL/CNEL interior noise level standard.

After construction of the noise barriers required to satisfy the Los Banos General Plan 60 dB DNL exterior noise level standard (as recommended in the previous discussion), future traffic noise levels are predicted to be approximately 60 dB DNL or less at the first-floor facades of single-family residences constructed nearest to Mercey Springs Road and Pioneer Road. To achieve compliance with the General Plan 45 dB DNL interior noise level standard within first-floor rooms, a building facade noise reduction of at least 15 dB would be required of the first-floor exterior wall construction.

Due to reduced ground absorption at elevated positions, second-floor traffic noise levels are predicted to be approximately 2 dB higher than first-floor levels. In addition, second-floor facades would not be shielded by the recommended noise barriers. As a result, future traffic noise level exposure at the second floor building facades of the residences proposed nearest to Mercey Springs Road and Pioneer Road is predicted to range from 67 dB DNL to 69 dB DNL (Table 12). Therefore, a building facade noise reduction of at least 24 dB would be required of the upper-floor exterior wall construction.

Based on the above-identified exterior to interior noise reduction typically achieved with standard residential construction, standard residential construction practices are expected to be adequate for both first and second-floor facades of the single-family residences constructed adjacent to Mercey Springs Road and Pioneer Road. Nonetheless, mechanical ventilation (air conditioning) should be provided for all residences of this development to allow the occupants to close doors and windows as desired to achieve compliance with the applicable interior noise level criteria. *However*, should a greater margin of safety be desired, the project design could include the following specific building improvement measure:

1. All second-floor bedroom windows of single-family residences identified in Figures 6 and 7 from which Mercey Springs Road would be visible should be upgraded to a minimum STC rating of 32.

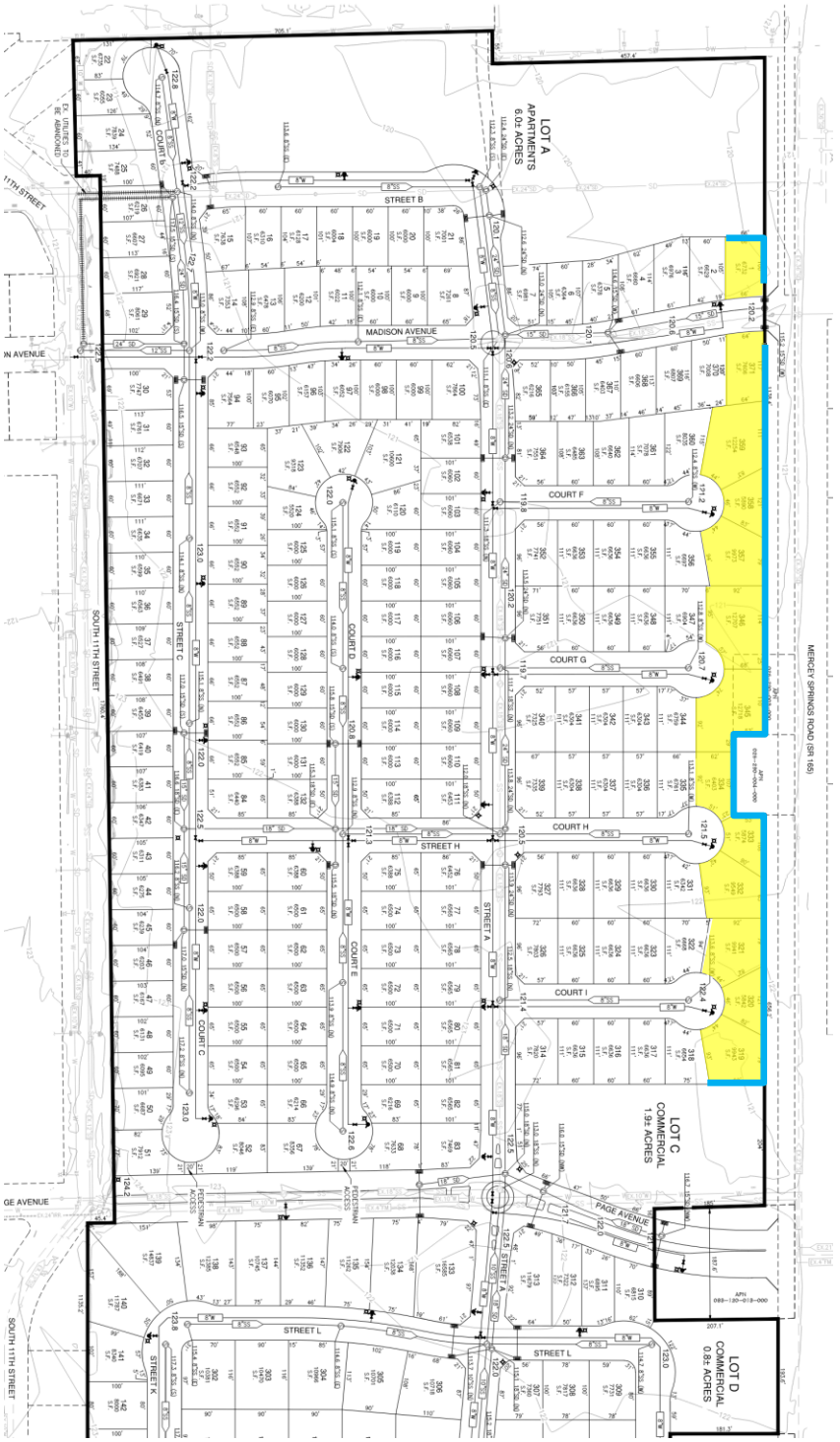
Multi-Family Residential Lot

According to the FHWA Model, future Mercey Springs Road exterior traffic noise level is predicted to be 65 dB DNL at a distance of approximately 100 feet from the centerline of the roadway. Due to reduced ground absorption at elevated positions, upper-level traffic noise levels from Mercey Springs Road are expected to approach 70 dB DNL at this same distance. To satisfy the General Plan 45 dB DNL interior noise level standard within all floors of residences closest to Mercey Springs Road, a minimum noise reduction of at least 25 dB would be required of the building facades.

As mentioned previously, standard residential construction (wood or stucco siding, STC-27 windows, door weather-stripping, exterior wall insulation, composition plywood roof), results in an exterior to interior noise level reduction of at least 25 dB with windows closed and approximately 15 dB with windows open. Therefore, predicted interior traffic noise levels within the residences of the multi-family residential lot proposed a minimum of 100 feet from the centerline of Mercey Springs Road would satisfy the General Plan 45 dB DNL interior noise level standard without the need for additional mitigation measures. However, if residences of the multi-family residential lot are proposed within 100 feet from the centerline of Mercey Springs Road, future interior traffic noise levels from this roadway could exceed the General Plan 45 dB DNL interior noise level standard at the upper-levels of proposed residences (apartments). As mentioned previously, mechanical ventilation (air conditioning) should be provided for all residences within this development to allow the occupants to close doors and windows as desired for additional acoustical isolation.

To satisfy the Los Banos General Plan 45 dB DNL interior noise level standard within the interior areas of the proposed multi-family residences (apartments), implementation of the following specific measure is recommended for the project site design:

1. Should the building facades of the residences within the proposed multi-family residential lot adjacent to Mercey Springs Road be proposed within 100 feet of the roadway centerline, all upper-floor bedroom windows of the residences located within that setback distance should be upgraded to minimum rating of STC 32.



Legend

- Recommended 8-Foot-Tall Solid Noise Barrier
- Recommended STC 32 Windows (Upper-Floors)

N

Scale (Feet)

0 150 300

Presidential Estates East
Los Banos, California

Improvement Measures – Traffic Noise

Figure 6

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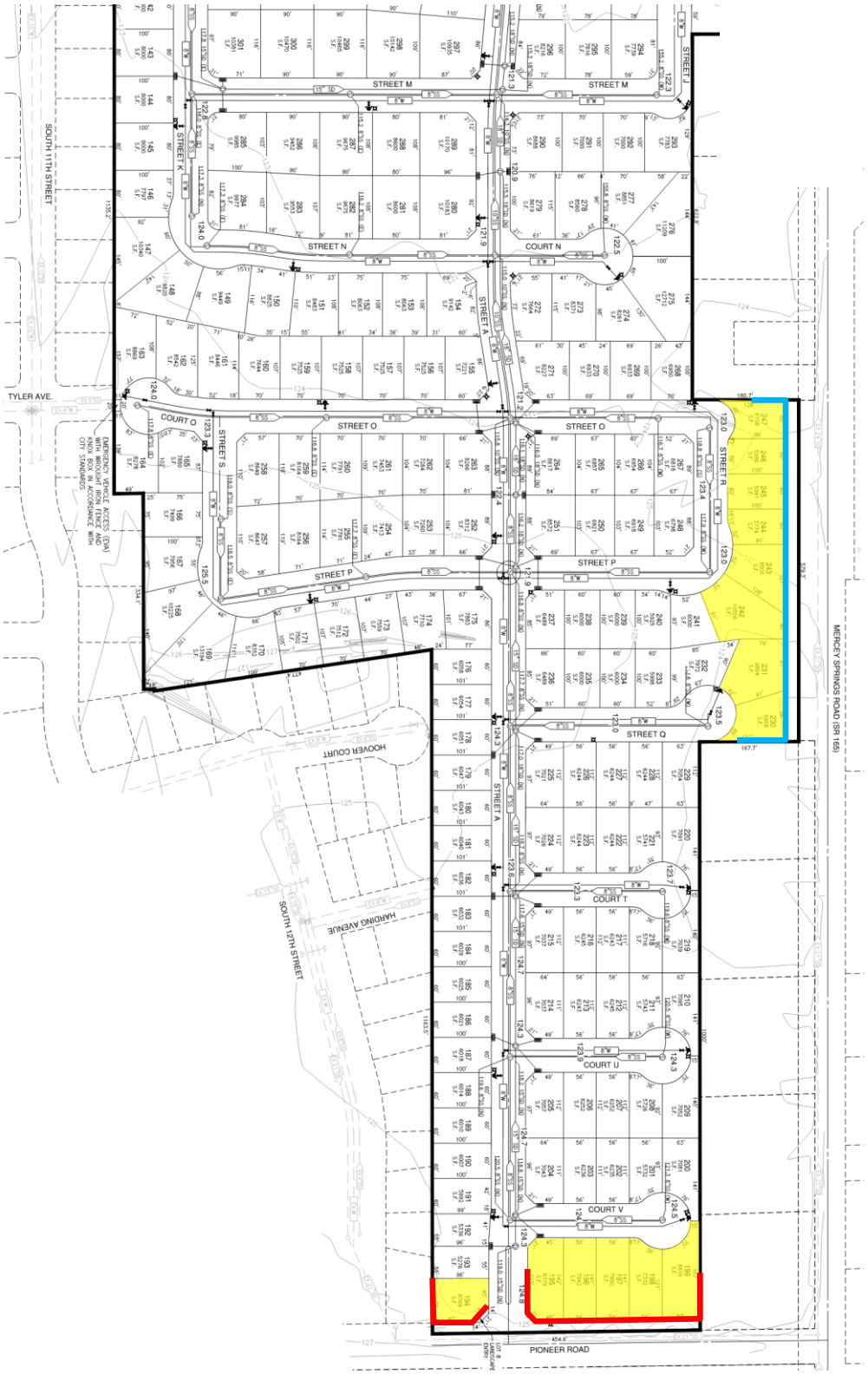

Legend

- Recommended 8-Foot-Tall Solid Noise Barrier
- Recommended 6-Foot-Tall Solid Noise Barrier
- Recommended STC 32 Windows (Upper-Floors)

N

Scale (Feet)

0 150 300

Presidential Estates East
Los Banos, California

Improvement Measures – Traffic Noise

Figure 7

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Issue 3: Project Commercial Noise Levels at Proposed Residences

As mentioned previously, a 1.9-acre lot and a 0.8-acre lot adjacent to Mercey Springs Road are proposed to be developed for neighborhood commercial land uses (Lots C and D in Figure 2). Per the Los Banos General Plan, areas zoned as neighborhood commercial are intended to provide small-scale office space or retail stores that are accessible by pedestrians and automobiles. These commercial uses would bring the possibility of noise impacts associated with operations of roof-mounted air handling units associated with building heating, ventilation and air-conditioning (HVAC), refuse collection, and truck deliveries. The proposed commercial lots would be located adjacent to single-family residential lots of the development.

Depending upon the equipment configurations and locations of on-site commercial noise sources, it is possible that noise exposure from proposed commercial uses of the development could exceed applicable noise level limits established in the Los Banos Municipal Code at nearby proposed residences.

To satisfy the applicable Los Banos Municipal Code noise level limits at proposed residential uses of the development, the following specific measure should be implemented:

1. A site specific noise impact study that addresses proposed commercial noise sources should be completed by a qualified noise consultant once specific proposals for such plans are filed. The noise impact study should include an analysis of HVAC equipment noise exposure, commercial loading docks (if applicable), parking areas, truck deliveries, and other noise-generating commercial activities which may occur within the proposed commercial lot. The analysis should include associated mitigation measures (as appropriate) to reduce commercial noise levels to a state of compliance with applicable Los Banos Municipal Code noise level limits at nearby proposed residential uses of the development. Specific mitigation measures could include but are not limited to the following:

    - Ensure that noise exposure associated with the selected mechanical equipment satisfies the applicable City noise level limits at proposed sensitive receptors.
    - The construction of localized noise barriers around mechanical equipment that effectively attenuate noise exposure to a state of compliance with the applicable City noise limits at proposed sensitive receptors.
    - Locate mechanical equipment on the rooftop of commercial buildings away from sensitive receptors (to the extent feasible) and screen the equipment behind building parapets.
    - Limit the hours of operation for noise sources that are predicted to exceed the applicable City noise level limits at proposed sensitive receptors.
    - Upgrade window and door construction of residences proposed nearest to commercial activities such as delivery truck routes to reduce the potential for nighttime sleep disturbance.

Issue 4: Off-Site Commercial Noise Levels at Proposed Residences

As shown in Figure 1, an existing shopping center (Grocery Outlet) is located adjacent to a proposed multi-family residential lot at the northeast end of the development. The primary noise sources commonly associated with shopping center operations are parking lot movements, on-site delivery truck circulation, loading dock operations, and mechanical equipment (e.g., rooftop HVAC units), garbage/cardboard compaction, and food cold storage equipment, etc.).

According to BAC staff field observations, the rooftop mounted cooling system equipment of the grocery center building was completely shielded from view by the building's rooftop parapet. In addition, the grocery center parking lot (located on the north side of the store) would be screened from view of the proposed multi-family residential lot by the grocery store building envelope. As a result, the primary noise sources associated with future operations at the adjacent grocery center have been identified as delivery truck circulation and loading dock operations, located along the south side of the store building adjacent to the project site.

Because delivery truck passbys would occur for a brief duration (i.e., less than 1 minute), the applicable Los Banos Municipal Code noise level descriptor for heavy truck passbys at the adjacent commercial use would be the maximum noise level metric (L_{max}). Because loading dock activities could occur throughout the course of an hour (i.e., in excess of 30 minutes), the applicable Municipal Code noise level descriptor for loading dock activities would be the median noise level metric (L_{50}). The City's exterior noise level limits are to be applied at a location 50 feet from the affected sensitive use.

Noise measurement site ST-1 was specifically selected to capture noise levels associated with the adjacent commercial operations at the project property line. According to the results from the short-term survey at site ST-1, measured ambient noise levels ranged from 40 dB L_{50} to 56 dB L_{50} and from 40 dB L_{max} to 46 dB L_{max}. However, BAC field staff noted that loading dock operations nor delivery truck activities were present during the short-term noise survey at site ST-1. According to BAC file data, single-event heavy truck passby noise levels are approximately 74 dB L_{max} and 83 dB SEL at a reference distance of 50 feet. BAC file data also indicates that grocery store loading dock average noise levels are approximately 63 dB L_{eq} at a reference distance of 50 feet. Median (L_{50}) loading dock noise levels would be approximately 5 dB less than hourly average noise levels (58 dB L_{eq}).

Based on the above-mentioned reference noise levels, future delivery truck circulation noise levels from the adjacent shopping center compute to approximately 75 dB L_{max} at a distance of 45 feet. Further, future shopping center loading dock noise levels compute to approximately 55 dB L_{50} at a distance of 70 feet. Thus, should sensitive uses (common outdoor areas) of the proposed multi-family residential lot be located within these distances, noise levels associated with future commercial (grocery center) activities could potentially exceed the applicable Los Banos Municipal Code daytime and/or nighttime exterior noise level limits.

To satisfy the applicable Los Banos Municipal Code noise level limits at proposed sensitive uses of the development, the following design measures should be implemented:

- The construction of an 8-foot tall solid noise barrier along the northern project property line as indicated in Figure 8. It is recognized that an existing 6-foot-tall CMU wall is currently constructed along the northern project property boundary. However, it is recommended that either the 6-foot-tall wall is extended to 8-feet in height, or an additional 8-foot-tall noise barrier be constructed adjacent to the existing 6-foot wall. Appropriate materials for noise walls include precast concrete or masonry block. Other materials may be acceptable provided they have a density of approximately 4 pounds per square foot.
- Ensure that the orientation of proposed structures on the multi-family residential lot completely shield the common outdoor areas from the adjacent commercial use to the north.
- All upper-floor bedroom windows of the multi-family residences located adjacent to the commercial parcel which would have a view of the commercial parcel truck lane and loading dock area should be upgraded to a minimum rating of STC 32.

Issue 5: Off-Site Industrial Noise Levels at Proposed Residences

The adjacent parcel to the north of the project property contains industrial uses formerly associated with a cheese plant. It is BAC's understanding that the cheese plant is no longer in operation and has been closed indefinitely. However, it is possible that industrial uses could have operations on this property in the future. The primary noise sources commonly associated with industrial operations consist of parking lot movements, on-site delivery truck circulation, loading dock operations, and mechanical equipment.

Section 9-3.2706 of the Los Banos Municipal Code contains an exemption applicable to industrial uses. Specifically, Section 9-3.2706(f) provides an exemption for noise sources associated with existing food processing, agricultural packing, or dairy or other industrial or commercial operations provided the noise level generated by such operations do not exceed current levels. It is not clear at the time of preparing this study whether this exemption would be applicable to future uses of the adjacent industrial property. Further, future uses of the industrial property are currently unknown.

To satisfy the applicable Los Banos Municipal Code noise level limits at proposed sensitive uses of the development, the following design measures should be implemented:

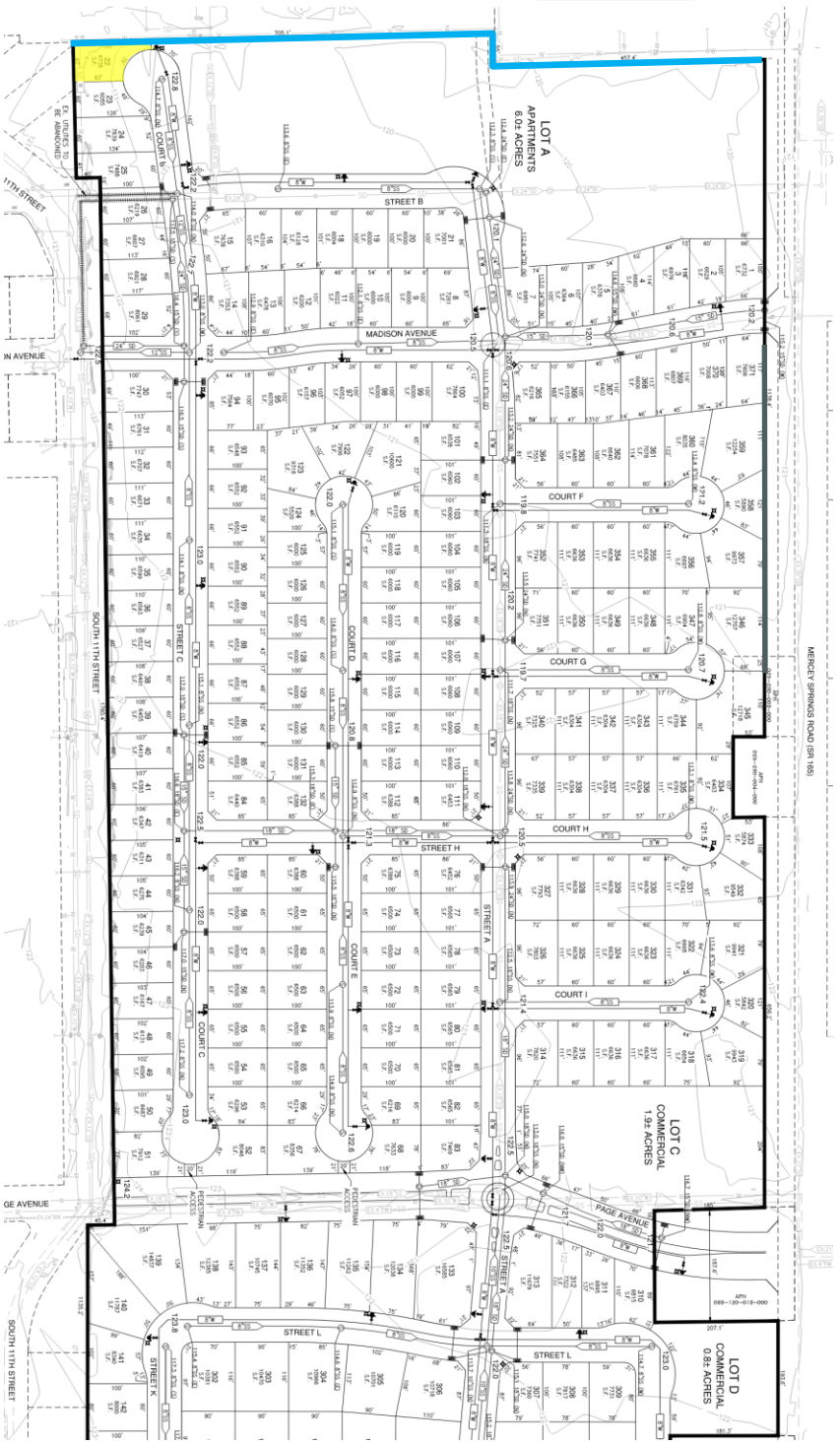
- The construction of an 8-foot tall solid noise barrier along the northern project property line as indicated in Figure 8. It is recognized that an existing 6-foot-tall CMU wall is currently constructed along the northern project property boundary. However, it is recommended that either the 6-foot-tall wall is extended to 8-feet in height, or an additional 8-foot-tall noise barrier be constructed adjacent to the existing 6-foot wall. Appropriate materials for noise walls include precast concrete or masonry block. Other materials may be acceptable provided they have a density of approximately 4 pounds per square foot.
- Ensure that the orientation of proposed structures on the multi-family residential lot adjacent to the industrial uses completely shield the common outdoor areas from the adjacent industrial uses to the north.

- All upper-floor bedroom windows of the multi-family and single-family residences located adjacent to the industrial uses should be upgraded to minimum STC rating of 32.
- Provide disclosure statements to prospective residents within 300 feet of the industrial property notifying them of the potential for elevated noise levels associated with future activities on the industrial parcel to the north.

Issue 6: Aircraft Operations Noise Levels at Proposed Residences

Los Banos Municipal Airport is located approximately 1.5 miles west of the Presidential Estates East development area. According to the Compatibility Policy Map contained in the Merced Merced County Airport Land Use Compatibility Plan (ALUCP), a small portion of the project area (northwest corner) is located within the airport's Influence Area contour. The Merced County ALUCP sets allowed uses dependent on Compatibility Zone designation and development standards pertaining to building height, intensity, and open land. The Compatibility Zone D ("Other Overflight Areas") airport contour is present in northwest corner of the project area. Compatibility Zone D is the least restrictive zone, and allows most land uses, including residential, with some conditions regarding building heights and other potential hazards.

The Los Banos General Plan establishes exterior noise level standards of 60 dB DNL/CNEL and 65 dB DNL/CNEL for single-family and multi-family residential uses (respectively) affected by transportation noise sources (i.e., aircraft). The General Plan also identifies an interior noise level standard of 45 dB DNL/CNEL for residential uses. According to the results from the BAC long-term noise level survey, ambient noise levels at the northwest portion of the project area, where the airport's Compatibility Zone D contour overlaps, were measured to be 56 dB DNL. Based on the results from the ambient noise level survey, noise level exposure associated with normal operations at the Los Banos Municipal Airport are not expected to exceed applicable Los Banos General Plan exterior or interior noise level criteria at proposed residential uses within the project area.



Legend

- Recommended 8-Foot-Tall Solid Noise Barrier
- Recommended STC 32 Windows (Upper-Floors)

N

Scale (Feet)

0 150 300

Presidential Estates East
Los Banos, California

Improvement Measures
Commercial / Industrial Noise

Figure 8

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Conclusion

This report evaluates potential noise and vibration impacts associated with the proposed Presidential Estates East Specific Plan development. This assessment concludes that, with implementation of mitigation measures presented herein, the project would result in less than significant noise and vibration impacts.

Appendix A

Acoustical Terminology

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
Attenuation	The reduction of an acoustic signal.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.
Ldn	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
Leq	Equivalent or energy-averaged sound level.
Lmax	The highest root-mean-square (RMS) sound level measured over a given period of time.
Loudness	A subjective term for the sensation of the magnitude of sound.
Masking	The amount (or the process) by which the threshold of audibility is for one sound is raised by the presence of another (masking) sound.
Noise	Unwanted sound.
Peak Noise	The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the Maximum level, which is the highest RMS level.
RT_{60}	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
Sabin	The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 sabin.
SEL	A rating, in decibels, of a discrete event, such as an aircraft flyover or train passby, that compresses the total sound energy of the event into a 1-s time period.
Threshold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshold of Pain	Approximately 120 dB above the threshold of hearing.

Legend

A Site LT-1: Noise survey equipment, looking south towards residence and along Mercey Springs Rd

B Site LT-1: Noise survey equipment, looking east towards Mercey Springs Rd

C Site LT-1: Looking west from survey site towards project area

D Site LT-1: Looking north from survey site along Mercey Springs Rd

Presidential Estates East
Los Banos, CA

Field Survey Photographs

Appendix B-1

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Legend

A Site LT-2: Noise survey equipment, looking west towards residence

B Site LT-2: Looking south along property line near survey site

C Site LT-2: Looking north near survey site along property line towards industrial use

D Site LT-2: Looking northeast near survey site towards industrial use

Presidential Estates East
Los Banos, CA

Field Survey Photographs

Appendix B-2

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Legend

A Site ST-1: Noise and vibration survey equipment, looking east towards Mercey Springs Rd along commercial

Presidential Estates East
Los Banos, CA

Field Survey Photographs

Appendix B-3

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Legend

A Site ST-3: Noise and vibration survey equipment, looking east along Pioneer Road

B Site ST-4: Noise and vibration survey equipment, looking north towards industrial

Presidential Estates East
Los Banos, CA

Field Survey Photographs

Appendix B-4

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Appendix C-1
Long-Term Ambient Noise Monitoring Results - Site LT-1
Presidential Estates East - Los Banos, California
6/5/25 - 6/6/25

Hour	Leq	Lmax	L50	L90
4:00 PM	67	90	65	56
5:00 PM	67	81	65	55
6:00 PM	66	81	64	53
7:00 PM	66	90	63	51
8:00 PM	65	83	62	50
9:00 PM	63	78	58	47
10:00 PM	61	77	51	43
11:00 PM	59	79	45	40
12:00 AM	59	85	44	39
1:00 AM	57	77	41	36
2:00 AM	56	78	39	35
3:00 AM	60	78	42	37
4:00 AM	61	78	45	40
5:00 AM	65	80	55	43
6:00 AM	65	80	58	45
7:00 AM	67	80	65	50
8:00 AM	67	78	65	49
9:00 AM	66	89	63	45
10:00 AM	67	78	65	51
11:00 AM	67	81	65	54
12:00 PM	67	83	65	54
1:00 PM	67	87	66	57
2:00 PM	67	80	66	56
3:00 PM	67	78	66	56

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	67	63	67	65	56	61
Lmax (Maximum)	90	78	82	85	77	79
L50 (Median)	66	58	64	58	39	47
L90 (Background)	57	45	52	45	35	40

Computed DNL (dB)	69
% Daytime Energy	84%
% Nighttime Energy	16%

GPS Coordinates
37°02'39.26" N
120°50'09.11" W

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Appendix C-2
Long-Term Ambient Noise Monitoring Results - Site LT-1
Presidential Estates East - Los Banos, California
6/6/25 - 6/7/25

Hour	Leq	Lmax	L50	L90
4:00 PM	67	86	66	57
5:00 PM	67	78	65	56
6:00 PM	68	96	66	56
7:00 PM	66	84	64	51
8:00 PM	65	78	62	51
9:00 PM	64	82	60	48
10:00 PM	63	87	57	46
11:00 PM	61	78	51	42
12:00 AM	59	79	45	39
1:00 AM	60	83	43	38
2:00 AM	57	78	39	35
3:00 AM	57	78	40	35
4:00 AM	59	78	41	37
5:00 AM	63	78	51	41
6:00 AM	63	81	53	43
7:00 AM	64	82	55	44
8:00 AM	65	80	59	47
9:00 AM	65	81	62	49
10:00 AM	65	80	63	47
11:00 AM	65	78	63	48
12:00 PM	67	95	63	51
1:00 PM	66	83	63	50
2:00 PM	65	80	62	49
3:00 PM	65	78	63	51

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	68	64	66	63	57	61
Lmax (Maximum)	96	78	83	87	78	80
L50 (Median)	66	55	62	57	39	46
L90 (Background)	57	44	50	46	35	39

Computed DNL (dB)	68
% Daytime Energy	84%
% Nighttime Energy	16%

GPS Coordinates
37°02'39.26" N
120°50'09.11" W

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Appendix C-3
Long-Term Ambient Noise Monitoring Results - Site LT-2
Presidential Estates East - Los Banos, California
Friday, June 6, 2025

Hour	Leq	Lmax	L50	L90
4:00 PM	47	59	47	46
5:00 PM	47	55	47	46
6:00 PM	47	54	47	46
7:00 PM	48	57	47	46
8:00 PM	48	59	48	47
9:00 PM	49	59	48	47
10:00 PM	49	58	48	47
11:00 PM	48	58	48	47
12:00 AM	54	69	50	47
1:00 AM	48	59	47	46
2:00 AM	49	67	48	46
3:00 AM	48	56	47	46
4:00 AM	48	61	47	46
5:00 AM	48	61	48	46
6:00 AM	48	59	47	46
7:00 AM	48	58	47	46
8:00 AM	49	61	48	47
9:00 AM	49	65	49	48
10:00 AM	49	62	49	47
11:00 AM	48	58	48	47
12:00 PM	53	75	49	48
1:00 PM	50	70	49	48
2:00 PM	49	69	48	47
3:00 PM	53	86	48	47

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	53	47	49	54	48	49
Lmax (Maximum)	86	54	63	69	56	61
L50 (Median)	49	47	48	50	47	48
L90 (Background)	48	46	47	47	46	47

Computed DNL (dB)	56
% Daytime Energy	63%
% Nighttime Energy	37%

GPS Coordinates
39°03'17.62" N
121°50'20.48" W

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Appendix C-4
Long-Term Ambient Noise Monitoring Results - Site LT-2
Presidential Estates East - Los Banos, California
Saturday, June 7, 2025

Hour	Leq	Lmax	L50	L90
4:00 PM	47	56	47	46
5:00 PM	47	55	47	46
6:00 PM	47	52	47	46
7:00 PM	47	61	47	46
8:00 PM	47	52	47	46
9:00 PM	48	59	48	47
10:00 PM	48	66	48	47
11:00 PM	49	71	48	47
12:00 AM	48	59	48	47
1:00 AM	48	60	48	47
2:00 AM	48	59	48	47
3:00 AM	49	65	48	47
4:00 AM	50	70	49	48
5:00 AM	49	61	48	47
6:00 AM	51	80	49	48
7:00 AM	50	62	50	48
8:00 AM	50	68	50	48
9:00 AM	49	67	49	47
10:00 AM	53	78	47	46
11:00 AM	57	85	49	47
12:00 PM	50	62	50	48
1:00 PM	50	67	49	48
2:00 PM	50	63	49	48
3:00 PM	50	72	49	48

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	57	47	50	51	48	49
Lmax (Maximum)	85	52	64	80	59	66
L50 (Median)	50	47	48	49	48	48
L90 (Background)	48	46	47	48	47	47

Computed DNL (dB)	56
% Daytime Energy	69%
% Nighttime Energy	31%

GPS Coordinates
39°03'17.62" N
121°50'20.48" W

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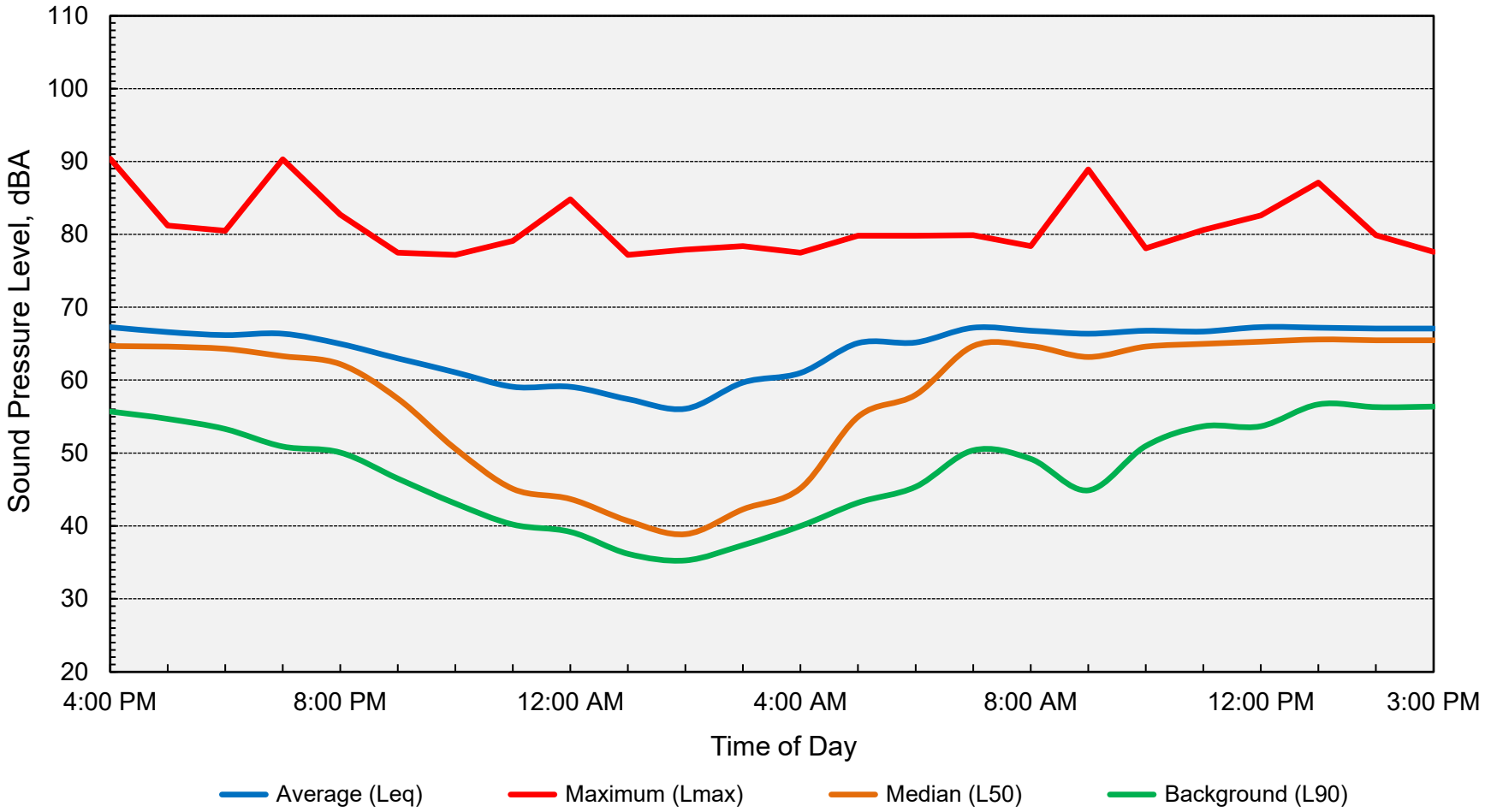
Appendix D-1
Long-Term Ambient Noise Monitoring Results - Site LT-1
Presidential Estates East - Los Banos, California
6/5/25 - 6/6/25



Computed DNL = 69 dB

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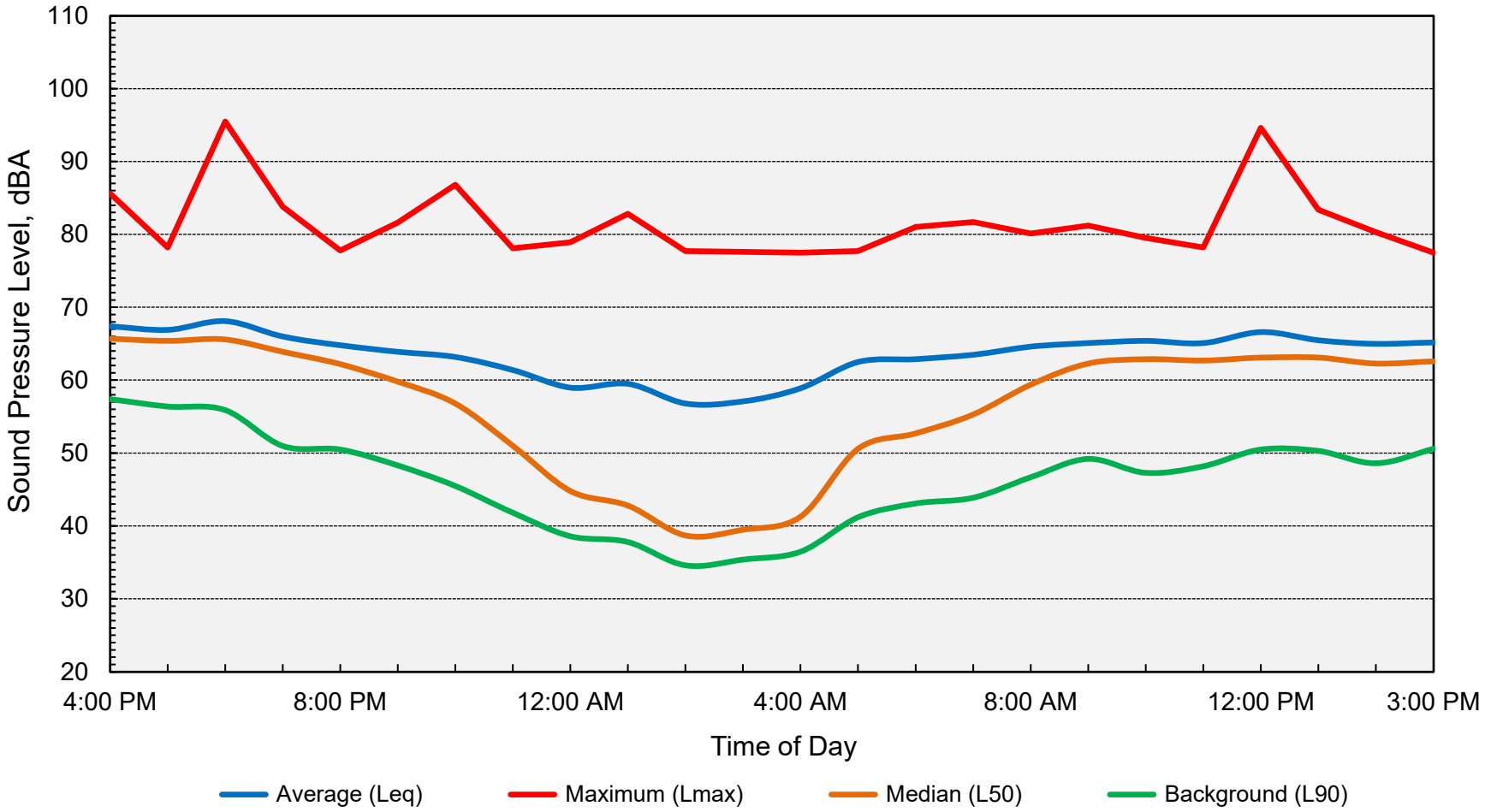
Appendix D-2
Long-Term Ambient Noise Monitoring Results - Site LT-1
Presidential Estates East - Los Banos, California
6/6/25 - 6/7/25



Computed DNL = 68 dB

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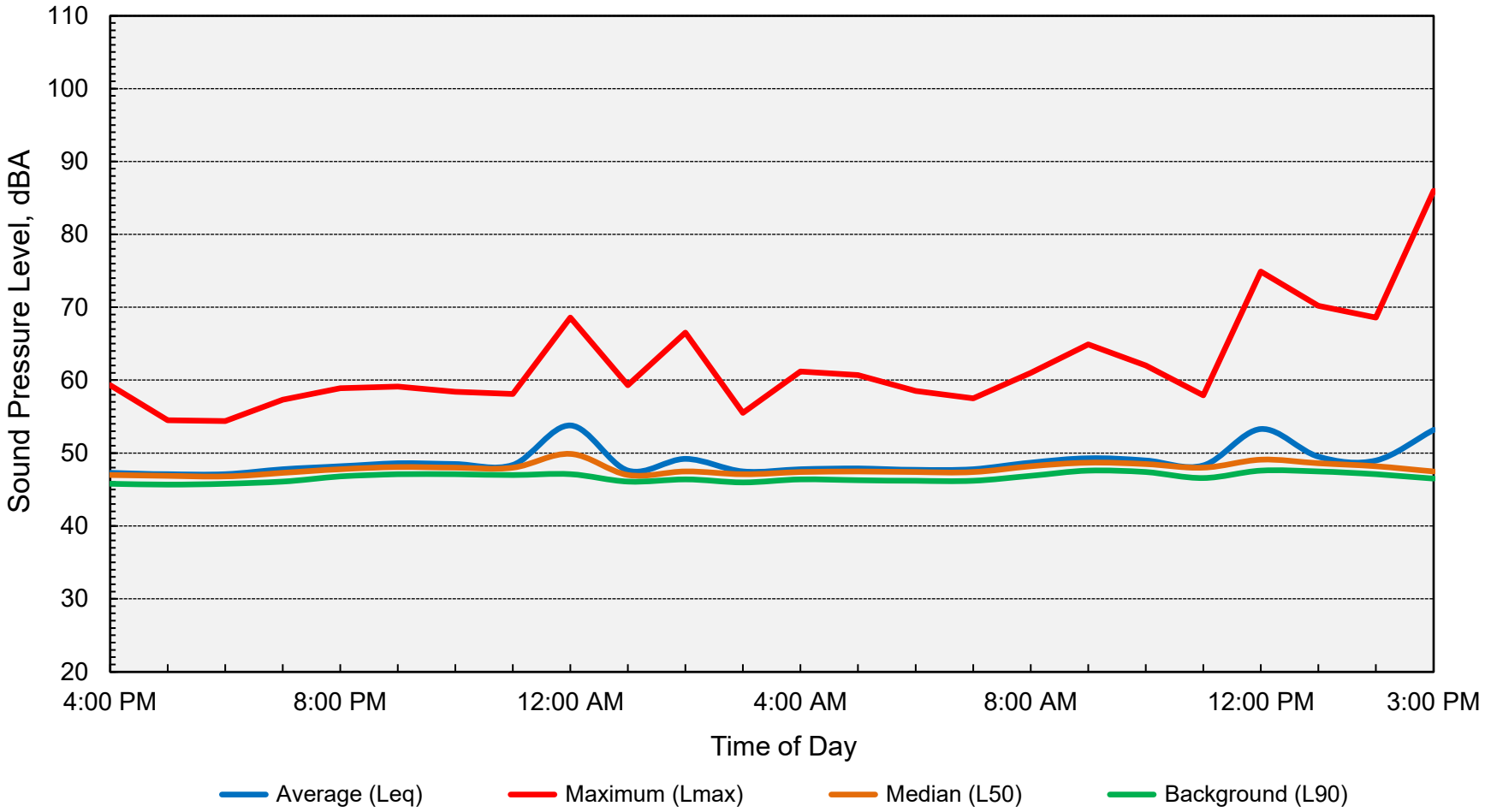
Appendix D-3
Long-Term Ambient Noise Monitoring Results - Site LT-2
Presidential Estates East - Los Banos, California
Friday, June 6, 2025



Computed DNL = 56 dB

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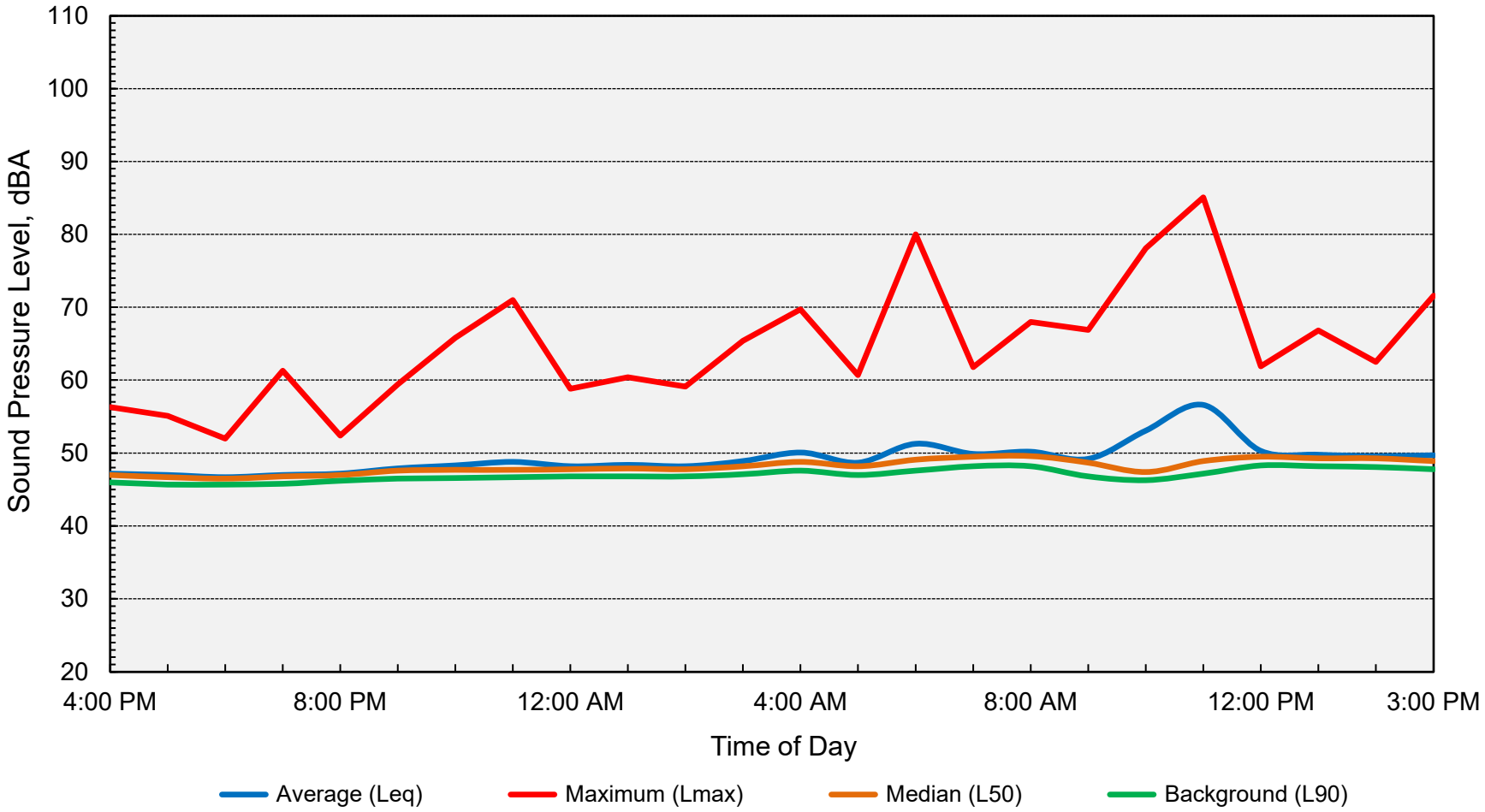
Appendix D-4
Long-Term Ambient Noise Monitoring Results - Site LT-2
Presidential Estates East - Los Banos, California
Saturday, June 7, 2025



Computed DNL = 56 dB

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Appendix E
FHWA Highway Traffic Noise Prediction Model Inputs
Presidential Estates East
Existing No Project Conditions
Run Date: 7/1/2025

Segment ID	Roadway	Roadway Segment	ADT	Day %	Night %	Medium Truck %	Heavy Truck %	Speed	Distance to Receptor (ft)	Offset (dB)
1	Pacheco Blvd	West of 6th St	18,085	80	20	3	6	35	100	-5
2	Pacheco Blvd	6th St to 7th St	17,465	80	20	3	6	35	100	-5
3	Pacheco Blvd	7th St to 11th St	17,340	80	20	3	6	25	100	-5
4	Pacheco Blvd	11th St to H St	20,355	80	20	3	6	35	250	-10
5	Pacheco Blvd	H St to Mercey Springs Rd	22,350	80	20	3	6	35	100	0
6	Pacheco Blvd	Mercey Springs Rd to Place Rd	18,995	80	20	3	6	35	200	-5
7	Pacheco Blvd	East of Place Rd	18,395	80	20	3	6	45	200	-5
8	Mercey Springs Rd	North of B St	13,110	80	20	1	7	35	60	-5
9	Mercey Springs Rd	B St to Pacheco Blvd	11,940	80	20	1	7	35	85	0
10	Mercey Springs Rd	Pacheco Blvd to Madison Ave	10,935	80	20	1	7	45	300	0
11	Mercey Springs Rd	Madison Ave to Scripps Dr	10,935	80	20	1	7	45	50	-5
12	Mercey Springs Rd	Scripps Dr to Pioneer Rd	8,950	80	20	1	7	45	80	0
13	Mercey Springs Rd	South of Pioneer Rd	2,815	80	20	1	7	45	50	0
14	6th St	North of Pacheco Blvd	3,385	80	20	2	1	25	100	0
15	6th St	South of Pacheco Blvd	1,805	80	20	1	1	25	50	0
16	7th St	North of Pacheco Blvd	3,560	80	20	1	1	25	80	0
17	7th St	South of Pacheco Blvd	2,925	80	20	1	1	25	75	0
18	11th St	Pacheco Blvd to Jefferson Ave	3,185	80	20	1	1	25	50	0
19	11th St	Jefferson Ave to Page Ave	3,400	80	20	1	1	25	50	0
20	11th St	Page Ave to Pioneer Rd	2,840	80	20	1	1	25	50	0
21	H St	North of Pacheco Blvd	2,475	80	20	2	2	35	100	0
22	Place Rd	South of Pacheco Blvd	4,120	80	20	1	1	35	100	-5
23	B St	West of Mercey Springs Rd	6,770	80	20	1	1	30	80	0
24	B St	East of Mercey Springs Rd	7,310	80	20	1	1	30	100	-5
25	Scripps Dr	East of Mercey Springs Rd	4,785	80	20	1	1	25	60	-5
26	Pioneer Rd	West of 11th St	7,445	80	20	2	2	45	50	0
27	Pioneer Rd	11th St to Mercey Springs Rd	7,025	80	20	2	2	35	50	0
28	Jefferson Ave	West of 11th St	755	80	20	1	1	25	120	-5
29	Page Ave	West of 11th St	2,275	80	20	1	1	25	50	0

Notes: 1. Noise-sensitive receptors considered in this analysis are existing residences, schools, churches, hospitals and senior care facilities.
2. Offsets applied where existing sound walls and/or building façades would provide screening/shielding of traffic noise levels at outdoor areas of receptor.

Appendix F
FHWA Highway Traffic Noise Prediction Model Inputs
Presidential Estates East
Existing+Project Conditions
Run Date: 7/1/2025

Segment ID	Roadway	Roadway Segment	ADT	Day %	Night %	Medium Truck %	Heavy Truck %	Speed	Distance to Receptor (ft)	Offset (dB)
1	Pacheco Blvd	West of 6th St	18,420	80	20	3	6	35	100	-5
2	Pacheco Blvd	6th St to 7th St	18,060	80	20	3	6	35	100	-5
3	Pacheco Blvd	7th St to 11th St	18,195	80	20	3	6	25	100	-5
4	Pacheco Blvd	11th St to H St	21,405	80	20	3	6	35	250	-10
5	Pacheco Blvd	H St to Mercey Springs Rd	23,540	80	20	3	6	35	100	0
6	Pacheco Blvd	Mercey Springs Rd to Place Rd	19,605	80	20	3	6	35	200	-5
7	Pacheco Blvd	East of Place Rd	19,220	80	20	3	6	45	200	-5
8	Mercey Springs Rd	North of B St	13,550	80	20	1	7	35	60	-5
9	Mercey Springs Rd	B St to Pacheco Blvd	12,380	80	20	1	7	35	85	0
10	Mercey Springs Rd	Pacheco Blvd to Madison Ave	12,815	80	20	1	7	45	300	0
11	Mercey Springs Rd	Madison Ave to Scripps Dr	12,815	80	20	1	7	45	50	-5
12	Mercey Springs Rd	Scripps Dr to Pioneer Rd	9,315	80	20	1	7	45	80	0
13	Mercey Springs Rd	South of Pioneer Rd	2,980	80	20	1	7	45	50	0
14	6th St	North of Pacheco Blvd	3,785	80	20	2	1	25	100	0
15	6th St	South of Pacheco Blvd	1,945	80	20	1	1	25	50	0
16	7th St	North of Pacheco Blvd	3,955	80	20	1	1	25	80	0
17	7th St	South of Pacheco Blvd	3,060	80	20	1	1	25	75	0
18	11th St	Pacheco Blvd to Jefferson Ave	4,080	80	20	1	1	25	50	0
19	11th St	Jefferson Ave to Page Ave	4,480	80	20	1	1	25	50	0
20	11th St	Page Ave to Pioneer Rd	3,125	80	20	1	1	25	50	0
21	H St	North of Pacheco Blvd	2,905	80	20	2	2	35	100	0
22	Place Rd	South of Pacheco Blvd	4,335	80	20	1	1	35	100	-5
23	B St	West of Mercey Springs Rd	6,860	80	20	1	1	30	80	0
24	B St	East of Mercey Springs Rd	7,400	80	20	1	1	30	100	-5
25	Scripps Dr	East of Mercey Springs Rd	5,110	80	20	1	1	25	60	-5
26	Pioneer Rd	West of 11th St	7,875	80	20	2	2	45	50	0
27	Pioneer Rd	11th St to Mercey Springs Rd	7,500	80	20	2	2	35	50	0
28	Jefferson Ave	West of 11th St	940	80	20	1	1	25	120	-5
29	Page Ave	West of 11th St	2,650	80	20	1	1	25	50	0

Notes: 1. Noise-sensitive receptors considered in this analysis are existing residences, schools, churches, hospitals and senior care facilities.
2. Offsets applied where existing sound walls and/or building façades would provide screening/shielding of traffic noise levels at outdoor areas of receptor.

Appendix G
FHWA Highway Traffic Noise Prediction Model Inputs
Presidential Estates East
Cumulative No Project Conditions
Run Date: 7/1/2025

Segment ID	Roadway	Roadway Segment	ADT	Day %	Night %	Medium Truck %	Heavy Truck %	Speed	Distance to Receptor (ft)	Offset (dB)
1	Pacheco Blvd	West of 6th St	28,315	80	20	3	6	35	100	-5
2	Pacheco Blvd	6th St to 7th St	26,405	80	20	3	6	35	100	-5
3	Pacheco Blvd	7th St to 11th St	27,195	80	20	3	6	25	100	-5
4	Pacheco Blvd	11th St to H St	28,000	80	20	3	6	35	250	-10
5	Pacheco Blvd	H St to Mercey Springs Rd	30,110	80	20	3	6	35	100	0
6	Pacheco Blvd	Mercey Springs Rd to Place Rd	27,190	80	20	3	6	35	200	-5
7	Pacheco Blvd	East of Place Rd	29,925	80	20	3	6	45	200	-5
8	Mercey Springs Rd	North of B St	15,610	80	20	1	7	35	60	-5
9	Mercey Springs Rd	B St to Pacheco Blvd	15,060	80	20	1	7	35	85	0
10	Mercey Springs Rd	Pacheco Blvd to Madison Ave	9,970	80	20	1	7	45	300	0
11	Mercey Springs Rd	Madison Ave to Scripps Dr	9,970	80	20	1	7	45	50	-5
12	Mercey Springs Rd	Scripps Dr to Pioneer Rd	10,885	80	20	1	7	45	80	0
13	Mercey Springs Rd	South of Pioneer Rd	5,685	80	20	1	7	45	50	0
14	6th St	North of Pacheco Blvd	5,300	80	20	2	1	25	100	0
15	6th St	South of Pacheco Blvd	2,360	80	20	1	1	25	50	0
16	7th St	North of Pacheco Blvd	4,255	80	20	1	1	25	80	0
17	7th St	South of Pacheco Blvd	3,465	80	20	1	1	25	75	0
18	11th St	Pacheco Blvd to Jefferson Ave	5,055	80	20	1	1	25	50	0
19	11th St	Jefferson Ave to Page Ave	3,870	80	20	1	1	25	50	0
20	11th St	Page Ave to Pioneer Rd	2,915	80	20	1	1	25	50	0
21	H St	North of Pacheco Blvd	3,620	80	20	2	2	35	100	0
22	Place Rd	South of Pacheco Blvd	4,935	80	20	1	1	35	100	-5
23	B St	West of Mercey Springs Rd	7,660	80	20	1	1	30	80	0
24	B St	East of Mercey Springs Rd	8,910	80	20	1	1	30	100	-5
25	Scripps Dr	East of Mercey Springs Rd	5,870	80	20	1	1	25	60	-5
26	Pioneer Rd	West of 11th St	15,855	80	20	2	2	45	50	0
27	Pioneer Rd	11th St to Mercey Springs Rd	15,310	80	20	2	2	35	50	0
28	Jefferson Ave	West of 11th St	1,365	80	20	1	1	25	120	-5
29	Page Ave	West of 11th St	2,475	80	20	1	1	25	50	0

Notes: 1. Noise-sensitive receptors considered in this analysis are existing residences, schools, churches, hospitals and senior care facilities.
2. Offsets applied where existing sound walls and/or building façades would provide screening/shielding of traffic noise levels at outdoor areas of receptor.

Appendix H
FHWA Highway Traffic Noise Prediction Model Inputs
Presidential Estates East
Cumulative+Project Conditions
Run Date: 7/1/2025

Segment ID	Roadway	Roadway Segment	ADT	Day %	Night %	Medium Truck %	Heavy Truck %	Speed	Distance to Receptor (ft)	Offset (dB)
1	Pacheco Blvd	West of 6th St	28,650	80	20	3	6	35	100	-5
2	Pacheco Blvd	6th St to 7th St	27,000	80	20	3	6	35	100	-5
3	Pacheco Blvd	7th St to 11th St	28,050	80	20	3	6	25	100	-5
4	Pacheco Blvd	11th St to H St	29,050	80	20	3	6	35	250	-10
5	Pacheco Blvd	H St to Mercey Springs Rd	31,300	80	20	3	6	35	100	0
6	Pacheco Blvd	Mercey Springs Rd to Place Rd	27,800	80	20	3	6	35	200	-5
7	Pacheco Blvd	East of Place Rd	30,750	80	20	3	6	45	200	-5
8	Mercey Springs Rd	North of B St	16,050	80	20	1	7	35	60	-5
9	Mercey Springs Rd	B St to Pacheco Blvd	15,500	80	20	1	7	35	85	0
10	Mercey Springs Rd	Pacheco Blvd to Madison Ave	11,850	80	20	1	7	45	300	0
11	Mercey Springs Rd	Madison Ave to Scripps Dr	11,850	80	20	1	7	45	50	-5
12	Mercey Springs Rd	Scripps Dr to Pioneer Rd	11,250	80	20	1	7	45	80	0
13	Mercey Springs Rd	South of Pioneer Rd	5,850	80	20	1	7	45	50	0
14	6th St	North of Pacheco Blvd	5,700	80	20	2	1	25	100	0
15	6th St	South of Pacheco Blvd	2,500	80	20	1	1	25	50	0
16	7th St	North of Pacheco Blvd	4,650	80	20	1	1	25	80	0
17	7th St	South of Pacheco Blvd	3,600	80	20	1	1	25	75	0
18	11th St	Pacheco Blvd to Jefferson Ave	5,950	80	20	1	1	25	50	0
19	11th St	Jefferson Ave to Page Ave	4,950	80	20	1	1	25	50	0
20	11th St	Page Ave to Pioneer Rd	3,200	80	20	1	1	25	50	0
21	H St	North of Pacheco Blvd	4,050	80	20	2	2	35	100	0
22	Place Rd	South of Pacheco Blvd	5,150	80	20	1	1	35	100	-5
23	B St	West of Mercey Springs Rd	7,750	80	20	1	1	30	80	0
24	B St	East of Mercey Springs Rd	9,000	80	20	1	1	30	100	-5
25	Scripps Dr	East of Mercey Springs Rd	6,195	80	20	1	1	25	60	-5
26	Pioneer Rd	West of 11th St	16,285	80	20	2	2	45	50	0
27	Pioneer Rd	11th St to Mercey Springs Rd	15,785	80	20	2	2	35	50	0
28	Jefferson Ave	West of 11th St	1,550	80	20	1	1	25	120	-5
29	Page Ave	West of 11th St	2,850	80	20	1	1	25	50	0

Notes: 1. Noise-sensitive receptors considered in this analysis are existing residences, schools, churches, hospitals and senior care facilities.
2. Offsets applied where existing sound walls and/or building façades would provide screening/shielding of traffic noise levels at outdoor areas of receptor.

Appendix I-1

FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Prediction Worksheet

Project Information:

Job Number: 2018-127
Project Name: Presidential Estates East Specific Plan
Roadway Name: Mercey Springs Road - North of Scripps Drive

Traffic Data:

Year: Cumulative Plus Project
Average Daily Traffic Volume: 11,850
Percent Daytime Traffic: 80
Percent Nighttime Traffic: 20
Percent Medium Trucks (2 axle): 1
Percent Heavy Trucks (3+ axle): 7
Assumed Vehicle Speed (mph): 45
Intervening Ground Type (hard/soft): **Soft**

Traffic Noise Levels:

				DNL (dBA)			
Location:	Description	Distance	Offset (dB)	Autos	Medium Trucks	Heavy Trucks	Total
1	Nearest SFR Backyards	85		64	52	65	68
2	Nearest SFR 1st Floor Facades	95		63	52	65	67
3	Nearest SFR 2nd Floor Facades	95	2	65	54	67	69

Traffic Noise Contours (No Calibration Offset):

DNL Contour (dBA)	Distance from Centerline (ft)
75	28
70	61
65	131
60	281

Notes:
1. Future (Cumulative Plus Project) average daily traffic volume for Mercey Springs Road calculated by using traffic inputs (peak hour turning movement data) provided by the project traffic consultant (Fehr & Peers). Specifically, future Mercy Springs Road average daily traffic (ADT) volume was conservatively estimated by applying a factor of 5 to the sum of AM and PM peak hour conditions.
2. Truck percentages obtained from published Caltrans data (2022).
3. A +2 dB offset was applied at 2nd floor facades to account for reduced ground absorption at elevated locations.

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Appendix I-2

FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Prediction Worksheet

Project Information:

Job Number: 2018-127
Project Name: Presidential Estates East Specific Plan
Roadway Name: Mercey Springs Road - South of Scripps Drive

Traffic Data:

Year: Cumulative Plus Project
Average Daily Traffic Volume: 11,250
Percent Daytime Traffic: 80
Percent Nighttime Traffic: 20
Percent Medium Trucks (2 axle): 1
Percent Heavy Trucks (3+ axle): 7
Assumed Vehicle Speed (mph): 45
Intervening Ground Type (hard/soft): **Soft**

Traffic Noise Levels:

				DNL (dBA)			
Location:	Description	Distance	Offset (dB)	Autos	Medium Trucks	Heavy Trucks	Total
1	Nearest SFR Backyards	85		64	52	65	68
2	Nearest SFR 1st Floor Facades	95		63	51	64	67
3	Nearest SFR 2nd Floor Facades	95	2	65	53	66	69

Traffic Noise Contours (No Calibration Offset):

DNL Contour (dBA)	Distance from Centerline (ft)
75	27
70	59
65	126
60	272

Notes:
1. Future (Cumulative Plus Project) average daily traffic volume for Mercey Springs Road calculated by using traffic inputs (peak hour turning movement data) provided by the project traffic consultant (Fehr & Peers). Specifically, future Mercy Springs Road average daily traffic (ADT) volume was conservatively estimated by applying a factor of 5 to the sum of AM and PM peak hour conditions.
2. Truck percentages obtained from published Caltrans data (2022).
3. A +2 dB offset was applied at 2nd floor facades to account for reduced ground absorption at elevated locations.

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Appendix I-3

FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Prediction Worksheet

Project Information:

Job Number: 2018-127
Project Name: Presidential Estates East Specific Plan
Roadway Name: Pioneer Road

Traffic Data:

Year: Cumulative Plus Project
Average Daily Traffic Volume: 15,785
Percent Daytime Traffic: 80
Percent Nighttime Traffic: 20
Percent Medium Trucks (2 axle): 1
Percent Heavy Trucks (3+ axle): 3
Assumed Vehicle Speed (mph): 35
Intervening Ground Type (hard/soft): **Soft**

Traffic Noise Levels:

				DNL (dBA)			
Location:	Description	Distance	Offset (dB)	Autos	Medium Trucks	Heavy Trucks	Total
1	Nearest SFR Backyards	75		63	53	63	66
2	Nearest SFR 1st Floor Facades	85		62	52	62	65
3	Nearest SFR 2nd Floor Facades	85	2	64	54	64	67

Traffic Noise Contours (No Calibration Offset):

DNL Contour (dBA)	Distance from Centerline (ft)
75	19
70	41
65	88
60	190

Notes:
1. Future (Cumulative Plus Project) average daily traffic volume for Pioneer Road calculated by using traffic inputs (peak hour turning movement data) provided by the project traffic consultant (Fehr & Peers). Specifically, future Pioneer Road average daily traffic (ADT) volume was conservatively estimated by applying a factor of 5 to the sum of AM and PM peak hour conditions.
2. Truck percentages obtained from published Caltrans data (2022).
3. A +2 dB offset was applied at 2nd floor facades to account for reduced ground absorption at elevated locations.

Appendix J-1
FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Barrier Effectiveness Prediction Worksheet

Project Information:

Job Number: 2018-127
Project Name: Presidential Estates East Specific Plan
Roadway Name: Mercey Springs Road - North of Scripps Drive

Noise Level Data:

Year: Future
Auto (DNL) dB: 64
Medium Truck (DNL) dB: 52
Heavy Truck (DNL) dB: 65

Site Geometry:

Receiver Description: Nearest SFR Backyards
Centerline to Barrier Distance (C_1): 70
Barrier to Receiver Distance (C_2): 15
Automobile Elevation: 0
Medium Truck Elevation: 2
Heavy Truck Elevation: 8
Pad/Ground Elevation at Receiver: 0
Receiver Elevation: 5
Base of Barrier Elevation: 0
Starting Barrier Height 6

Barrier Effectiveness:

Top of Barrier Elevation (ft)	Barrier Height (ft)	DNL (dBA)				Barrier Breaks Line of Sight to…		
		Autos	Medium Trucks	Heavy Trucks	Total	Autos?	Medium Trucks?	Heavy Trucks?
6	6	58	47	60	**62**	Yes	Yes	Yes
7	7	56	45	60	**61**	Yes	Yes	Yes
8	8	55	44	58	**60**	Yes	Yes	Yes
9	9	54	43	57	**59**	Yes	Yes	Yes
10	10	53	42	56	**58**	Yes	Yes	Yes
11	11	52	41	55	**57**	Yes	Yes	Yes
12	12	51	40	54	**56**	Yes	Yes	Yes
13	13	50	39	53	**55**	Yes	Yes	Yes
14	14	50	39	52	**54**	Yes	Yes	Yes

Notes: 1. Standard receiver elevation is five feet above grade/pad elevations at the receiver location(s).

Appendix J-2
FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Barrier Effectiveness Prediction Worksheet

Project Information:

Job Number: 2018-127
Project Name: Presidential Estates East Specific Plan
Roadway Name: Mercey Springs Road - South of Scripps Drive

Noise Level Data:

Year: Future
Auto (DNL) dB: 64
Medium Truck (DNL) dB: 52
Heavy Truck (DNL) dB: 65

Site Geometry:

Receiver Description: Nearest SFR Backyards
Centerline to Barrier Distance (C_1): 70
Barrier to Receiver Distance (C_2): 15
Automobile Elevation: 0
Medium Truck Elevation: 2
Heavy Truck Elevation: 8
Pad/Ground Elevation at Receiver: 0
Receiver Elevation: 5
Base of Barrier Elevation: 0
Starting Barrier Height 6

Barrier Effectiveness:

Top of Barrier Elevation (ft)	Barrier Height (ft)	DNL (dBA)				Barrier Breaks Line of Sight to…		
		Autos	Medium Trucks	Heavy Trucks	Total	Autos?	Medium Trucks?	Heavy Trucks?
6	6	57	46	60	**62**	Yes	Yes	Yes
7	7	56	45	59	**61**	Yes	Yes	Yes
8	8	55	44	58	**60**	Yes	Yes	Yes
9	9	53	42	57	**59**	Yes	Yes	Yes
10	10	53	42	56	**58**	Yes	Yes	Yes
11	11	52	41	55	**57**	Yes	Yes	Yes
12	12	51	40	54	**56**	Yes	Yes	Yes
13	13	50	39	53	**55**	Yes	Yes	Yes
14	14	49	38	52	**54**	Yes	Yes	Yes

Notes: 1. Standard receiver elevation is five feet above grade/pad elevations at the receiver location(s).

Appendix J-3
FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Barrier Effectiveness Prediction Worksheet

Project Information:

Job Number: 2018-127
Project Name: Presidential Estates East Specific Plan
Roadway Name: Pioneer Road

Noise Level Data:

Year: Future
Auto (DNL) dB: 63
Medium Truck (DNL) dB: 53
Heavy Truck (DNL) dB: 63

Site Geometry:

Receiver Description: Nearest SFR Backyards
Centerline to Barrier Distance (C_1): 60
Barrier to Receiver Distance (C_2): 15
Automobile Elevation: 0
Medium Truck Elevation: 2
Heavy Truck Elevation: 8
Pad/Ground Elevation at Receiver: 0
Receiver Elevation: 5
Base of Barrier Elevation: 0
Starting Barrier Height 6

Barrier Effectiveness:

Top of Barrier Elevation (ft)	Barrier Height (ft)	DNL (dBA)				Barrier Breaks Line of Sight to…		
		Autos	Medium Trucks	Heavy Trucks	Total	Autos?	Medium Trucks?	Heavy Trucks?
6	6	56	47	58	**60**	Yes	Yes	Yes
7	7	55	45	57	**59**	Yes	Yes	Yes
8	8	54	44	56	**58**	Yes	Yes	Yes
9	9	53	43	54	**57**	Yes	Yes	Yes
10	10	52	42	53	**56**	Yes	Yes	Yes
11	11	51	41	52	**55**	Yes	Yes	Yes
12	12	50	40	51	**54**	Yes	Yes	Yes
13	13	49	39	50	**53**	Yes	Yes	Yes
14	14	49	39	50	**52**	Yes	Yes	Yes

Notes: 1. Standard receiver elevation is five feet above grade/pad elevations at the receiver location(s).

BOLLARD
Acoustical Consultants

Appendix F

Presidential Estates Transportation Impact Analysis Report, dated August 2026, prepared by Fehr and Peers

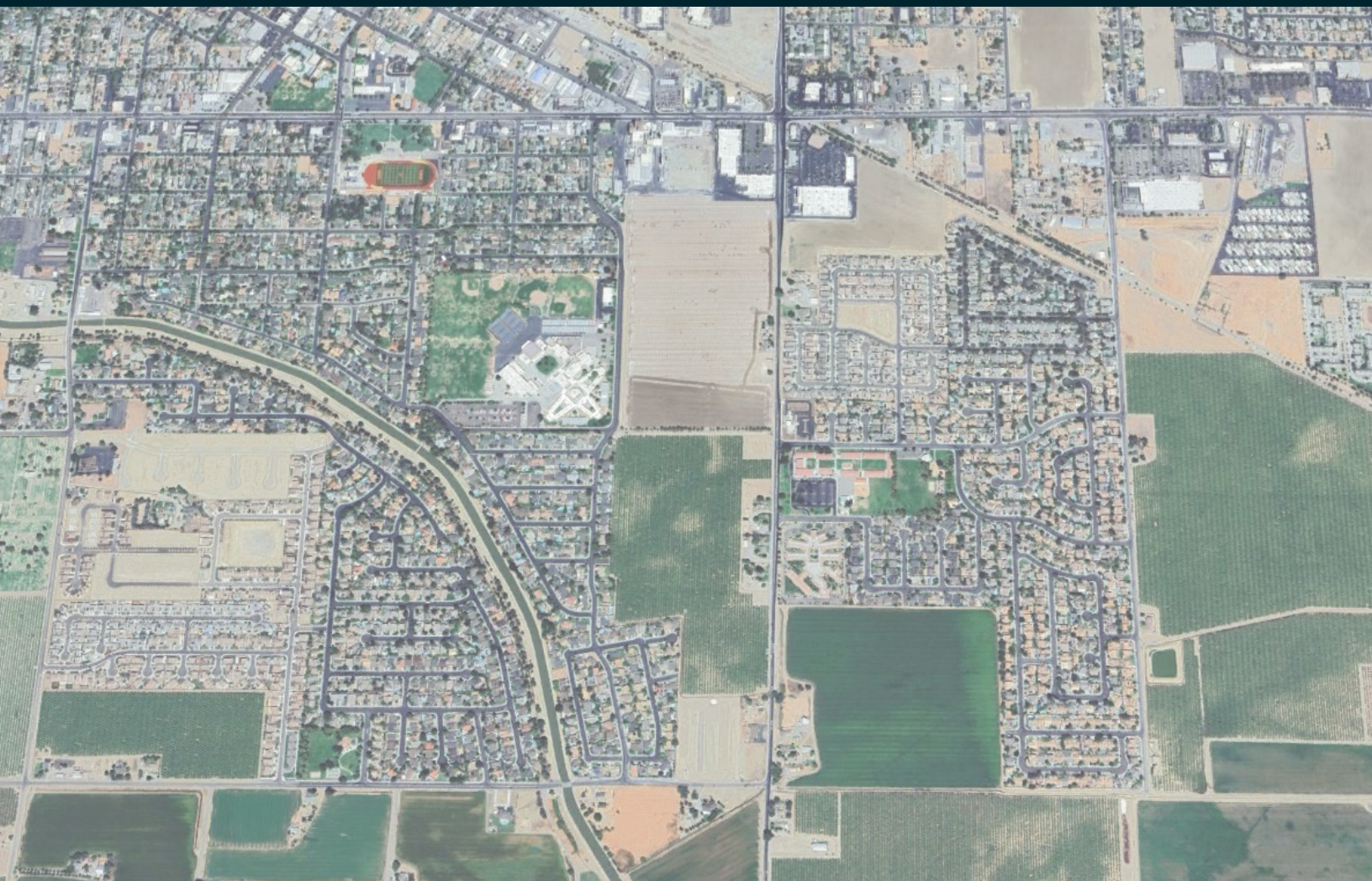
Fehr & Peers

Presidential Estates East

Transportation Impact Analysis Report

Prepared for:
J.B. Anderson Land Use Planning
City of Los Banos

Submitted:
August 2026



Fehr & Peers

Presidential Estates East

Transportation Impact Analysis Report

Prepared for:
J.B. Anderson Land Use Planning
City of Los Banos

Submitted:
August 2026

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1. Executive Summary 1

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1. Executive Summary

This report presents the Transportation Impact Analysis (TIA) analysis and findings conducted by Fehr & Peers for the proposed Presidential Estates Project located in southern Los Banos, California. The project site is currently undeveloped; adjacent uses include residential, school, and retail facilities. The proposed project will include the following elements:

- 371 single family dwelling units
- Approximately 120 multifamily dwelling units
- Up to 50,000 square feet of local-serving retail

Throughout this report, recommendations are made to address potential deficiencies in the transportation system resulting from the Project. *Mitigation Measures* are improvement measures that are required to be implemented as they pertain to mitigating a significant CEQA impact. *Recommendations* are improvement measures that are not required to be implemented under CEQA, as they do not pertain to CEQA impact analyses on the transportation system. More detailed information is presented in **Chapter 3**.

1.1 Project Trip Generation

At full buildout, the proposed project is estimated to generate the following vehicle trips:

- 329 weekday morning (AM) peak hour trips (104 inbound and 225 outbound)
- 522 weekday afternoon (PM) peak hour trips (312 inbound and 210 outbound)
- 5,186 daily trips

The project trips were distributed and assigned to the transportation network and added to the Existing and Cumulative (Year 2046) baseline traffic volumes to determine the "Plus Project" conditions. More detailed information is presented in **Chapter 5**.

1.2 Vehicle Miles Traveled (VMT) Analysis

The project's vehicle-miles traveled (VMT) per capita was estimated using the latest 2022 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) Merced County Association of Governments Model (MCAG Model), which includes modifications for the City of Los Banos. The City of Los Banos Transportation Impact Analysis Guidelines outline the VMT thresholds of significance for the evaluation of CEQA transportation impacts. The guidelines also note that the CEQA Transportation VMT screening criteria used in the OPR *Technical Advisory on Evaluating Transportation Impacts in CEQA* (2018) may be used in addition to thresholds of significance to screen project components from further VMT study (i.e., create a presumption of a less-than-significant impact).

The proposed retail component of the project will be less than 50,000 square feet in size and is located in an area of the City that is primarily residential. Thus, the screening criteria from the OPR *Technical Advisory* applies, and the CEQA Transportation VMT impact for the retail portion of the project is ***less-than-significant.***

The project's Total Home-Based VMT per resident for the baseline Plus Project scenario would be 15.7 VMT per resident, while the City of Los Banos average project Total Home-Based VMT per

resident is 16.0 VMT per resident. Th project's Total Home-Based VMT is higher than the threshold value of 13.6 VMT per resident, which is 15% below the City of Los Banos average value of 16.0 VMT per resident. Therefore, the residential portion of the Project results in a ***significant impact,*** and mitigation measures are required to achieve a 13.4% reduction to meet the threshold value of 13.6 VMT per resident. The mitigation measures (**Mitigation Measure 1**) are the following:

A. Separate parking costs from property costs (i.e., the purchase or rent of parking spaces are separate from the housing cost) for the multifamily apartment units.
B. Include sidewalks along the following roadways:
    - 11th Street between Jefferson Avenue and Page Avenue
    - Mercey Springs Road (SR 165) between 13th Street and Scripps Drive
C. Retain the proposed Class I bike path along Pioneer Road from 11th Street to Mercey Springs Road (SR 165), and revise the proposed Class II bike plan to preserve the existing Class I bike path along the north side of Page Avenue from 11th Street to Mercey Springs Road (SR 165)
D. Coordinate with the local transit agency for the Los Banos Commuter route, Transit Joint Powers Authority for Merced County, for the expansion of the local transit network.
E. Provide tenants with community-based travel planning.
F. Provide access to shared vehicles for tenants.
G. Reduce the total parking supply available at the residential site and prohibit on-street parking.

If all mitigation measures are deemed feasible and able to be implemented, the project's VMT impact is ***less-than-significant with mitigation***. More detailed analysis is presented in **Chapter 6**.

1.3 Intersection Level of Service (LOS) Analysis

The effects of the proposed project on the operations of the surrounding transportation system were evaluated using the Synchro 12 software analysis package and methodologies from the *Highway Capacity Manual, 7th Edition*. The City of Los Banos Transportation Impact Analysis Guidelines outline the peak hour intersection Level of Service (LOS) standards for City intersections and provide substantial effect criteria for the evaluation of intersection operations.

Intersection operations at 13 key intersections were evaluated during the weekday morning (AM) and afternoon (PM) peak hours. Substantial adverse effects were identified at the following study intersections:

- Intersection 5: Pacheco Boulevard (SR 152)/Mercey Springs Road (SR 165) – substantial adverse effects under Cumulative No Project and Cumulative Plus Project Conditions
- Intersection 10: Pioneer Road/11th Street – substantial adverse effects under Existing Plus Project, Cumulative No Project, and Cumulative Plus Project Conditions
- Intersection 11: Pioneer Road/Mercey Springs Road (SR 165) – substantial adverse effects under Existing Plus Project Conditions

Improvements were proposed to alleviate the substantial adverse effects. The improvements reduce the substantial adverse effects at Intersection 10 and 11 to be ***less-than-substantial with improvements.*** The improvement at Intersection 5 would require additional funding, right-of-way acquisition, and coordination with Caltrans, and therefore the substantial adverse effect at this location is ***substantial and unavoidable.*** This analysis is presented in **Chapter 7** and **8** for each of the analysis scenarios.

1.4 Other Transportation Analysis

The analysis of the project's CEQA impacts to the multimodal transportations system also included a review of the pedestrian, bicycle, public transit systems, as well as emergency vehicle access based on the goals and policies in the City of Los Banos General Plan. One bicycle system impact was identified, and a mitigation measure (**Mitigation Measure 2**) is proposed, which would reduce the impact to a level that is ***less-than-significant impact with mitigation***. This analysis is presented in **Chapter 6**.

A phasing analysis was conducted to reflect mid-term conditions after completion of interim development phases of the project. One emergency vehicle access impact was identified, and a mitigation measure (**Mitigation Measure 3**) is proposed, which would reduce the impact to a level that is ***less-than-significant impact with mitigation***. This analysis is presented in **Chapter 9**.

A detailed site plan review was conducted, and recommendations were developed to improve site access and internal circulation for vehicles, pedestrians, bicycles, and transit vehicles. Details are provided in **Chapter 10**.

Fair share contribution percentages were estimated for improvements to study intersections where the project creates a substantial adverse effect to intersection operations, or where the project takes access to the Caltrans highway system. The following intersections were evaluated for fair share contribution on intersection operation improvements:

- Intersection 5: Pacheco Boulevard (SR 152)/Mercey Springs Road (SR 165) – This intersection is expected to have a substantial adverse effect under the Cumulative No Project and Cumulative Plus Project Conditions. The estimated fair share contribution is 25.2% of improvement costs.
- Intersection 9: Mercey Springs Road (SR 165)/Scripps Drive – This intersection is a project access point and will need to be converted to a roundabout as a result of the project modifying the intersection (per Caltrans ISOAP methods). The project will be fully responsible for intersection improvement costs.
- Intersection 10: Pioneer Road/11th Street – This intersection is expected to have a substantial adverse effect under Existing Plus Project Conditions. The project will be fully responsible for improvement costs.
- Intersection 11: Pioneer Road/Mercey Springs Road (SR 165) – This intersection is expected to have a substantial adverse effect under Existing Plus Project Conditions. The estimated fair share contribution is 4.5% of improvement costs.
- Intersection 13: Mercey Springs Road (SR 165)/Madison Avenue – This intersection is a Project access point and will need to be built as a roundabout as a result of the project creating the intersection (per Caltrans ISOAP methods). The project will be fully responsible for intersection improvement costs.

A mitigation measure, **Mitigation Measure 4**, is proposed to contribute to the improvements needed. More detailed information is presented in **Chapter 11**.

2. Introduction

This report presents the Transportation Impact Analysis (TIA) analysis and findings conducted by Fehr & Peers for the proposed Presidential Estates Project located in southern Los Banos, California.

2.1 Study Purpose

The purpose of this TIA is to identify potentially significant adverse impacts of the proposed Project on the surrounding transportation system and to recommend mitigation measures, if needed. This TIA was conducted in accordance with the adopted City of Los Banos *Transportation Impact Analysis Guidelines*. This TIA follows the standards set in the most recent *General Plan* Circulation Element for the City of Los Banos, as well as other local plans and policies.

2.2 Project Description

The Presidential Estates Project (Project) is proposed to be built on vacant land in an area generally bound by 11th Street in the west, Mercey Springs Road (State Route 165 [SR 165]) in the east, Pioneer Road in the south, and existing retail development in the north. The proposed Project will be completed over eight phases, with the first seven phases comprised of single family dwelling units. At full buildout, the proposed Project will include the following elements:

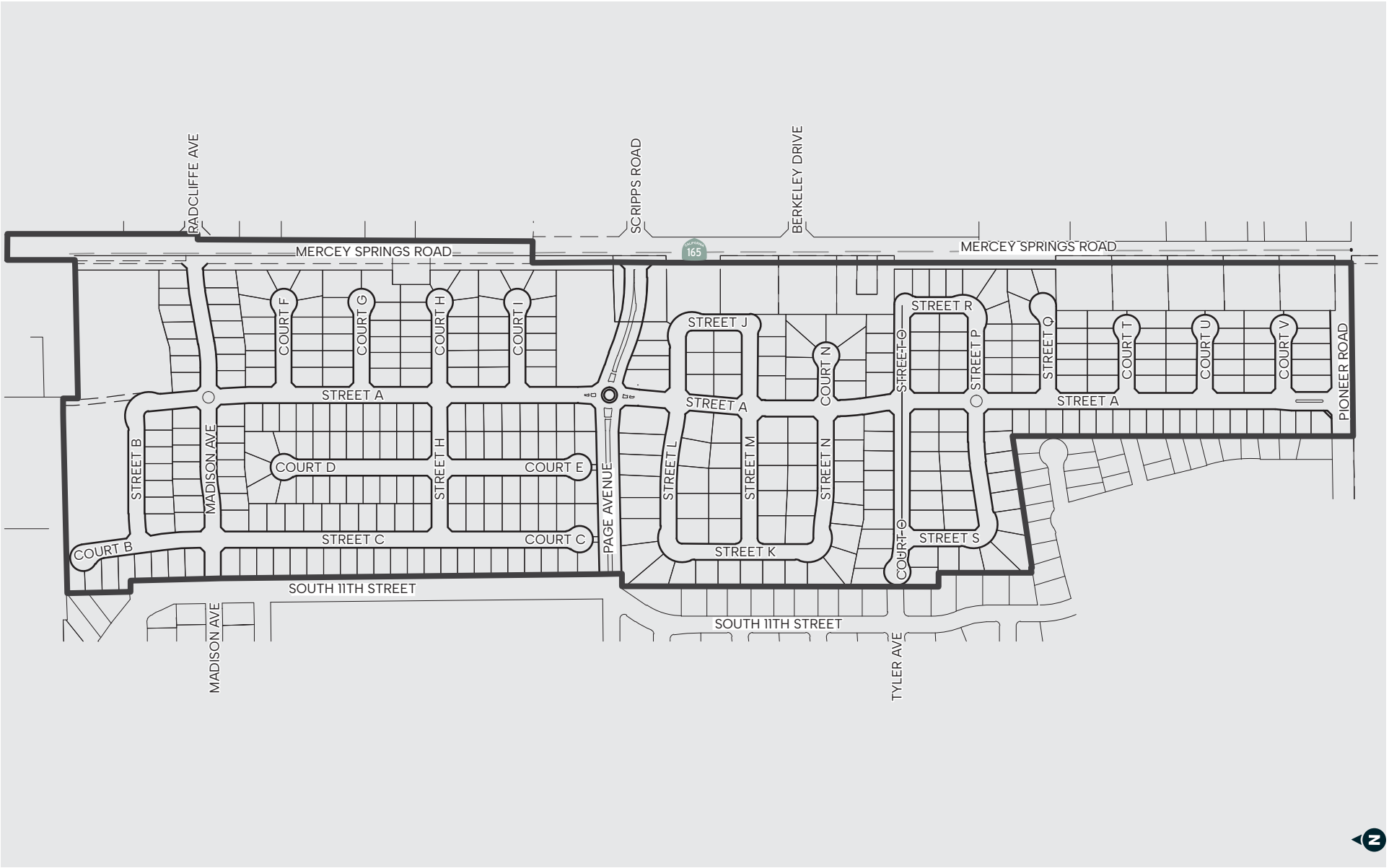
- 371 single family dwelling units
- Approximately 120 multifamily dwelling units
- Up to 50,000 square feet of local-serving retail[1]

These land uses will be supported by an internal street system that will complete the street grid in southern Los Banos. These key street connections include:

- An east-west roadway connecting Madison Avenue/11th Street to Mercey Springs Road (SR 165) at the proposed Radcliffe Avenue extension
- An east-west roadway connecting Page Avenue/11th Street to Mercey Springs Road (SR 165)/Scripps Drive
- A north-south roadway connecting the Madison Avenue extension to Pioneer Road

The site plan for the Project is presented in **Figure 1**.

[1] As the exact amount of local-serving retail is unknown at this time, the assumption for square feet of local-serving retail is based on the size of the parcels designated for retail, and the average zoning floor-area ratio (FAR) for retail in the General Plan (0.425).



Site Plan Source: Westwood, June 2025

FIGURE 1

Project Site Plan

Fehr & Peers

3. Analysis Approach and Methodology

This chapter describes the assumptions and methodologies utilized in the VMT and LOS analyses.

3.1 CEQA Transportation Analysis Methods and Impact Criteria

CEQA Transportation section impacts are identified based on four CEQA Guidelines Appendix G checklist questions. These checklist questions include:

Would the Project:

(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 §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?

Checklist question (b) is the formal implementation of Senate Bill 743 (Steinberg, 2013), which installed vehicle-miles traveled (VMT) as the CEQA Transportation section analysis metric, and removed congestion-based metrics such as intersection Level of Service (LOS) from CEQA Transportation section consideration[2].

The detailed CEQA Transportation Section impact criteria are presented below.

3.1.1 CEQA Vehicle Miles Traveled (VMT) Analysis

CEQA Guidelines §15064.3(a) notes that, for the purposes of §15064.3 and CEQA Transportation analysis, VMT "refers to the amount and distance of automobile travel attributable to a Project." The Governor's Office of Planning and Research (OPR) interpreted this statement to mean automobile and light-duty truck travel (e.g., pickup trucks). The VMT generated by the Project is also evaluated in the Air Quality, Greenhouse Gas (GHG) Emissions, and Energy sections of the CEQA document for the Project.

The following VMT-related adopted CEQA Transportation section impact criterion for residential and retail projects in the City of Los Banos is:

- For residential projects: a project would result in a significant impact and require mitigation if the project has a home-based VMT per resident that is 85% or more of the baseline[3] citywide average.

[2] CEQA Guidelines §15064.3(a) notes that "a project's effect on automobile delay shall not constitute a significant environmental impact."

[3] CEQA baseline is defined as when the Notice of Preparation for the CEQA analysis is released. CEQA baseline is not defined by the base year of the MCAG travel demand model. Interpolation between the model base year and future year for the MCAG travel demand model is used to develop CEQA baseline VMT information.

- For retail and other goods/services project: a project would result in a significant impact if the project effect on VMT results in a net increase in VMT within the area of influence of the Project.

The City's adopted TIA Guidelines note that the CEQA Transportation VMT screening criteria used in the OPR *Technical Advisory on Evaluating Transportation Impacts in CEQA* (2018) may be used in addition to thresholds of significance to screen Project components from further VMT study (i.e., create a presumption of a less-than-significant impact). The *Technical Advisory* notes that retail development that are locally-serving and less than 50,000 square feet in area may shorten existing trips and reduce VMT; in these cases, the *Technical Advisory* notes that lead agencies "should consider the [VMT] impact to be less-than-significant."

3.1.2 CEQA Vehicle System Impacts

The Project would create a significant impact related to the vehicle system if any of the following criteria are met:

- The Project design would not provide or would eliminate vehicle facilities to connect to the area circulation system; or
- The Project would introduce incompatible uses to the roadway system; or
- The Project design would create hazardous conditions for vehicle drivers.

3.1.3 CEQA Pedestrian System Impacts

The Project would create a significant impact related to the pedestrian system if any of the following criteria are met:

- The Project disrupts pedestrian facilities; or
- The Project interferes with or precludes planned pedestrian facilities; or
- The Project creates inconsistencies with adopted pedestrian system plans, guidelines, policies, or standards.

3.1.4 CEQA Bicycle System Impacts

The Project would create a significant impact related to the bicycle system if any of the following criteria are met:

- The Project would not provide or would eliminate bicycle facilities that connect to the area circulation system; or
- The Project conflicts with existing or planned bicycle facilities; or
- The Project design would create hazardous conditions for bicyclists.

3.1.5 CEQA Public Transit System Impacts

The Project would create a significant impact related to public transit service if any of the following criteria are met:

- The Project generates a substantial increase in public transit riders that cannot be adequately served by existing public transit services; or
- The Project establishes transit facilities or equipment that results in sight distance deficiency or vehicle conflict point; or
- The Project disrupts or conflicts with existing or planned public transit facilities.

3.1.6 CEQA Emergency Access Impacts

The Project would create a significant impact related to emergency access if the Project or element of the Project meet the following criteria:

- Conflicts with an existing or planned emergency response facility or route; or
- Provides inadequate access to accommodate emergency vehicles.

3.1.7 Mitigation and Improvement Measure Terminology

Throughout this report, recommendations are made to address potential deficiencies in the transportation system resulting from the Project. *Mitigation Measures* are improvement measures that are required to be implemented as they pertain to mitigating a significant CEQA impact related to the thresholds presented in **Section 3.1**. *Recommendations* are improvement measures that are not required to be implemented under CEQA, as they do not pertain to CEQA impact analyses on the transportation system, such as those related to the criteria presented in **Section 3.2**. Fehr & Peers provides these non-binding recommendations for improvements to enhance multimodal circulation, mobility, and access. These recommendations may be incorporated into Conditions of Approval for the Project.

3.2 Non-CEQA Intersection Operations

This section presents the study parameters of the intersection operations analysis prepared for the Project. As noted under CEQA Guidelines §15064.3(a), this intersection operations analysis is not for CEQA purposes, although the City retains the right to place Conditions of Approval on the Project if the operations analysis finds that the Project would result in new deficiencies with respect to City's General Plan goals or polices related to the efficient operations of the circulation system.

3.2.1 LOS Analysis Methodology

The Synchro 12 software analysis package, using methodologies from the *Highway Capacity Manual*, *7th Edition* (Transportation Research Board, 2022), was used to perform this analysis. The analysis results are summarized by vehicle delay in seconds and Level of Service (LOS). LOS is a qualitative description of operations ranging from LOS A, when the roadway facility has excess capacity and vehicles experience little or no delay, to LOS F, where the volume of vehicles exceeds the capacity, results in long queues and excessive delays. The study intersections' LOS were established based on traffic analysis using the Transportation Research Board (TRB) method in the *Highway Capacity Manual, 7th Edition*.

For signalized intersections, LOS is based on the average delay experienced by all vehicles passing through the intersection. This methodology uses various intersection characteristics (such as traffic volumes, lane geometry, and signal phasing) to estimate the delay per vehicle. The delay per vehicle is a portion of the total delay attributed to the signal operations and includes initial deceleration, queue move up time, time stopped, and acceleration.

At unsignalized intersections, operations are defined by the average control delay per vehicle (measured in seasons) for each stop-controlled movement. This incorporated delay is associated with deceleration, acceleration, stopping, and moving up in the queue. For all-way stop-controlled intersections and roundabouts, the LOS is represented by the average control delay for the whole

intersection. For side-street stop-controlled intersections, the average delay and worst-case approach delay and associated LOS are reported in this report.

The average control delays and LOS designations for signalized and unsignalized intersections are summarized in **Table 1**.

Table 1. Levels of Service Definitions – Intersections

Level of Service	LOS Criteria (Delay in Seconds)	
	Signalized Intersections	Unsignalized Intersections
A	≤ 10.0	≤ 10.0
B	>10.0 to 20.0	>10.0 to 15.0
C	>20.0 to 35.0	15.1 to 25.0
D	>35.0 to 55.0	25.1 to 35.0
E	>55.0 to 80.0	35.1 to 50.0
F	>80.0	>50.0

Source: *Highway Capacity Manual, 7th Edition*, Transportation Research Board.

3.2.2 Intersection Substantial Effect Criteria

Intersection operations are compared between Plus Project and No Project conditions to determine the Project's effect on the operations of study intersections relative to General Plan goals and policies related to the operations of the circulation system. The City's LOS standard for acceptable peak hour intersection operations is LOS D. The substantial effect criteria used by the City of Los Banos to identify if a Project must sponsor improvements to the circulation system include:

3.2.2.1 Signalized Intersections

- For intersections operating at an acceptable LOS, Project-related traffic causes the LOS rating to deteriorate from LOS D or better to LOS E or F.
- For intersections already operating at an unacceptable LOS without the Project it is considered a deficiency if the Project increases the average intersection delay by five or more seconds.

3.2.2.2 Unsignalized Intersections

- The addition of Project traffic causes an unsignalized intersection to deteriorate from LOS D or better to LOS E or F overall or the worst-case movement. The peak hour signal warrant (CA-MUTCD Warrant 3) must be met.
- For unsignalized intersections already operating at an LOS E or F prior to the addition of Project traffic, the Project increases delay (worst approach/movement for side-street stop-control, and whole intersection delay for all-way stop-control and roundabouts) by five or more seconds. The peak hour signal warrant (CA-MUTCD Warrant 3) must be met.

3.2.3 Study Locations

The study area is generally located in the southern areas of the City of Los Banos along Mercey Springs Road (SR 165), Pacheco Boulevard (SR 152), and 11th Street, as shown in **Figure 2**. The study intersections, listed in **Table 2**, were selected in coordination with the City of Los Banos staff as those most likely to be affected by the Project, and thus warrant analysis.

Table 2. Study Intersections

	Intersection	Jurisdiction	Existing Traffic Control
1	6th Street/Pacheco Boulevard (SR 152)	Caltrans	Signalized
2	7th Street/Pacheco Boulevard (SR 152)	Caltrans	Signalized
3	11th Street/Pacheco Boulevard (SR 152)	Caltrans	Signalized
4	H Street/Pacheco Boulevard (SR 152)	Caltrans	Signalized
5	Pacheco Boulevard (SR 152)/Mercey Springs Road (SR 165)	Caltrans	Signalized
6	Place Road/Pacheco Boulevard (SR 152)	Caltrans	Signalized
7	11th Street/Jefferson Avenue	Los Banos	AWSC
8	11th Street/Page Avenue	Los Banos	AWSC
9	Mercey Springs Road (SR 165)/Scripps Drive	Caltrans	SSSC
10	Pioneer Road/11th Street	Los Banos	SSSC
11	Pioneer Road/Mercey Springs Road (SR 165)	Caltrans	SSSC
12	B Street/Mercey Springs Road (SR 165)	Caltrans	Signalized
13	Mercey Springs Road (SR 165)/Madison Avenue	Caltrans	*Future intersection*

Source: Fehr & Peers, 2025.

FIGURE 2

Project Site Vicinity and Study Intersections

Fehr & Peers

3.2.4 Study Scenarios

Roadway system operations are evaluated during the weekday morning (AM) and weekday evening (PM) peak hours when traffic volumes on the surrounding roadway network are typically the highest, and the Project would generate the most vehicle traffic. The analysis scenarios are the following:

- **Existing Conditions** – Existing conditions based on traffic counts at the study locations.
- **Existing Plus Project Conditions** – Existing conditions with the addition of Project-generated traffic and transportation network infrastructure proposed by the Project.
- **Cumulative No Project Conditions** – Year 2046 traffic forecasts without the proposed Project were developed for the Cumulative conditions by applying traffic volume growth data derived from the MCAG travel demand model and other data sources.
- **Cumulative Plus Project Conditions** – Year 2046 traffic forecasts with the addition of Project-generated traffic and transportation network infrastructure proposed by the Project.

It is noted that Year 2046 represents the buildout year of the City's General Plan. The Cumulative No Project and Cumulative Plus Project analyses consider the improvements in the ongoing City Transportation Master Plan update as a base assumption.

3.2.5 Caltrans Intersection Safety and Operational Assessment Process

Adopted in 2024, the Caltrans Intersection Safety and Operational Assessment Process (ISOAP) updates Caltrans's preferred methodology for evaluating changes to traffic control and design along the State Highway System. The ISOAP method places a higher weighting on safety as part of the decision making process followed by Caltrans in accordance with the State's adoption of the Safe Systems approach. Unlike the previous Intersection Control Evaluation (ICE) procedure, the ISOAP method will apply to Caltrans review of local agency applications for new or modified connections to the State Highway System. It is noted that, based on the information in the Caltrans ISOAP Guide, a higher preference is placed on implementing roundabouts versus signalized or stop-controlled intersections based on a number of factors, including minimizing the number of conflict points, reducing vehicle speeds, improving visibility at intersections, and providing space and protection for pedestrians and bicyclists.

4. Existing Conditions

This chapter describes the existing multimodal transportation system in the study area, including the street system, public transit service, and bicycle and pedestrian facilities. Existing operations at study intersections are also summarized in this section.

4.1 Existing Transportation System

4.1.1 Vehicle Roadway System

Direct vehicular access to the Project is provided by Mercey Springs Road (SR 165), 11th Street, and Pioneer Road. Local access to the site is provided via H Street, Scripps Drive, Madison Avenue, Jefferson Avenue and Page Avenue. Regional access to the Project site is provided via Pacheco Boulevard (SR 152/SR 33). These facilities are described below.

Pacheco Boulevard (SR 152) is a four-lane arterial roadway located north of the Project site which connects the City of Los Banos to I-5 in the west and SR 99 in the east. The facility is co-signed as SR 152 and SR 33 through the City; for simplicity, the facility is numbered as SR 152 throughout this document. Pacheco Boulevard (SR 152) continues west past I-5 to Gilroy, and SR 33 travels northwest to Santa Nella. East of the City, Pacheco Boulevard (SR 152) connects to SR 99 and SR 33 travels southwest to Dos Palos. Within Los Banos, the speed limit is 35 mph, and on-street parking is not permitted. This road provides access to commercial businesses along the east-west commercial corridor of Los Banos.

Mercey Springs Rd/SR 165 is a two- to four-lane state highway located directly east of the Project site that runs north-south from Turlock/SR 99 in the north to I-5 in the south. The road widens to become a 4-lane arterial within parts of the City. Near the Project site, the posted speed limit is 45 mph (25 mph when children are present), and parking is not permitted. This road provides access to residential areas, commercial businesses and an elementary school surrounding the Project site.

Pioneer Road is a two-lane collector roadway located south of the Project site that extends from Volta Road in the west to Mercey Springs Road (SR 165) in the east. The speed limit is 45 mph and street parking for cars is permitted, though not permitted for trucks. This street primarily serves residential communities and provides access to a park. Pioneer Road will be extended to Ward Road in the east as part of the *Pioneer Road Complete Streets Project*, which is included in the General Plan and is currently undergoing environmental clearance.

H Street is a two-lane collector roadway located north of the Project which runs from Pacheco Blvd (SR 152) in the southeast to Badger Flat Road in the west. H Street connects the Project site to Downtown Los Banos and parallels the former rail line (now rail trail). The speed limit is 35 mph and on-street parking is not permitted.

11th Street is a two-lane local street located directly west of the Project site that runs from Pioneer Road in the south to Pacheco Blvd (SR 152) in the north. This street primarily serves residential communities and Los Banos High School. The speed limit is 30 mph (25 mph when children are present), and street parking is not permitted.

Scripps Drive is a two-lane local street located east of the Project site along Mercey Springs Road (SR 165). This street primarily serves residential communities and the elementary school surrounding the Project site. The speed limit is 25 mph, and on-street parking is permitted.

Madison Avenue is a two-lane local street located west of the Project site along 11th Street. This street primarily serves residential communities surrounding the Project site. The speed limit is 25 mph, and on-street parking is permitted.

Jefferson Avenue is a two-lane local street located west of the Project site along 11th Street. This street primarily serves residential communities surrounding the Project site. The speed limit is 25 mph, and on-street parking is permitted.

Page Avenue is a two-lane local street located west of the Project site along 11th Street. This street primarily serves residential communities and the high school surrounding the Project site. The speed limit is 25 mph, and street parking is not permitted.

4.1.2 Transit Services and Connectivity

The Bus, Merced County's Regional Transit System, is the single provider for public transit for all of Merced County. The Bus provides transportation between Los Banos, Dos Palos, and Merced through a single route called the Los Banos Commuter. This route has a headway of 90 to 120 minutes. An additional transit service provided by The Bus is The Micro Bus, an on-demand transit system which serves communities in western Merced County, including Gustine, Los Banos, and Dos Palos. The Los Banos Commuter does not contain a bus stop near the Project site, and the route passes north of the Project site along Pacheco Boulevard (SR 152). The Project site is within the limits of The Micro Bus service. Public transit services within the Project study area that traverse through study intersections are shown in **Figure 3**.

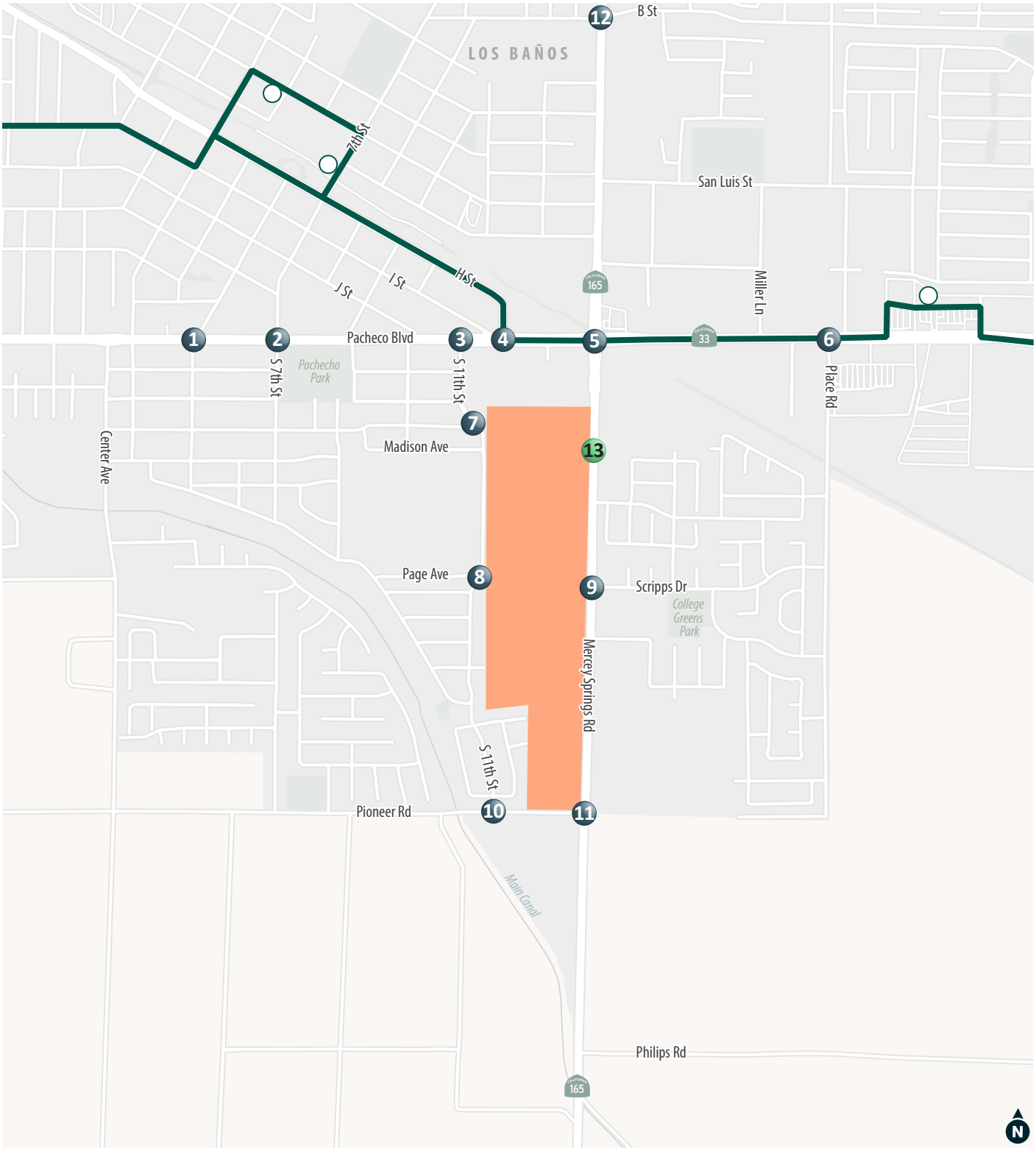


FIGURE 3

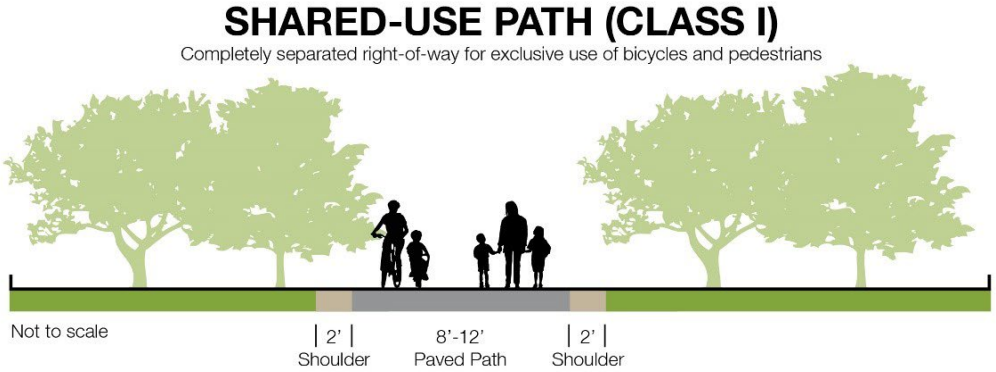
Existing Transit Routes

Fehr & Peers

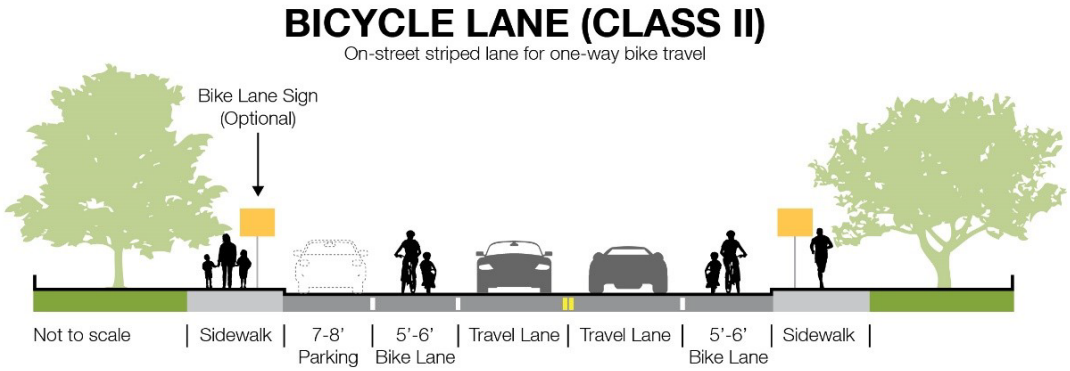
4.1.3 Bicycle Facilities

Bikeway planning and design in California typically relies on guidelines and design standards established by California Department of Transportation (Caltrans) in the Highway Design Manual (Chapter 1000: Bikeway Planning and Design). Caltrans provides four distinct types of bikeway facilities, as described below and shown in the accompanying figures.

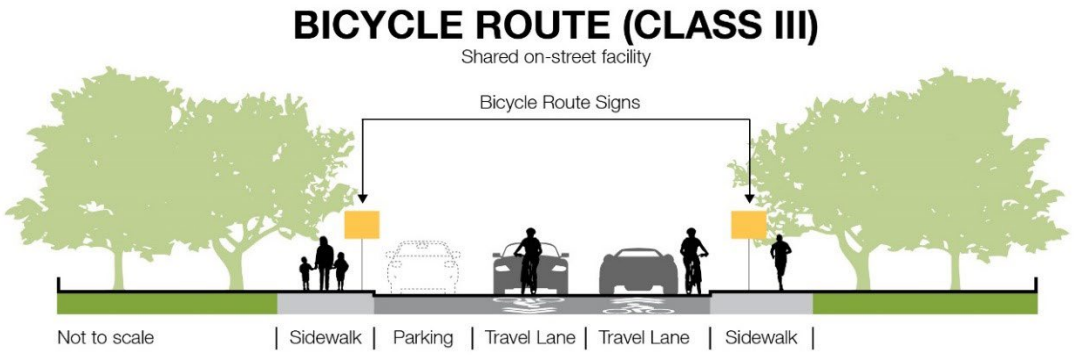
- *Class I Bikeways (Shared-Use Path)* provide a completely separate right-of-way and are designated for the exclusive use of bicycles and pedestrians, with vehicle and pedestrian cross-flow minimized. In general, bike paths serve corridors where on-street facilities are not feasible or where sufficient right-of-way exists to allow them to be constructed.



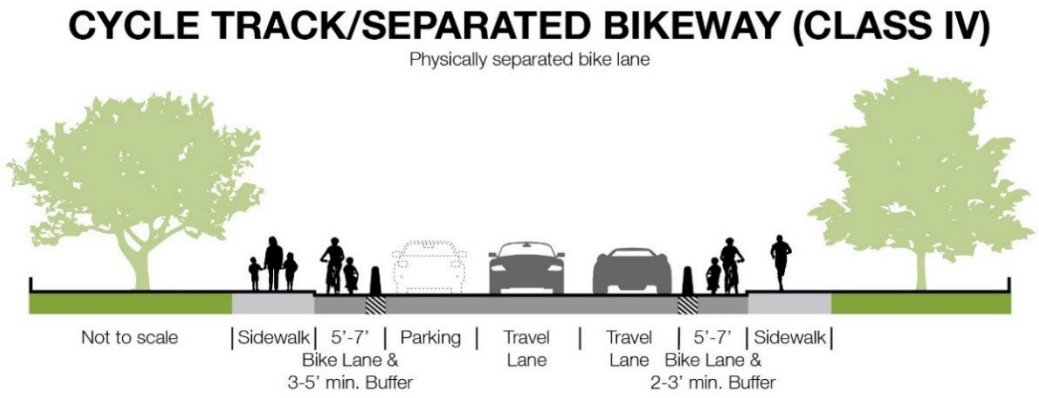
- *Class II Bikeways (Bicycle Lanes)* are dedicated lanes for bicyclists generally adjacent to the outer vehicle travel lanes. These lanes have special lane markings, pavement legends, and signage. Bicycle lanes are typically five (5) feet wide. Adjacent vehicle parking and vehicle/pedestrian cross-flow are permitted.



- *Class III Bikeways (Bicycle Route)* are designated by signs or pavement markings for shared use with pedestrians or motor vehicles but have no separated bike right-of-way or lane striping. Bike routes serve either to: a) provide a connection to other bicycle facilities where dedicated facilities are infeasible, or b) designate preferred routes through high-demand corridors.



- *Class IV Bikeways (cycle tracks or "separated" bikeways)* provide a right-of-way designated exclusively for bicycle travel within a roadway and are protected from other vehicle traffic by physical barriers, including, but not limited to, grade separation, flexible posts, inflexible vertical barriers such as raised curbs, or parked cars.



Currently, there exists three Class I bike paths in the vicinity of the Project. A paved bike path replaced the rail line parallel to H Street. The paved path starts at 2nd Street near Downtown Los Banos and ends at Mercey Springs Road, continuing as a gravel path until Ward Road. An additional Class I bike path parallels the Main Canal, which cuts through the southwestern portion of Los Banos. Just north of Scripps Drive, there is an east-west Class I bike and pedestrian path through the Project site connecting Mercey Springs Road (SR 165) to 11th street. This path serves as a direct connection between the residential communities east and west of the Project site. There are no other bike facilities in the vicinity of the Project site. Along Pioneer Road, a multi-use Class I Bike trail is proposed per the Pioneer Road Complete Streets Plan. Mercey Springs Road (SR 165) and 11th Street have Class II and Class III bike facilities proposed as per the Los Banos General Plan 2042. Existing and proposed bicycle facilities in the study area are shown in **Figure 4**.

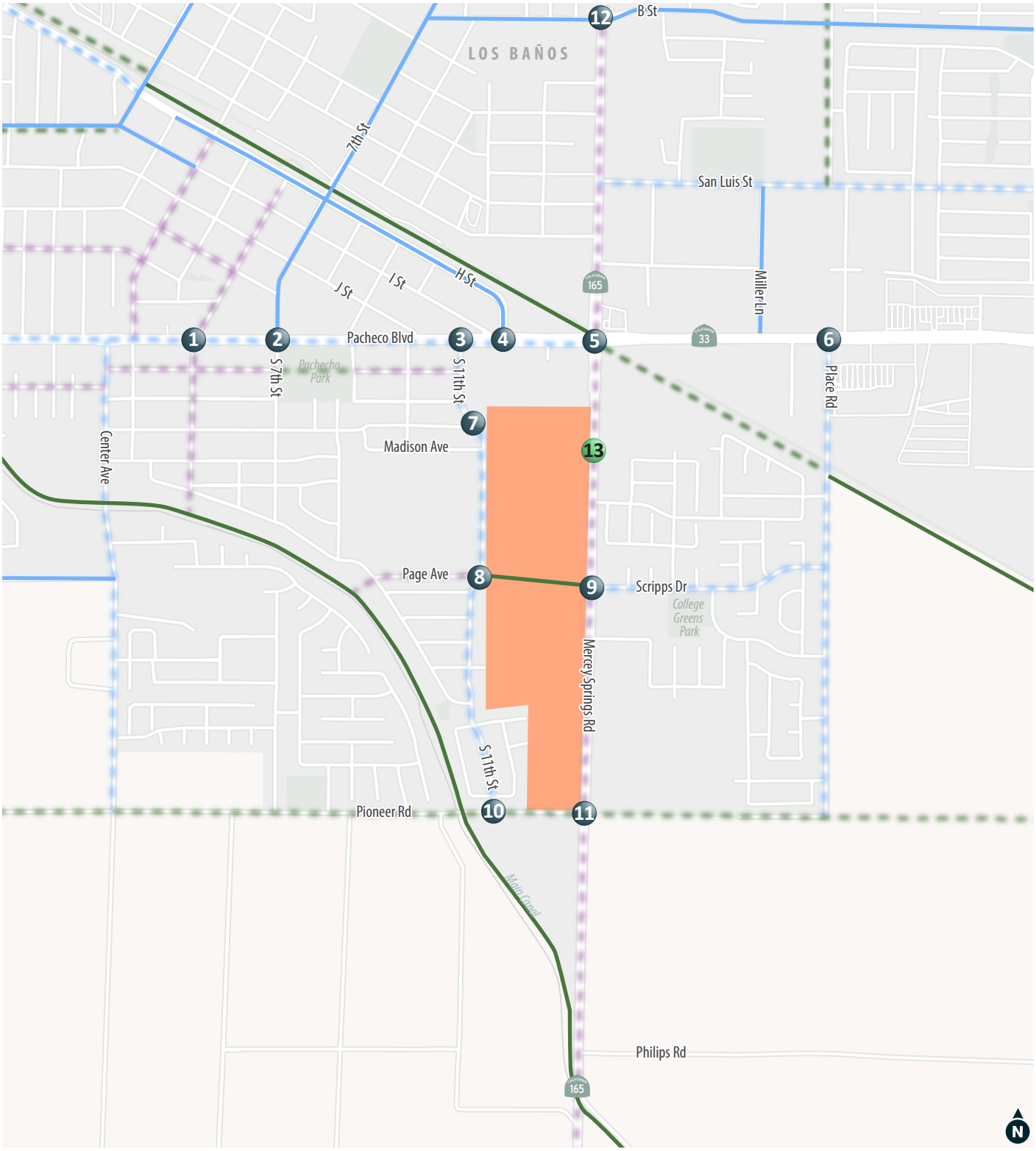


FIGURE 4

Existing and Planned Bike Facilities

Fehr & Peers

4.1.4 Pedestrian Facilities

Pedestrian facilities consist of sidewalks, crosswalks, and pedestrian signals at signalized intersections. The pedestrian environment was evaluated along the connecting roadways that directly serve the Project site and adjacent roadways that connect to transit stops and/or nearby destinations in the greater study area.

There are limited pedestrian facilities in the immediate vicinity of the Project site. Along Mercey Springs Road (SR 165), there are no existing sidewalks from 13th Street to Pioneer Road. Along Pioneer Road, there are existing pedestrian facilities, though gaps are present directly south of the Project site and at the bridge for the Main Canal, located 0.15 miles from the Project site. 11th Street contains one sidewalk on the west side of the street. A trail that cuts through the Project site provides pedestrian access between the residential communities on the east and west side of Mercey Springs Road. On the west side of the pedestrian access trail on 11th Street, there is an all-way stop-controlled intersection with painted crosswalks. On the east side of the pedestrian access trail on Mercey Springs Road is a pedestrian hybrid beacon to promote safer pedestrian crossings across Mercey Springs Road (SR 165). Sidewalk gaps along Pioneer Road are proposed to be closed per the Pioneer Road Complete Streets Plan.

4.2 Existing Conditions Intersection Operations

The following subsections describe Existing Conditions peak hour intersection volumes and LOS.

4.2.1 Data Collection

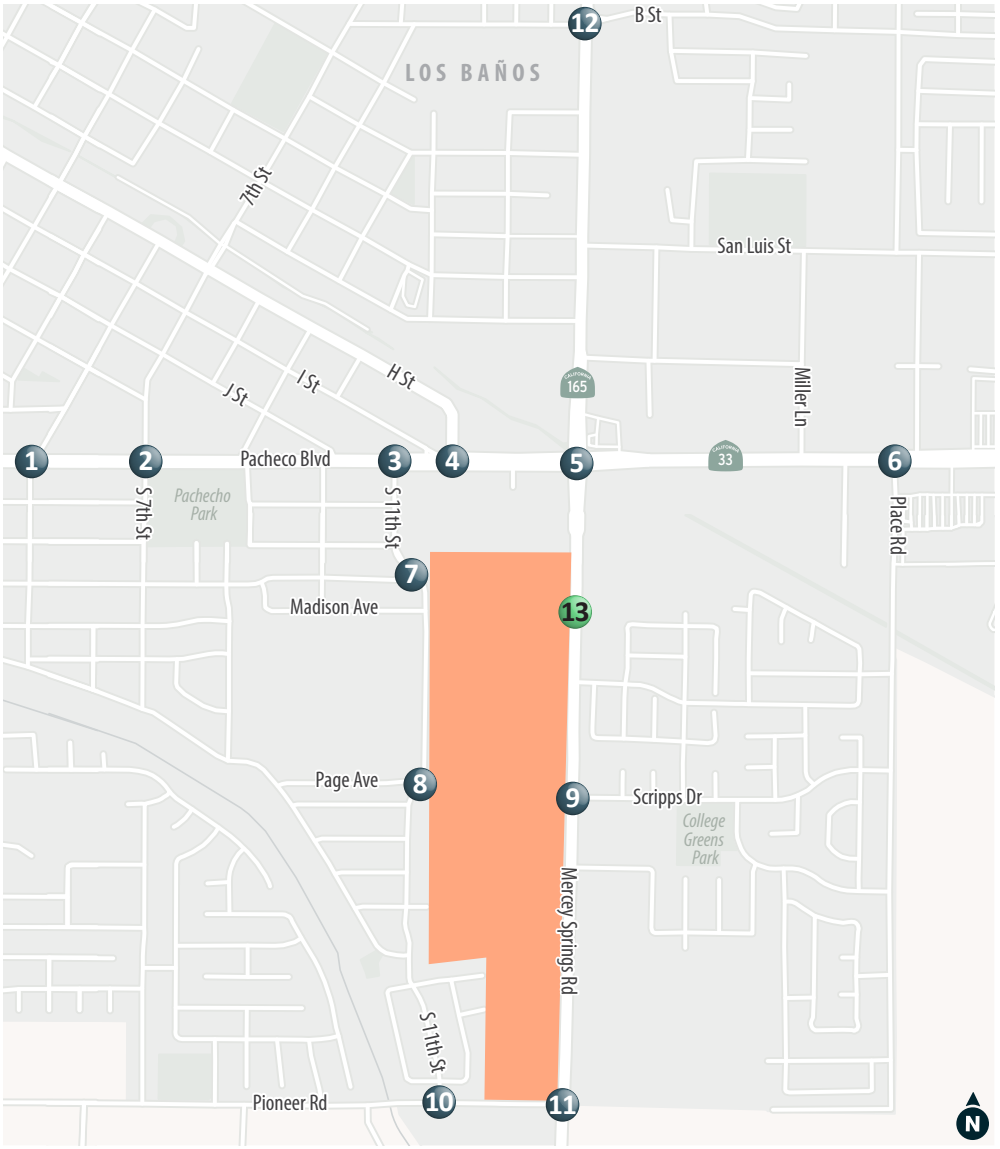
Weekday morning (7:00 AM to 9:00 AM) and weekday evening (4:00 PM to 6:00 PM) peak period intersection turning movement counts (vehicles, pedestrians, and bicycles) were collected in May 2025 on a clear day when schools were in session for Intersections 1 through 4, per **Table 2** above. Turning movement counts for the rest of the intersections listed in **Table 2** were collected from previous studies completed in the City of Los Banos in 2021, 2023 and 2024.

Signal timing data was collected from the City and Caltrans and input into the traffic operations models.

4.2.2 Existing Intersections Volumes

The operations of the study intersections are evaluated for the highest one-hour volume during the weekday morning and weekday afternoon periods. A summary of count data for this study can be found in **Appendix A**.

Existing lane configurations and types of intersection control devices were confirmed through Google Street View and field observations. **Figure 5** presents the existing AM and PM peak hour turning movement volumes, lane configurations, and traffic control devices used in the Existing Conditions analysis. **Figure 6** presents existing AM and PM peak hour bicycle and pedestrian volumes at the study intersections.



XX (YY) AM (PM) Peak Hour Traffic Volumes | Signalized Intersection | Stop Sign

Project Site | Study Intersection | Future Study Intersection

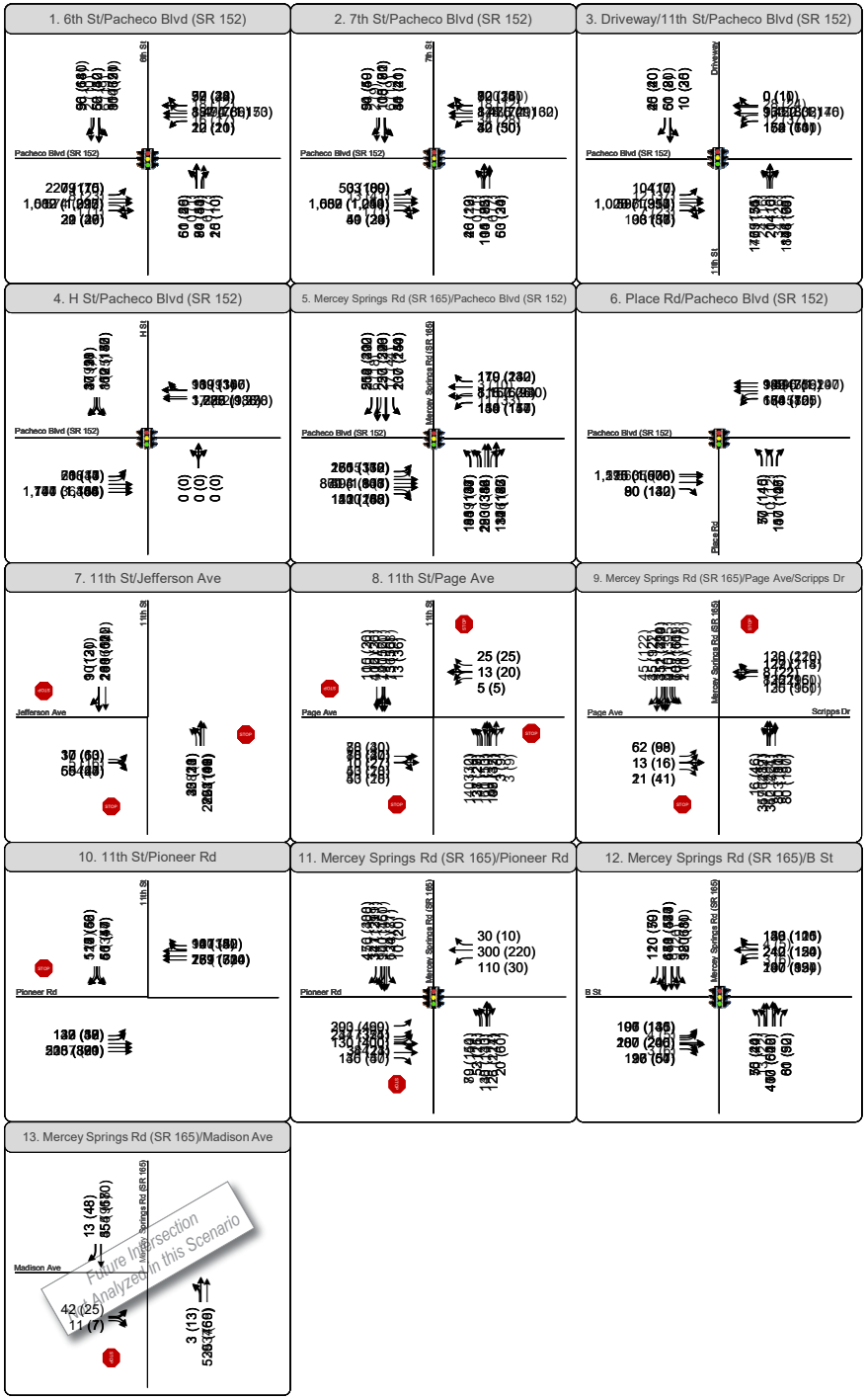
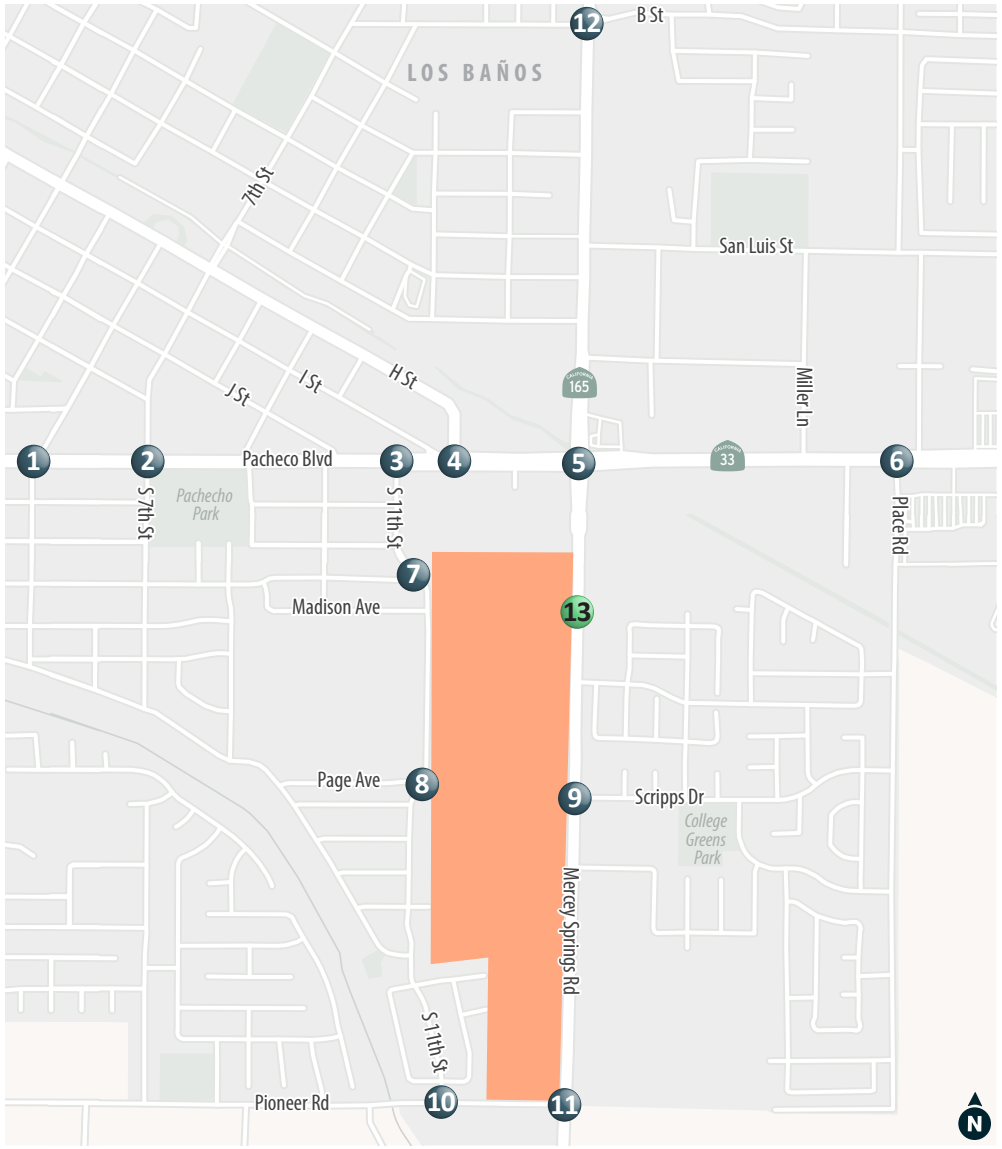
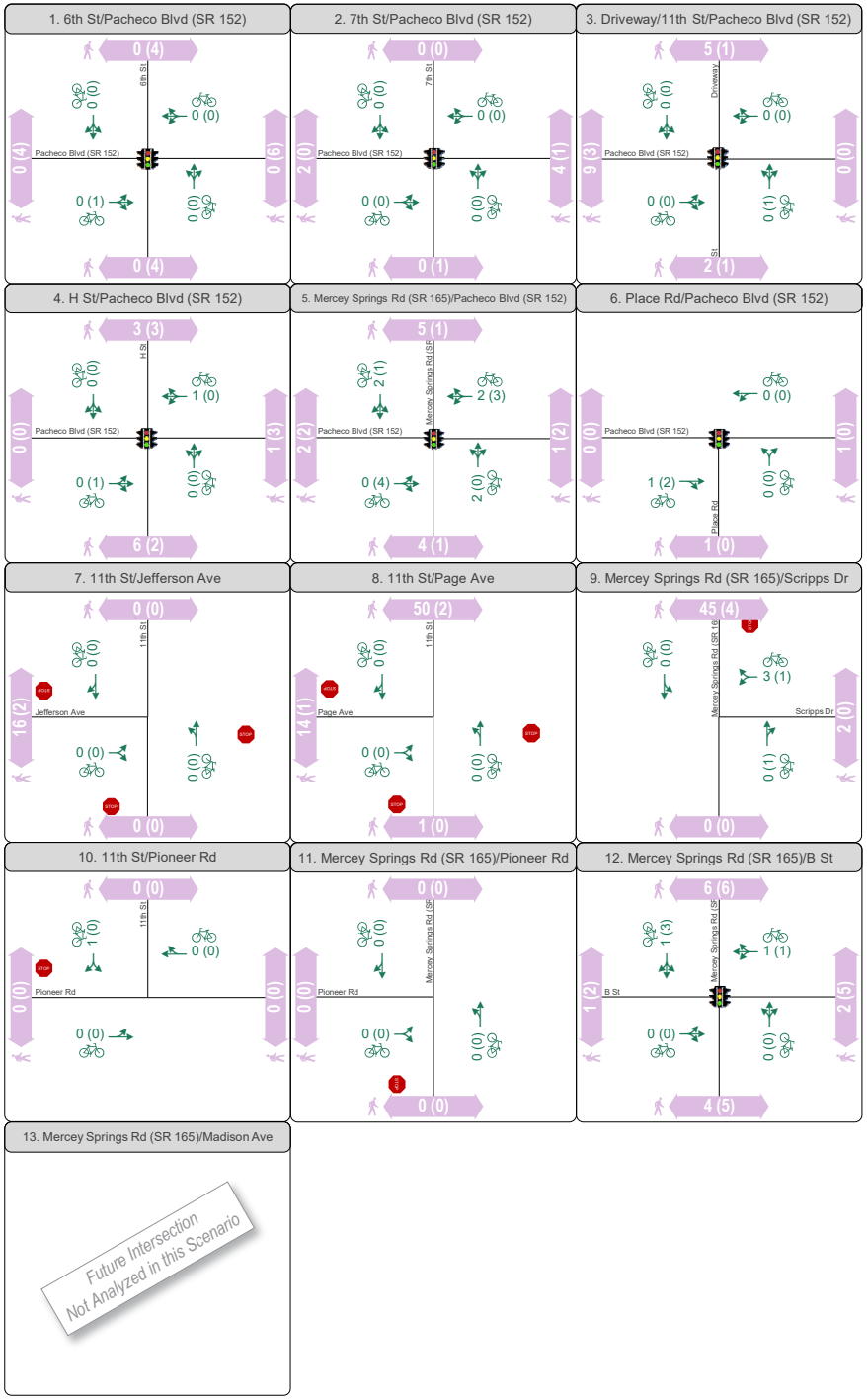


FIGURE 5

Existing Plus Project Conditions Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls





0 (0) AM (PM) Peak Hour Pedestrian Volumes

0 (0) AM (PM) Peak Hour Bicycle Volumes

Signalized Intersection

Stop Sign

Project Site

Study Intersection

Future Study Intersection

FIGURE 6

Existing Conditions Peak Hour Bicycle and Pedestrian Volumes

Fehr & Peers

4.2.3 Existing Conditions Intersections Levels of Service

Existing intersection lane configurations and peak hour turning movement volumes were used to calculate the peak hour LOS for the study intersections during the weekday AM and PM peak hours for Existing Conditions. The results of the LOS analysis using the Synchro software program for the study intersections under Existing Conditions are presented in **Table 3** and the corresponding LOS calculation sheets are included in **Appendix B**.

As shown in **Table 3**, all intersections meet the LOS D standard with exception to the following intersections:

- Intersection 9: Mercey Springs Road (SR 165)/Scripps Drive – LOS F in the AM peak hour and LOS E on the PM peak hour for the worst movement

Table 3. Existing Conditions Intersection Level of Service

	Intersection	Control[1]	Peak Hour	LOS Standard	Existing Conditions	
					Delay[2] (sec)	LOS[3]
1	6th Street/Pacheco Boulevard (SR 152)	Signalized	AM	D	19.1	B
			PM	D	14.6	B
2	7th Street/Pacheco Boulevard (SR 152)	Signalized	AM	D	26.8	C
			PM	D	11.5	B
3	11th Street/Pacheco Boulevard (SR 152)	Signalized	AM	D	29.7	C
			PM	D	8.9	A
4	H Street/Pacheco Boulevard (SR 152)	Signalized	AM	D	5.2	A
			PM	D	7.5	A
5	Pacheco Boulevard (SR 152)/ Mercey Springs Road (SR 165)	Signalized	AM	D	46.6	D
			PM	D	47.5	D
6	Place Road/Pacheco Boulevard (SR 152)	Signalized	AM	D	26.3	C
			PM	D	7.9	A
7	11th Street/Jefferson Avenue	AWSC	AM	D	14.2	B
			PM	D	7.6	A
8	11th Street/Page Avenue	AWSC	AM	D	12.4	B
			PM	D	7.5	A
9	Mercey Springs Road (SR 165)/ Scripps Drive	SSSC	AM	D	**18.5 (78.6)**	**C (F)**
			PM	D	**9.1 (43.0)**	**A (E)**
10	Pioneer Road/11th Street	SSSC	AM	D	6.6 (28.5)	A (D)
			PM	D	1.9 (14.4)	A (B)
11	Pioneer Road/Mercey Springs Road (SR 165)	SSSC	AM	D	10.1 (31.7)	B (D)
			PM	D	9.5 (21.9)	A (C)
12	B Street/Mercey Springs Road (SR 165)	Signalized	AM	D	39.4	D
			PM	D	25.4	C
13	Mercey Springs Road (SR 165)/ Madison Avenue	*Intersection Does not Exist in This Scenario*				

Notes:
1. AWSC = all-way stop control, SSSC = side-street stop-control
2. Delay for signalized and all-way stop-controlled intersections presented as whole-intersection average delay. Delay for side-street stop-controlled intersections presented as whole-intersection (delay on worst movement).
3. LOS per *Highway Capacity Manual, 7th Edition*

Bold indicates unacceptable operations. **Bold and highlighted** indicates a substantial adverse effect.
Source: Fehr & Peers, 2025.

4.2.4 Existing Conditions Vehicle Queues

Table 4 presents the weekday AM and PM peak hour 95th percentile queues for the study intersections where vehicle queues may occasionally exceed the vehicle storage length. These queues are indicative of maximum design queues occurring during peak period of peak traffic. Queue worksheets are provided in **Appendix B**.

Table 4. Existing Conditions 95th Percentile Queues

Intersection		Control[1]	Movement	Storage Length[2] (ft)	Existing Conditions	
					AM	PM
1	6th Street/Pacheco Boulevard (SR 152)	Signalized	EBL	210	175	175
			EBT	595	200	300
			EBTR	595	200	300
			WBL	135	25	25
			WBT	815	25	25
			WBTR	815	25	25
			NBLT	265	225	125
			NBR	100	25	0
			SBLT	400	250	175
			SBR	160	25	25
2	7th Street/Pacheco Boulevard (SR 152)	Signalized	EBL	140	75	**175**
			EBT	840	25	25
			EBTR	840	25	25
			WBL	130	75	75
			WBT	665	525	25
			WBTR	665	550	25
			NBLTR	255	250	175
			SBLT	440	225	175
			SBR	60	25	25
3	11th Street/Pacheco Boulevard (SR 152)	Signalized	EBL	130	25	25
			EBT	530	400	100
			EBTR	530	425	100
			WBL	160	**275**	125
			WBT	380	25	25
			WBTR	380	25	25
			NBLTR	275	**350**	150
			SBLT	150	125	75

Intersection		Control[1]	Movement	Storage Length[2] (ft)	Existing Conditions	
					AM	PM
			SBR	150	25	25
4	H Street/Pacheco Boulevard (SR 152)	Signalized	EBL	160	50	25
			EBT1	380	25	25
			EBT2	380	25	25
			WBT	900	25	200
			WBTR	900	25	200
			SBLR	1,220	200	250
5	Pacheco Boulevard (SR 152)/ Mercey Springs Road (SR 165)	Signalized	EBL	280	**325**	**300**
			EBT1	430	350	**475**
			EBT2	430	350	**475**
			EBR	120	**125**	100
			WBL	250	**275**	**275**
			WBT1	1,725	375	325
			WBT2	1,725	375	325
			WBR	480	50	75
			NBL1	145	**150**	125
			NBL2	145	**150**	125
			NBT	1,730	275	325
			NBTR	1,730	275	325
			SBL	185	**225**	**275**
			SBT1	750	200	200
			SBT2	750	200	200
			SBR	350	75	75
6	Place Road/Pacheco Boulevard (SR 152)	Signalized	EBT1	640	475	25
			EBT2	640	475	25
			EBR	290	100	25
			WBL	380	125	150
			WBT1	865	50	50
			WBT2	865	50	50
			NBL1	190	75	100
			NBL2	190	75	100
			NBR	470	25	25

Intersection		Control[1]	Movement	Storage Length[2] (ft)	Existing Conditions	
					AM	PM
7	11th Street/Jefferson Avenue	AWSC	EBLR	730	25	25
			NBLT	230	100	25
			SBTR	290	100	25
8	11th Street/Page Avenue	AWSC	EBLR	1,050	50	25
			NBL	140	75	25
			NBT	140	50	25
			SBTR	1,380	75	25
9	Mercey Springs Road (SR 165)/ Scripps Drive	SSSC	WBLR	355	250	150
			SBL	190	25	25
10	Pioneer Road/11th Street	SSSC	EBL	80	25	25
			SBLR	110	100	25
11	Pioneer Road/Mercey Springs Road (SR 165)	SSSC	EBLR	960	150	125
			NBLT	2,670	25	0
12	B Street/Mercey Springs Road (SR 165)	Signalized	EBL	55	**150**	**125**
			EBTR	220	**300**	200
			WBL	55	**200**	**100**
			WBT	640	225	100
			WBR	50	0	0
			NBL	160	100	25
			NBTR	670	400	325
			SBL	305	150	75
			SBTR	770	575	275
13	Mercey Springs Road (SR 165)/ Madison Avenue	*Intersection Does not Exist in This Scenario*				

Notes:
1. AWSC = all-way stop control, SSSC = side-street stop-control
2. An additional 60 to 90 feet of storage is typically provided in the taper area outside of the through lane, which is not reflected in the storage length above.

Bold indicates queue potentially extends beyond available storage.
Source: Fehr & Peers, 2026.

As shown in **Table 4**, 95th percentile queues at 7th Street/Pacheco Boulevard (SR 152), 11th Street/Pacheco Boulevard (SR 152), Pacheco Boulevard (SR 152)/ Mercey Springs Road (SR 165), and B Street/Mercey Springs Road (SR 165) show that motorists may experience periodic queue spillback and delays from the identified individual movements.

5. Project Trip-Making Characteristics

This chapter provides an overview of the proposed Project trip generation, distribution, and assignment characteristics, allowing for an evaluation of Project impacts on the surrounding roadway network. The amount of traffic associated with the Project was estimated using a three-step process:

1. **Trip Generation** – The estimated *amount* of vehicle traffic entering/exiting the Project site.
2. **Trip Distribution** – The *direction* trips are projected to approach and depart the Project site.
3. **Trip Assignment** – The Project trips were then *assigned* to specific roadway segments and intersection turning movements based on likely paths of travel.

5.1 Trip Generation

A typical method for estimating the number of trips generated by a proposed Project is to use trip generation data presented in the Institute of Engineers' *Trip Generation Manual, 11th Edition*. The Trip Generation Manual includes trip generation data for a variety of land-use types. In estimating the trips generated by the proposed Project, the single-family residential portion of the site was analyzed using Land Use Code 210 (Single-Family Detached Housing), the apartment portion of the Project was analyzed using Land Use Code 220 (Low-Rise Multifamily Housing) and the retail portion of the site was analyzed using Land Use Code 822 (Strip Retail Plaza).

Separate trip generation estimates were prepared for the weekday morning peak hour of adjacent street traffic and weekday evening peak hour of adjacent street traffic. Internal trips within the Project site as well as pass by trips for the commercial retail were calculated using the MainStreet tool created by Fehr & Peers that applies the EPA-approved MXD+ mixed-use trip generation methodology. The Project trip generation estimates are presented in **Table 5**.

Table 5. Project Trip Generation

Development Type	ITE Land Use Code	Quantity (Units)	Weekday Trip Generation						
			Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Single Family Residential Units	210	371 Dwelling Units	3,371	64	182	246	215	126	341
Multifamily–Apartments	220	120 Dwelling Units	845	14	46	60	45	27	72
Commercial Retail	822	50,000 sf	2,722	71	47	118	165	165	330
Total Raw Trip Generation			**6,938**	**149**	**275**	**424**	**425**	**318**	**743**
Reductions									
Internal Capture			-456	-18	-18	-36	-36	-36	-72
External Walk, Bike, and Transit			-298	-7	-12	-19	-18	-13	-31
Pass by Trips			-998	-20	-20	-40	-59	-59	-118
Total Reductions			**-1,752**	**-45**	**-50**	**-95**	**-113**	**-108**	**-221**
Net Total Trip Generation			**5,186**	**104**	**225**	**329**	**312**	**210**	**522**

Source: *ITE Trip Generation Manual, 11th Edition;* Fehr & Peers, 2025.

Table 5 shows a summary of the proposed development generating 5,186 weekday daily trips, 329 weekday AM peak hour trips, and 522 weekday PM peak hour trips.

5.2 Trip Distribution and Assignment

The trip distribution and trip assignment processes are used to estimate how the trips generated by a Project would be distributed across the roadway network. The geographical distribution of trips generated by the Project is based on the locations of complementary land uses, the street system serving the Project, and existing travel patterns in the area. **Figure 7** presents the resulting trip distribution. Based on the configuration of the roadway network, the Project trips were assigned to the roadway system, which is presented in **Figure 8**.

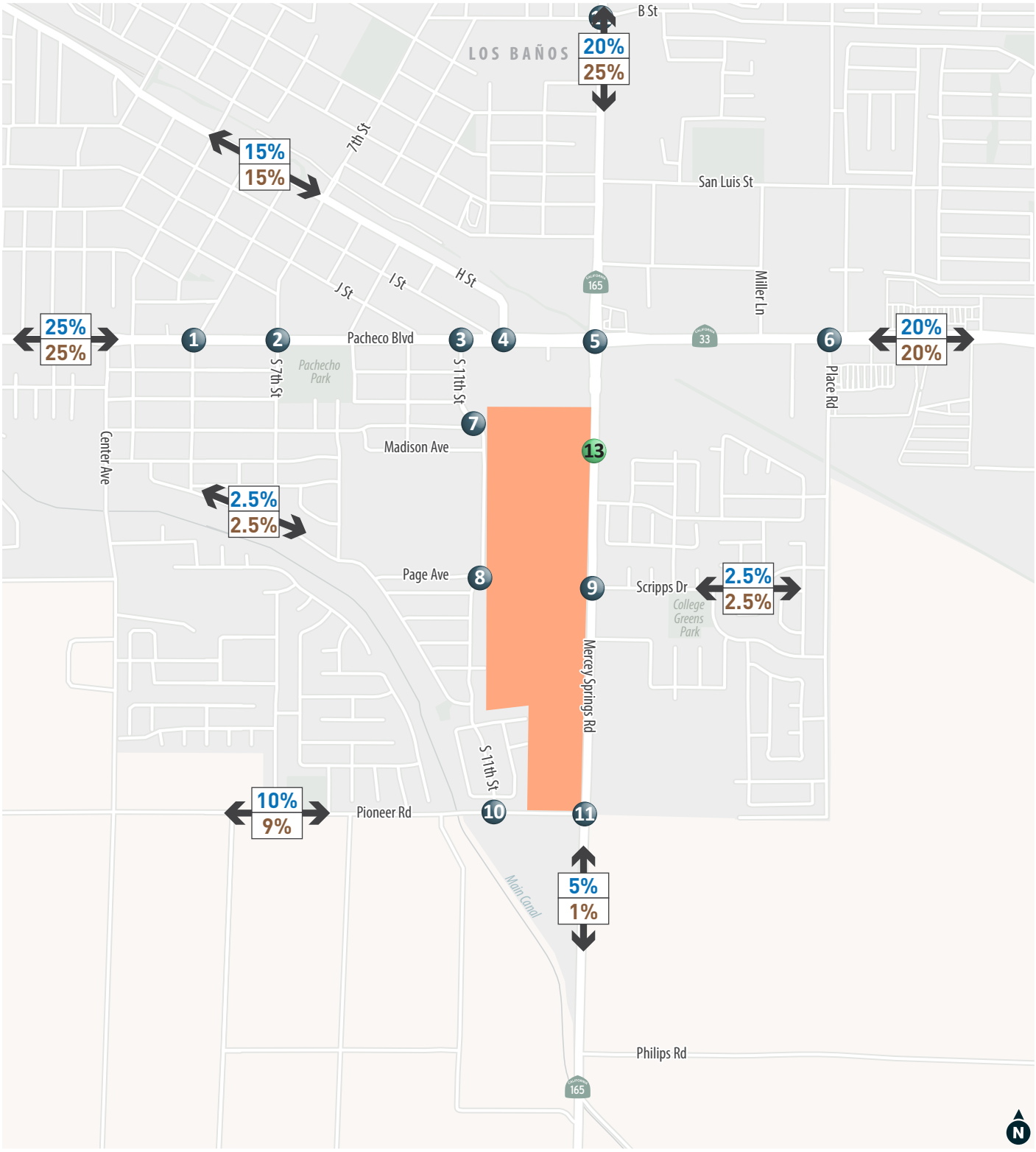
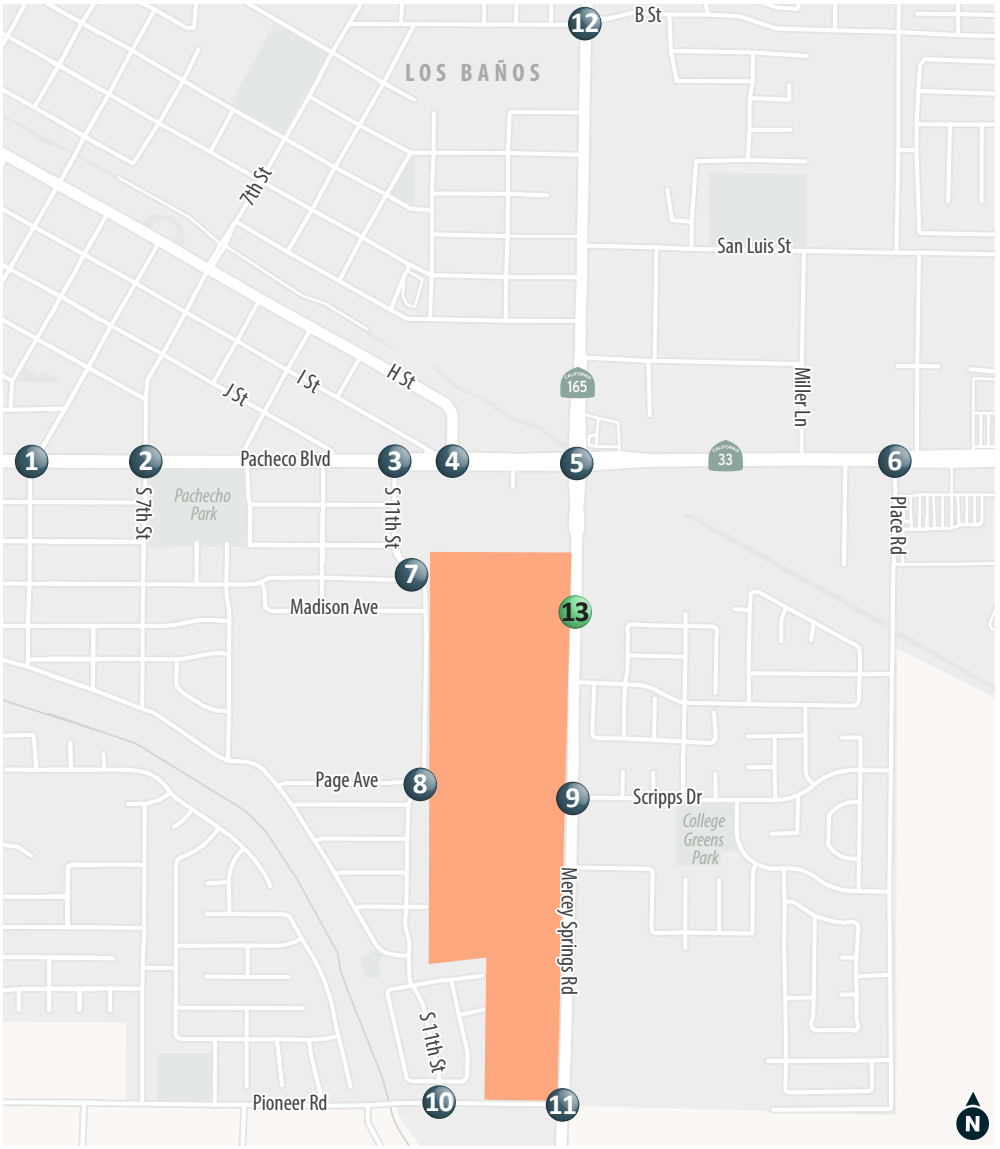


FIGURE 7

Project Trip Distribution

Fehr & Peers



XX (YY) AM (PM) Peak Hour Traffic Volumes | Signalized Intersection | Stop Sign

Project Site | Study Intersection | Future Study Intersection

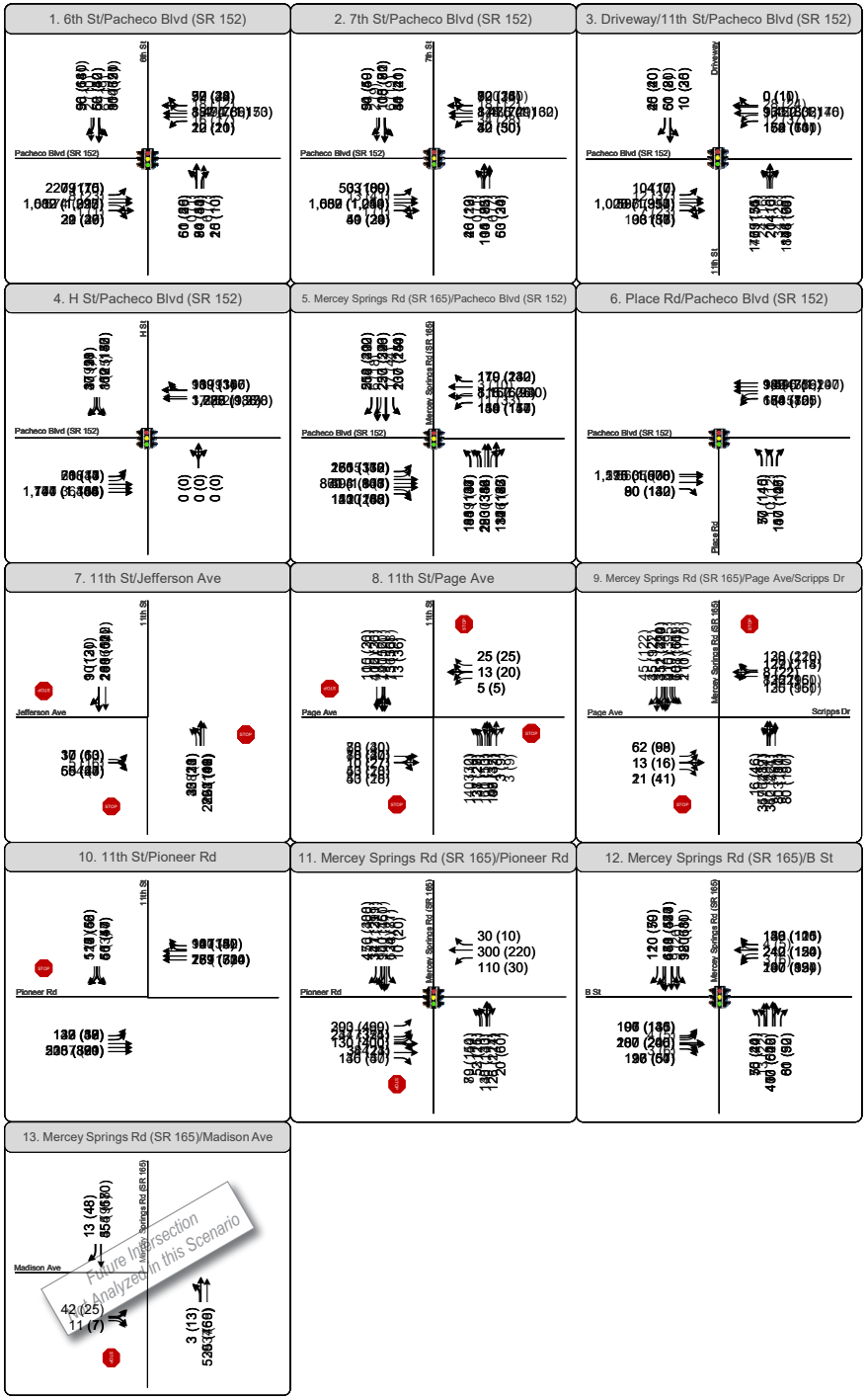


FIGURE 5

Existing Plus Project Conditions Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls

6. CEQA Transportation Assessment

This chapter presents the CEQA impact analysis results for the Project. This analysis below is related to CEQA Guidelines Appendix G, Transportation Checklist Question B.

6.1 CEQA VMT Analysis

The following subsections outline the CEQA VMT analysis prepared for the Project.

6.1.1 Screening of Retail Portion of Project

As noted in **Section 3.1.1**, the adopted VMT analysis methodology for retail projects in Los Banos retains the option to screen retail projects from further analysis (i.e., presume a less-than-significant impact) if a retail project meets the screening criteria in the OPR *Technical Advisory*. The proposed retail component of the Project will be less than 50,000 square feet in size and is located in an area of the City that is primarily residential. Therefore, it is expected that the retail portion of the Project would shorten trips, and thus reduce VMT. Thus, the screening criteria from the OPR *Technical Advisory* applies, and the CEQA Transportation VMT impact for the retail portion of the Project is ***less-than-significant.***

6.1.2 Assessment of Residential Portion of Project

6.1.2.1 MCAG Model

The latest 2022 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) Merced County Association of Governments Model (MCAG Model) was used as the basis of estimating Project VMT per capita. The MCAG Model includes a base year of 2023 and multiple forecast years, including 2024, 2025, 2026, 2029, 2031, 2037, and 2046. The MCAG Model contains land use, roadway network, and travel characteristics information for Merced County, and divides the county into several traffic analysis zones (TAZs). The Year 2046 model is consistent with expected build-out of the 2022 RTP projects. The MCAG Model included special adjustments for the City of Los Banos to reflect the relatively unique travel patterns for western Merced County agencies versus agencies along the SR 99 corridor; these Los Banos-related improvements, as well as verification of the General Plan buildout land use assumptions, were implemented as part of the ongoing Transportation Master Plan update Project.

The model allows calculation of VMT based on the trip generation of each land use and the trip lengths for each trip. The model land use and roadway network were reviewed and adjusted based on the Los Banos TMP as described above and received Project description.

6.1.2.2 Residential Project VMT Impact Analysis

Table 6 presents the Total Home-Based VMT per Resident estimates for the residential portion of the Project. The Baseline metric was estimated through interpolation between the model outputs of the 2023 Model Base Year and 2046 Model Cumulative Year.

Table 6. Project Total Home-Based VMT per Resident Estimates

Metric	2023 Model Base Year	2025 Interpolated CEQA Baseline[1]	2046 Model Cumulative Year
Residents	1,642	1,642	1,642
Total Home-Based VMT	26,533	25,837	18,526
Total Home-Based VMT per Resident	16.2	15.7	11.3

Notes:
1. Baseline Conditions is year 2025 (baseline is normally tied to the year when the Notice of Preparation (NOP) is issued).

Source: Fehr & Peers, 2025.

Table 7 presents the Total Home-Based VMT per Resident estimates for the City of Los Banos. The baseline metric was used to develop the assessment threshold and was estimated through interpolation between the model outputs of the 2023 Model Base Year and 2046 Model Cumulative Year.

Table 7. City of Los Banos Average Total Home-Based VMT per Resident Estimates

Metric	2023 Model Base Year	2025 Interpolated CEQA Baseline[1]	2046 Model Cumulative Year
Population	39,532	42,631	75,167
Total Home-Based VMT	663,212	683,561	897,223
Total Home-Based VMT per Resident	16.8	16.0	11.9

Notes:
1. Baseline Conditions is year 2025 (baseline is normally tied to the year when the Notice of Preparation (NOP) is issued).

Source: Fehr & Peers, 2025.

As **Table 6** shows, the Project Total Home-Based VMT per resident for the 2025 interpolated baseline Plus Project scenario would be 15.7 VMT per resident. As **Table 7** shows, the City of Los Banos average Project Total Home-Based VMT per resident is 16.0 VMT per resident. **Table 8** shows that this value is higher than the threshold value of 13.6 VMT per resident, which is 15% below the City of Los Banos average value of 16.0 VMT per resident. Therefore, the residential portion of the Project results in a ***significant impact,*** and mitigation measures are required to achieve a 13.4% reduction to meet the threshold value of 13.6 VMT per resident.

Table 8. Total Home-Based VMT per Resident Assessment

Metric	Project TAZ Value	City of Los Banos Average Value	CEQA VMT Threshold Value	Significant CEQA Impact?	Percent of Project VMT To Be Mitigated
Total Home-Based VMT per Resident	15.7	16.0	13.6	***Yes***	13.4%

Notes:
1. The VMT threshold represents 15 percent below the Citywide average Total Home-Based VMT per Resident of 16.0 VMT

Source: Fehr & Peers, 2025.

6.1.3 Residential Project VMT Mitigation Measure

The following subsection recommends and describes a set of travel demand management (TDM) strategies as mitigation measures to achieve the required 13.4% VMT reduction. The TDM strategies are based on recommendations listed in the 2022 California Air Pollution Control Officers Association (CAPCOA) *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity* (2022 CAPCOA Handbook). Fehr & Peers developed TDM+, a tool based on the 2022 CAPCOA Handbook, which estimates a percent reduction in VMT due to a single TDM strategy as well as for a combination of multiple TDM strategies.

TDM+ incorporates the effects of numerous land use and design strategies as well as various travel incentives and disincentives. The TDM+ tool was used to estimate the Project's VMT reduction potential in a suburban environment in consideration of the Project site's mixture of residential and retail land uses as well as the Project site's proximity to key facilities such as schools, restaurants, and grocery stores. The effectiveness of each strategy is dependent on the Project location, the surrounding infrastructure, and the complimentary TDM policies implemented on site.

Table 9 provides a recommended set of mitigation measures. It also includes the responsible party for implementation and the estimated effectiveness of each mitigation measure. City staff, within the purview as the CEQA Lead Agency, shall consider which mitigation measures are feasible for implementation. Tier I measures are generally more feasible to implement, as they rely mostly on site design and pricing decisions within the Project applicant's control. Tier II measures tend to require more consideration and coordination unless paired with strong incentives. If reaching a 13.4% VMT reduction goal with these measures is infeasible, this VMT reduction will be deemed as significant-and-unavoidable. These TDM measures include ongoing operational strategies and have monthly or annual costs which would require on-going management.

Table 9. Recommended Residential Project VMT Mitigation Measures

Recommended Mitigation Measure	Responsible Party	Potential VMT Reduction
Tier I		
A. Unbundle Parking	Project Applicant	1.7%
B. Pedestrian Network Improvement[1]	City and Project Applicant	6.4%
C. Construct Bike Facility[1]	City and Project Applicant	0.8%
	Total	**8.9%**
Tier II		
D. Extend Transit Network Coverage	City and Transit Agency	0.2%
E. Community-Based Travel Planning	Building Management and Tenants	2.3%
F. Conventional Car Share Program	Building Management and Tenants	0.15%
G. Limit Residential Parking Supply	City and Project Applicant	3.6%
	Total	**6.3%**
	Tier I and II Total	**15.2%**

Notes:
1. One or more elements of this strategy are currently included in Project site plans.

Source: Fehr & Peers, 2025.

Mitigation Measure 1: Transportation and Parking Demand Management (TDM) Plan.

The project must implement the following trip reduction strategies, which achieve the required 13.4% VMT reduction, including:

A. Separate parking costs from property costs (i.e., the purchase or rent of parking spaces are separate from the housing cost) for the multifamily apartment units.
B. Include sidewalks along the following roadways:
    a. 11th Street between Jefferson Avenue and Page Avenue
    b. Mercey Springs Road (SR 165) between 13th Street and Scripps Drive
C. Retain the proposed Class I bike path along Pioneer Road from 11th Street to Mercey Springs Road (SR 165), and revise the proposed Class II bike plan to preserve the existing Class I bike path along the north side of Page Avenue from 11th Street to Mercey Springs Road (SR 165)
D. Coordinate with the local transit agency for the Los Banos Commuter route, Transit Joint Powers Authority for Merced County, for the expansion of the local transit network.
E. Provide tenants with community-based travel planning.
F. Provide access to shared vehicles for tenants.
G. Reduce the total parking supply available at the residential site and prohibit on-street parking.

Mitigation Measure Effectiveness

Other TDM measures were considered but rejected as infeasible due to the project's location. A more detailed description of the recommended mitigation measures above is provided as follows:

Tier I

A. *Unbundle Parking* – The cost per parking space can influence the potential VMT reduction (i.e., the higher the fee for parking, the greater the VMT reduction). The parking cost per space is assumed to be $150 each month, or $1,800 annually.
B. *Pedestrian Network Improvement* – The length of sidewalk can influence the potential VMT reduction (i.e., the longer the sidewalk, the greater the VMT reduction). In addition to the increased sidewalk length, connecting the pedestrian network grid can also influence the potential VMT reduction (i.e., the better the connectivity, the greater the VMT reduction). There are no existing sidewalks along the Project frontages along 11th Street, Pioneer Road, and Mercey Springs Road (SR 165). While the site plan shows a proposed sidewalk along Pioneer Road, it does not indicate sidewalk improvements along 11th Street or Mercey Springs Road. Providing sidewalks at locations identified in **Mitigation Measure 1** above will fill gaps in the local grid and provide direct, continuous connections to quality destinations that fulfill daily needs – a high school, an elementary school, a grocery store, and restaurants. The Project site's proximity to these destinations makes walking a more viable and attractive transportation option.
C. *Construct Bike Facility* – Providing bicycle infrastructure helps to improve biking conditions and encourages a shift from driving to biking. In addition to the length of the bikeway network, the number of key destinations and the type of bike facility can influence the potential VMT reduction. An existing Class I bike path is located along Page Avenue from 11th Street to Mercey Springs Road (SR 165). The site plan indicates the Project would construct a Class II bike lane at the same location which would replace the currently existing Class I path. The Project also proposes constructing a Class I bike path along Pioneer Road, just along the Project's boundary (approximately 500 feet), which is aligned with the City's proposed Class I path in the Pioneer Road Complete Streets Plan. Including Class I bike paths at locations identified in **Mitigation Measure 1** will enhance bike connectivity from the Project site to nearby quality destinations, especially the high school and the elementary school. Additionally, it will align the Project site plan with the City's General Plan and Bicycle-Pedestrian Plan to support connectivity of the City's bikeway network.

Tier II

D. *Extend Transit Network Coverage* – The expansion of local transit network near the Project site would enhance the Project site's connection to the transit network and thus can influence the potential VMT reduction (i.e., the longer the transit network, the greater the VMT reduction).
E. *Community-Based Travel Planning* – Community-based travel planning includes customized information, incentives, and support to encourage the use of transportation alternatives in place of driving alone. The number of residences targeted can influence the potential VMT reduction (i.e., the higher the target number, the greater the VMT reduction).
F. *Conventional Car Share Program* – Car share programs offer people convenient access to a vehicle for personal or commuting purposes. This provides an alternative to driving alone and helps reduce vehicle ownership.

G. *Limit Residential Parking Supply* – Reduced parking availability can influence the potential VMT reduction (i.e., the larger the gap between supply and demand, the greater the VMT reduction).

If all mitigation measures are deemed feasible and able to be implemented, the project's VMT impact is ***less-than-significant with mitigation.***

6.2 CEQA Multimodal System Assessment

6.2.1 Evaluation of Vehicle System Hazard Impacts

Due to similar residential and commercial land uses in the Project vicinity, the speed and mix of vehicles generated by the Project is assumed to be similar to the existing speed and mix of vehicles in the study area.

The Project, as currently proposed in the site plan, would provide access to the public circulation system through two full-access points along 11th Street, two full-access points along Mercey Springs Road (SR 165), and one right-in/right-out only access point along Pioneer Road. The Pioneer Road access point is presumed to be right-in/right-out due to the design of the Pioneer Road Complete Streets Project and associated widening/intersection improvements that make a full access point infeasible. Emergency vehicle access-only driveways would be provided at the northern property line of the Project site at the end of "A Street," and at the end of "Court O" located on the southwestern section of the site. The Project roadways along Mercey Springs Road (SR 165) are anticipated to be the primary entry points to the site as it is a State Highway that traverses the City of Los Banos from north to south. All Project access points in this analysis are presumed to be side-street stop-controlled, except for 11th Street/Page Avenue which is anticipated to be all-way stop-controlled.[4]

The posted speed limits along the following roadways within the Project's vicinity are as follows:

- 25 to 30 miles per hour along 11th Street
- 45 miles per hour along Pioneer Road
- 45 to 50 miles per hour along Mercey Springs Road (SR 165)

According to Table 201.1 of the Caltrans *Highway Design Manual*, the stopping sight distance at 25, 30, 45, and 50 miles per hour is 150 feet, 200 feet, 360 feet, and 430 feet, respectively. With the use of Google Earth, the sight distance along 11th Street appears to be over 300 feet, and the sight distance along Pioneer Road and Mercey Springs Road (SR 165) appears to be over 500 feet. This would indicate that the stopping sight distance for the proposed access points may be adequate.

The internal roadway widths range from 58 feet in the residential areas to 80 feet on Page Avenue for the commercial properties on the site. The throat lengths of the access points are still unclear as internal driveways and on-street parking areas for the residential and commercial properties are still undefined. Analysis of the intersection access points for the weekday AM and PM peak hours in all with Project scenarios (LOS worksheets included in **Appendix B**) indicate that the average 95th percentile queue for vehicles exiting the Project site would be between one to two vehicles, with the exception of Page Avenue that will have queues ranging from eight to twenty vehicles. Overall, based

[4] The two access points along Mercey Springs Road (SR 165) will later be evaluated for roundabout analysis in **Section 6.1 and 7.3;** intersection improvements, such as the addition of a roundabout, must be made at these access points to no longer result in a substantial adverse effect.

on the current site plan, it is assumed that the proposed width and throat depth at the access points are sufficient to accommodate queuing.

Overall, the Project does not introduce incompatible uses to the roadway system, nor would it introduce geometric features that would result in hazardous conditions. Thus, implementation of the Project would result in a ***less-than-significant*** vehicle system hazard impact.

6.2.2 Evaluation of Pedestrian Facility Impacts

The Project would create a significant impact related to the pedestrian system if any of the following criteria are met:

- Disrupt existing pedestrian facilities
- Interfere with planned pedestrian facilities
- Create inconsistencies with adopted pedestrian system plans, guidelines, policies, or standards

There are no existing sidewalks along the Project frontage along 11th Street, Pioneer Road, and Mercey Springs Road (SR 165). Proposed pedestrian facilities on-site include a network of pathways and sidewalks around and between buildings and neighborhoods. The site plan also indicates the Project would construct a pedestrian facility along the southern Project frontage on Pioneer Road only. As a result, the Project would provide new pedestrian facilities that connect to the existing pedestrian network in the surrounding neighborhoods. The Project proposes no features that would be hazardous to pedestrian travel and does not conflict with any pedestrian facilities plans or programs. Overall, the Project would result in a ***less-than-significant*** impact related to the pedestrian system.

Although the Project does not pose any significant impacts related to the pedestrian system, it would benefit from providing more pedestrian paths to the surrounding neighborhoods. It is required the Project implement **Mitigation Measure 1** – provide sidewalks along 11th Street, between Jefferson Avenue and Page Avenue, and along Mercey Springs Road (SR 165), between 13th Street and Scripps Drive. Not only would this help in potentially decreasing the Project's VMT impact but also provide connection to the external pedestrian facilities along 11th Street and Mercey Springs Road (SR 165).

6.2.3 Evaluation of Bicycle Facility Impacts

The Project would create a significant impact related to the bicycle system if any of the following criteria are met:

- Disrupt existing bicycle facilities
- Interfere with planned bicycle facilities
- Create inconsistencies with adopted bicycle system plans, guidelines, policies, or standards

The Project proposes constructing a Class I bike path along Pioneer Road, just along the Project's boundary (approximately 500 feet), which is aligned with the City's proposed Class I path for the entirety of Pioneer Road. A Class II bike lane is proposed within the site along Page Avenue from 11th Street to Mercey Springs Road (SR 165), which would remove the currently existing Class I path. Per the City's General Plan and Bicycle-Pedestrian Plan, removal of the Class I path along Page Avenue would disrupt the existing bicycle facility by converting a high-quality Class I path to an on-street Class II facility, therefore, causing a ***significant impact***.

Mitigation Measure 2: The final site plan for the Project should implement **Mitigation Measure 1** and illustrate a Class I path along the north side of Page Avenue. Implementing this mitigation measure would not disrupt or interfere with the existing bicycle facility and provide a continuous flow to the pedestrian hybrid beacon located on Scripps Road/Mercey Springs Road (SR 165). With this mitigation, the Project would then result in a ***less-than-significant impact with mitigation*** related to bicycle transportation.

6.2.4 Evaluation of Emergency Access Impacts

Several factors determine whether a Project has sufficient access for emergency vehicles, including the following:

- Number of access points (both public and emergency access only)
- Width of access points
- Width of internal roadways

The Project's access points on 11th Street, Mercey Springs Road (SR 165), Pioneer Road, and the two dedicated emergency vehicle only driveways at the end of "A Street" and "O Court" would provide emergency vehicle access to the site.

Los Banos City Fire Station 1 is most likely to serve the site. It is located on 7th Street, and fire vehicles are likely to take Mercey Springs Road to access the Project site. While the Project may increase traffic congestion in the vicinity of the Project, emergency vehicles would still retain the right to preempt traffic signals and use lights and sirens to indicate to drivers that they need to yield. Therefore, the Project results in a ***less-than-significant*** impact related to emergency vehicle access.

6.2.5 Evaluation of Transit Facility Impacts

The Project would create a significant impact related to transit service if the following criteria are met:

- Generate a substantial increase in public transit riders that cannot be adequately served by existing public transit services
- Establish transit facilities or equipment that results in sight distance deficiency or vehicle conflict point
- Disrupt or conflict with existing or planned public transit facilities

The Project is over one mile from the closest existing Los Banos Commuter bus stops located along Pacheco Boulevard, H Street, and I Street. Nevertheless, the expected increase in passenger demand is not projected to exceed available transit capacity on the existing bus routes.

Overall, the Project proposes no features which would conflict with existing or planned transit services, nor does it preclude future facilities. The Project is not expected to result in increases in ridership on local or regional transit facilities that would exceed its capacity. Thus, the Project would result in a ***less-than-significant*** impact related to transit.

Although the Project does not pose any significant impacts related to the transit system, it would benefit from expanding the current transit network. It is recommended the Project implement **Mitigation Measure 1** – City staff consider coordinating with local transit agencies to expand the existing transit network. Not only would this help in potentially decreasing the Project's VMT impact but also provide better connectivity to the transit network.

7. Existing Plus Project Conditions

This chapter describes Existing Plus Project intersection Level of Service (LOS), which is Existing Conditions with the addition of traffic generated by the Project. No roadway improvements were assumed at the study intersections for the analysis of the Existing Plus Project Conditions as none are currently proposed or under consideration. As LOS is no longer a CEQA transportation impact threshold for development projects, this assessment is not used to determine CEQA impacts but may inform decisions about potential conditions of approval based on General Plan policy consistency.

As noted in **Section 3.2.5**, the Caltrans ISOAP method requirement for local development project review has fundamentally altered the TIA process when a land use project will take new or modified access to the State Highway System. Because of Caltrans's strong preference for roundabouts, the default "Plus Project" scenario intersection control assumption for Mercey Springs Road (SR 165)/Scripps Drive and Mercey Springs Road (SR 165)/Madison Avenue is a single-lane roundabout instead of a side-street stop-controlled intersection. Alternative intersection control devices may be considered by Caltrans as part of their review of this study, but additional evidence related to traffic safety would be required to provide justification for an alternative intersection control device.

7.1 Existing Plus Project Conditions Intersection Analysis

Existing Plus Project Conditions were evaluated using methods described in **Chapter 3**. The LOS and delay results are summarized in **Table 10**, based on the traffic volumes and lane configurations in **Figure 9**. Detailed calculation sheets are provided in **Appendix B**.

As shown in **Table 10**, all intersections meet the LOS D standard with exception to the following intersections:

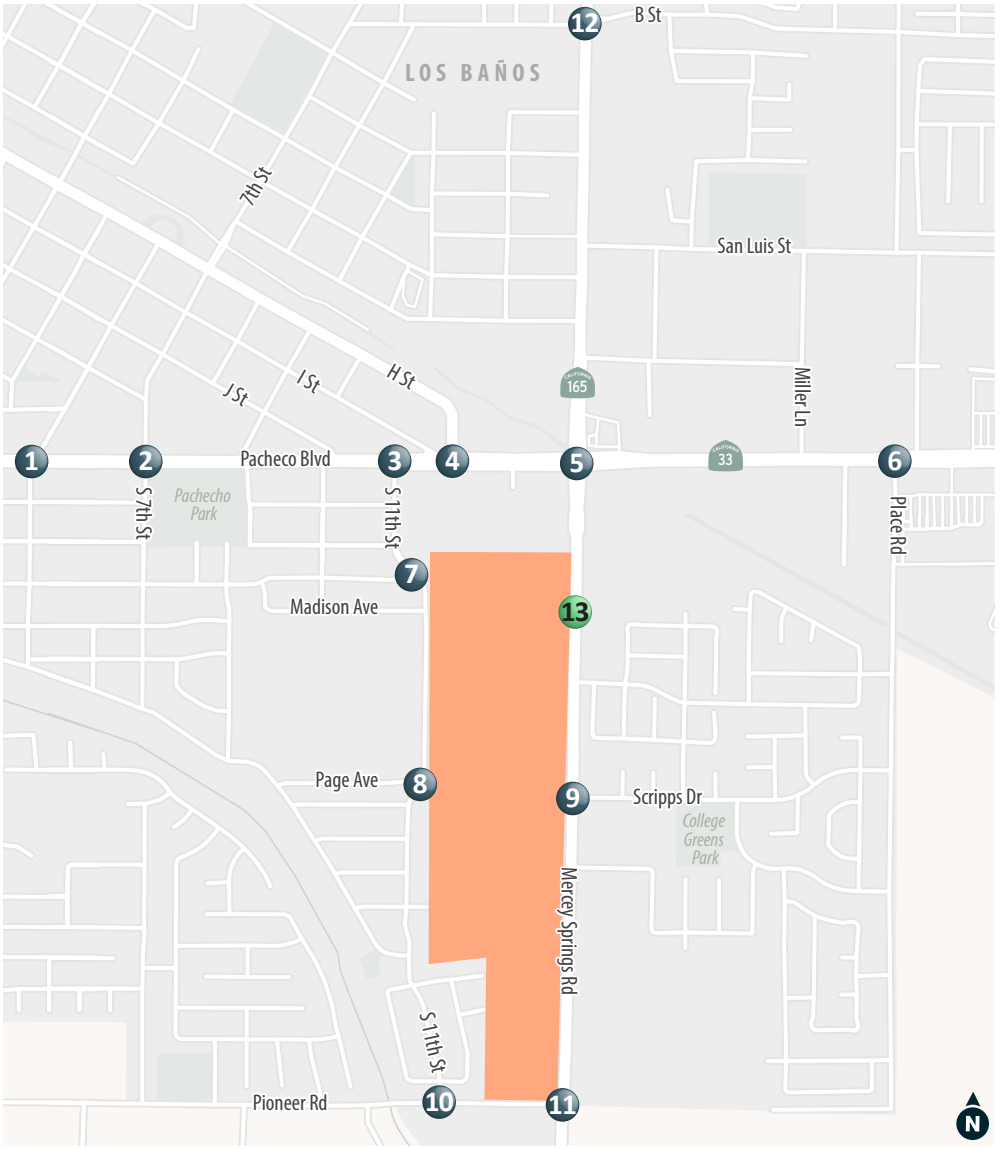
- Intersection 10: Pioneer Road/11th Street – LOS E in the AM peak hour for the worst movement
- Intersection 11: Pioneer Road/Mercey Springs Road (SR 165) – LOS E in the AM and PM peak hour for the worst movement

Table 10. Existing Plus Project Conditions Intersection Level of Service

	Intersection	Control[1]	Peak Hour	Existing Conditions		Existing Plus Project Conditions	
				Delay[2] (sec)	LOS[3]	Delay[2] (sec)	LOS[3]
1	6th Street/Pacheco Boulevard (SR 152)	Signalized	AM	19.1	B	19.4	B
			PM	14.6	B	16.1	B
2	7th Street/Pacheco Boulevard (SR 152)	Signalized	AM	26.8	C	22.3	C
			PM	11.5	B	11.8	B
3	11th Street/Pacheco Boulevard (SR 152)	Signalized	AM	29.7	C	45.3	D
			PM	8.9	A	19.0	B
4	H Street/Pacheco Boulevard (SR 152)	Signalized	AM	5.2	A	5.7	A
			PM	7.5	A	6.4	A
5	Pacheco Boulevard (SR 152)/ Mercey Springs Road (SR 165)	Signalized	AM	46.6	D	49.6	D
			PM	47.5	D	50.9	D
6	Place Road/Pacheco Boulevard (SR 152)	Signalized	AM	26.3	C	26.7	C
			PM	7.9	A	8.1	A
7	11th Street/Jefferson Avenue	AWSC	AM	14.2	B	20.2	C
			PM	7.6	A	8.4	A
8	11th Street/Page Avenue	AWSC	AM	12.4	B	14.8	B
			PM	7.5	A	8.0	A
9	Mercey Springs Road (SR 165)/ Scripps Drive	SSSC, Roundabout[4]	AM	**18.5 (78.6)**	**C (F)**	6.6	A
			PM	**9.1 (43.0)**	**A (E)**	7.1	A
10	Pioneer Road/11th Street	SSSC	AM	6.6 (28.5)	A (D)	**7.8 (35.5)**	**A (E)**
			PM	1.9 (14.4)	A (B)	2.1 (15.4)	A (B)
11	Pioneer Road/Mercey Springs Road (SR 165)	SSSC	AM	10.1 (31.7)	B (D)	**11.5 (36.5)**	**B (E)**
			PM	9.5 (21.9)	A (C)	**11.6 (26.8)**	**B (E)**
12	B Street/Mercey Springs Road (SR 165)	Signalized	AM	39.4	D	41.0	D
			PM	25.4	C	26.7	C
13	Mercey Springs Road (SR 165)/ Madison Avenue	Roundabout[4]	AM	*Does not Exist in This Scenario*		4.3	A
			PM			4.4	A

Notes:
1. AWSC = all-way stop control, SSSC = side-street stop-control
2. Delay for signalized and all-way stop-controlled intersections presented as whole-intersection average delay. Delay for side-street stop-controlled intersections presented as whole-intersection (delay on worst movement).
3. LOS per *Highway Capacity Manual, 7th Edition*
4. Roundabout control under Existing Plus Project Conditions.

Bold indicates unacceptable operations. **Bold and highlighted** indicates a substantial adverse effect.
Source: Fehr & Peers, 2025.



XX (YY) AM (PM) Peak Hour Traffic Volumes | Signalized Intersection | Stop Sign

Project Site | Study Intersection | Future Study Intersection | Roundabout

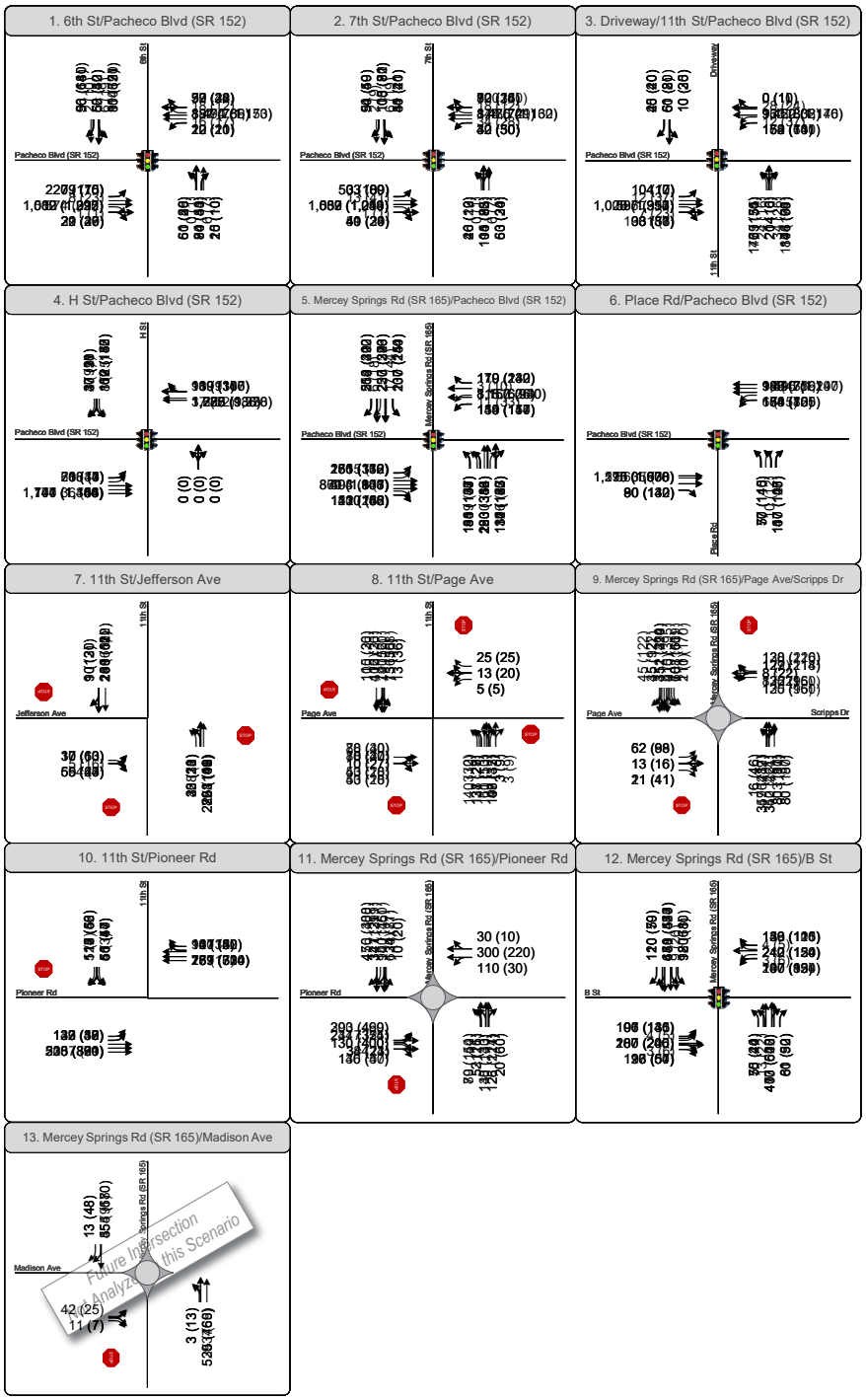


FIGURE 5

Existing Plus Project Conditions Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls

7.2 Existing Plus Project Vehicle Queues

Table 11 presents the weekday AM and PM peak hour 95th percentile queues for the study intersections where vehicle queues may occasionally exceed the vehicle storage length. These queues are indicative of maximum design queues occurring during peak period of peak traffic. Queue worksheets are provided in **Appendix B**.

Table 11. Existing and Existing Plus Project Conditions 95th Percentile Queues

Intersection		Control[1]	Movement	Storage Length[2] (ft)	Existing Conditions		Existing Plus Project Conditions	
					AM	PM	AM	PM
1	6th Street/Pacheco Boulevard (SR 152)	Signalized	EBL	210	175	175	175	175
			EBT	595	200	300	200	325
			EBTR	595	200	300	225	350
			WBL	135	25	25	25	25
			WBT	815	25	25	25	25
			WBTR	815	25	25	25	25
			NBLT	265	225	125	250	125
			NBR	100	25	0	25	0
			SBLT	400	250	175	250	225
			SBR	160	25	25	25	25
2	7th Street/Pacheco Boulevard (SR 152)	Signalized	EBL	140	75	**175**	75	**175**
			EBT	840	25	25	25	25
			EBTR	840	25	25	25	25
			WBL	130	75	75	75	75
			WBT	665	525	25	450	25
			WBTR	665	550	25	450	25
			NBLTR	255	250	175	**275**	200
			SBLT	440	225	175	225	200
			SBR	60	25	25	25	25
3	11th Street/Pacheco Boulevard (SR 152)	Signalized	EBL	130	25	25	25	25
			EBT	530	400	100	425	350
			EBTR	530	425	100	425	350
			WBL	160	**275**	125	**275**	**225**
			WBT	380	25	25	25	25
			WBTR	380	25	25	0	25
			NBLTR	275	**350**	150	**600**	225
			SBLT	150	125	75	125	75

Intersection		Control[1]	Movement	Storage Length[2] (ft)	Existing Conditions		Existing Plus Project Conditions	
					AM	PM	AM	PM
			SBR	150	25	25	25	25
4	H Street/Pacheco Boulevard (SR 152)	Signalized	EBL	160	50	25	75	25
			EBT1	380	25	25	25	25
			EBT2	380	25	25	25	25
			WBT	900	25	200	25	25
			WBTR	900	25	200	25	25
			SBLR	1,220	200	250	225	300
5	Pacheco Boulevard (SR 152)/ Mercey Springs Road (SR 165)	Signalized	EBL	280	**325**	**300**	**350**	**325**
			EBT1	430	350	**475**	375	**500**
			EBT2	430	350	**475**	375	**500**
			EBR	120	**125**	100	**125**	**200**
			WBL	250	**275**	**275**	**300**	**350**
			WBT1	1,725	375	325	400	325
			WBT2	1,725	375	325	400	325
			WBR	480	50	75	50	75
			NBL1	145	**150**	125	**200**	**175**
			NBL2	145	**150**	125	**200**	**175**
			NBT	1,730	275	325	300	375
			NBTR	1,730	275	325	300	375
			SBL	185	**225**	**275**	**225**	**275**
			SBT1	750	200	200	200	225
			SBT2	750	200	200	200	225
			SBR	350	75	75	100	75
6	Place Road/Pacheco Boulevard (SR 152)	Signalized	EBT1	640	475	25	500	25
			EBT2	640	475	25	500	25
			EBR	290	100	25	100	25
			WBL	380	125	150	150	175
			WBT1	865	50	50	50	50
			WBT2	865	50	50	50	50
			NBL1	190	75	100	75	100
			NBL2	190	75	100	75	100
			NBR	470	25	25	25	25
			EBLR	730	25	25	25	25

Intersection		Control[1]	Movement	Storage Length[2] (ft)	Existing Conditions		Existing Plus Project Conditions	
					AM	PM	AM	PM
7	11th Street/Jefferson Avenue	AWSC	NBLT	230	100	25	200	25
			SBTR	290	100	25	150	25
8	11th Street/Page Avenue	AWSC	EBLR	1,050	50	25	–	–
			NBL	140	75	25	75	25
			NBT	140	50	25	–	–
			SBTR	1,380	75	25	–	–
			EBLTR[4]	1,050	–	–	75	25
			WBLTR[4]	600	–	–	25	25
			NBTR[4]	140	–	–	50	25
			SBLTR[4]	1,380	–	–	100	25
9	Mercey Springs Road (SR 165)/ Scripps Drive	SSSC, Roundabout[3]	WBLR	355	250	150	–	–
			SBL	190	25	25	–	–
			EBLTR[4]	440	–	–	25	25
			WBLTR[4]	355	–	–	50	50
			NBLTR[4]	500	–	–	75	75
			SBLTR[4]	860	–	–	75	100
10	Pioneer Road/11th Street	SSSC	EBL	80	25	25	25	25
			SBLR	110	100	25	**150**	25
11	Pioneer Road/Mercey Springs Road (SR 165)	SSSC	EBLR	960	150	125	175	175
			NBLT	2,670	25	0	25	25
12	B Street/Mercey Springs Road (SR 165)	Signalized	EBL	55	**150**	**125**	**150**	**125**
			EBTR	220	**300**	200	**300**	200
			WBL	55	**200**	**100**	**200**	**100**
			WBT	640	225	100	225	100
			WBR	50	0	0	0	0
			NBL	160	100	25	100	25
			NBTR	670	400	325	425	350
			SBL	305	150	75	150	75
			SBTR	770	575	275	600	300
13	Mercey Springs Road (SR 165)/ Madison Avenue	Roundabout[3]	EBLR	1,110	*Intersection Does not Exist in This Scenario*		25	25
			NBLT	1,470			100	75
			SBTR	1,140			50	100

Notes:

1. AWSC = all-way stop control, SSSC = side-street stop-control
2. An additional 60 to 90 feet of storage is typically provided in the taper area outside of the through lane, which is not reflected in the storage length above.
3. Roundabout control under Existing Plus Project Conditions. New lane configuration under roundabout control.
4. New lane configuration under Existing Plus Project Conditions.

Bold indicates queue potentially extends beyond available storage.
Source: Fehr & Peers, 2026.

As shown in **Table 11**, 95th percentile queues at 7th Street/Pacheco Boulevard (SR 152), 11th Street/Pacheco Boulevard (SR 152), Pacheco Boulevard (SR 152)/ Mercey Springs Road (SR 165), Pioneer Road/11th Street, and B Street/Mercey Springs Road (SR 165) show that motorists may experience periodic queue spillback and delays from the identified individual movements.

7.3 Existing Plus Project Signal Warrant Analysis

The peak-hour signal warrants (Warrant 3A and Warrant 3B) from the *Manual on Uniform Traffic Control Devices* (MUTCD) were used to determine if Existing Plus Project volumes meet peak hour signal warrants (see **Appendix C**) for the following unsignalized intersection that exceed the intersection LOS threshold:

- Intersection 10: Pioneer Road/11th Street – AM peak hour
- Intersection 11: Pioneer Road/Mercey Springs Road (SR 165) – AM and PM peak hour

The intersections above meet the threshold in either Warrant 3A and 3B for each of the study peak hours. **Table 12** summarizes when the warrant is met for each intersection/scenario.

Table 12. Summary of Existing Plus Project Signal Warrant Analysis

Intersection		Scenario Meets Signal Warrant 3?	
		Existing Plus Project AM	Existing Plus Project PM
10	Pioneer Road/11th Street	Yes	No
11	Pioneer Road/Mercey Springs Road (SR 165)	Yes	Yes

Source: Fehr & Peers, 2025.

This analysis is intended to examine the general correlation between the current level of development in the region and the need to install new traffic signals. It estimates current traffic compared against a sub-set of the standard traffic signal warrants recommended in the Federal Highway Administration *Manual on Uniform Traffic Control Devices* and associated California MUTCD guidelines. This analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated by an experienced engineer based on field-measured rather than forecast traffic data and a thorough study of traffic and roadway conditions. Furthermore, the decision to install a signal should not be based solely upon the warrants, since the installation of signals can lead to certain types of collisions. The appropriate agency should undertake regular monitoring of actual traffic conditions and accident data, and timely re-evaluation of the full set of warrants to prioritize and program intersections for signalization.

7.4 Existing Plus Project Intersection Substantial Adverse Effects

This section of the report evaluates the Existing Plus Project Conditions intersection LOS results presented in **Table 10** against intersection substantial adverse effect criteria. As mentioned in **Section 3.2.2,** a proposed Project would result in a substantial adverse effect to intersection operations if the Project traffic causes the LOS to deteriorate from a LOS D to LOS E or F, or if the intersection is already operating at an LOS E or F prior to the addition of Project traffic and increases the delay by five or more seconds. The proposed Project would result in a substantial adverse effect to intersection operations at the following intersections:

- Intersection 10: Pioneer Road/11th Street
- Intersection 11: Pioneer Road/Mercey Springs Road (SR 165)

Intersection 10: Pioneer Road/11th Street – Under Existing Plus Project conditions, the addition of project trips at Pioneer Road/11th Street is expected to worsen the worst approach delay from LOS D to LOS E, which is below the City's LOS D standard, during the AM peak hour. The intersection also meets the Peak Hour Signal Warrant. Therefore, the Project would have a substantial adverse effect at this intersection. Replacing the side-street stop control with a signal would improve intersection operations by reducing the average intersection delay to approximately 13 seconds (LOS B) during the AM peak hour. This improvement would be in addition to the improvements currently in the Pioneer Road Complete Streets Project. With the addition of the improvements the Project's effect would be ***less-than-substantial with improvements.***

Intersection 11: Pioneer Road/Mercey Springs Road (SR 165) – Under Existing Plus Project conditions, the addition of the Project would worsen the worst movement LOS to LOS E during the AM and PM peak hours. The intersection also meets the Peak Hour Signal Warrant. Therefore, the Project would have a substantial adverse effect at this intersection. Replacing the side-street stop control with a two-lane roundabout would improve intersection operations by reducing the average intersection delay to approximately 8 seconds (LOS A) and 9 seconds (LOS A), during the AM and PM peak hours, respectively. This improvement is consistent with the Pioneer Road Complete Streets Project in the 2046 Cumulative Year, but the Project will create a substantial adverse effect at this intersection under Existing Plus Project Conditions. Thus, the roundabout would need to be built in the Near-Term, and fair share contributions must be made. The fair share calculations are mentioned in **Chapter 10**. With the addition of the improvements the Project's effect would be ***less-than-substantial with improvements.***

7.5 Summary of Near-Term Improvements

Below is a summary of the improvements needed in the Near-Term for the Project to alleviate substantial adverse effects at study intersections:

- Intersection 10: Pioneer Road/11th Street – Replace the side-street stop control with a signal at the Pioneer Road/11th Street intersection. This improvement will have the Project's effect be ***less-than-substantial with improvements*** at this intersection.
- Intersection 11: Pioneer Road/Mercey Springs Road (SR 165) – Replace the side-street stop control with a two-lane roundabout, staying consistent with the Pioneer Road Complete Streets Project and contributing to a fair share of its construction and maintenance. This improvement will have the Project's effect be ***less-than-substantial with improvements*** at this intersection.

8. Cumulative (Year 2046) Traffic Conditions

This chapter describes Cumulative Conditions intersection LOS both without and with traffic generated by the Project. The Cumulative (No Project) Condition represents conditions at buildout of the City's General Plan and other regional planning documents such as the Pioneer Road Complete Streets Plan and the proposed Los Banos Transportation Master Plan. Based on a review of previously completed transportation analyses for projects in the City of Los Banos, City staff indicated that Year 2046 is the Cumulative horizon year, which would incorporate the City's General Plan, the Pioneer Road Complete Streets Plan, the City's Transportation Master Plan, and the MCAG Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). The Year 2046 horizon year is also consistent with the horizon year for the MCAG model.

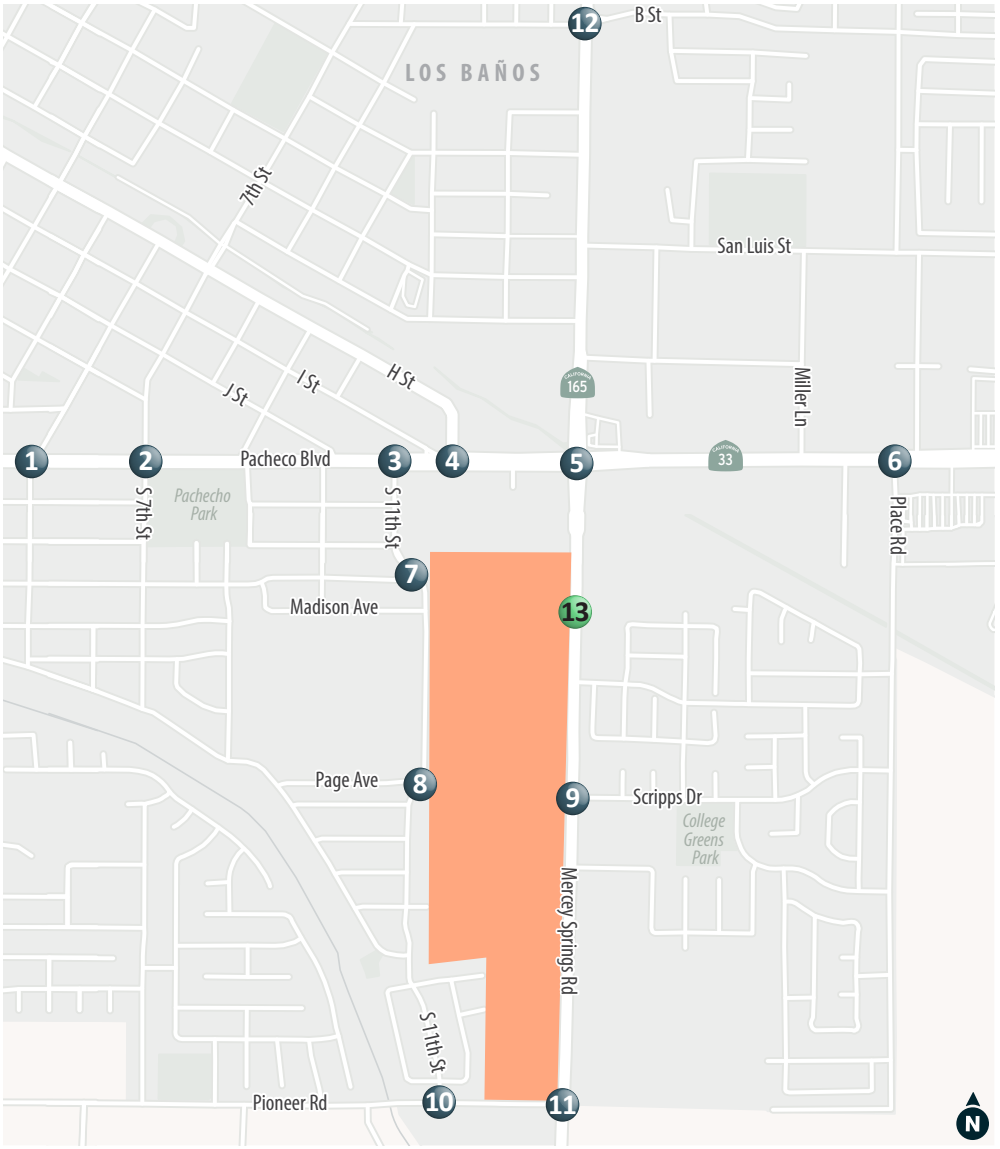
8.1 Cumulative Baseline Roadway Improvements

The Cumulative scenario considers roadway improvements that are funded and reasonably foreseeable by Year 2046. Based on feedback from City staff and the regional planning documents, the following study intersections include modifications to intersection lane configurations:

- Intersection 11: Pioneer Road/Mercey Springs Road (SR 165)
    - Install two-lane roundabout
    - Northbound approach: widen from 1 left-through shared lane to 1 through-left shared lane, 1 through-right shared lane
    - Southbound approach: widen from 1 through-right shared lane to 1 through-left shared lane, 1 through-right shared lane
    - Eastbound approach: widen from 1 left turn-right turn shared lane to 1 through-left shared lane, 1 through-right shared lane
    - Westbound approach: from no approach to 1 through-left shared lane, 1 through-right shared lane
- Intersection 12: B Street/Mercey Springs Road (SR 165)
    - Northbound approach: widen from 1 left turn lane, 1 through-right shared lane to 1 left turn lane, 2 through lanes, 1 right turn lane
    - Southbound approach: widen from 1 left turn lane, 1 through-right shared lane to 1 left turn lane, 2 through lanes, 1 right turn lane
    - Eastbound approach: widen from 1 left turn lane, 1 through-right shared lane to 1 left turn lane, 1 through lane, 1 right turn lane
    - Westbound approach: remove the channelized right turn lane to become a non-channelized right turn lane

8.2 Cumulative Year (Year 2046) Traffic Forecasts

Volumes for Cumulative Plus Project Conditions were prepared, and the net new trips from the proposed Project were subtracted to develop traffic volumes for Cumulative No Project Conditions. The Cumulative No Project volumes are presented in **Figure 10**, and the Cumulative Plus Project volumes are shown in **Figure 11**.



XX (YY) AM (PM) Peak Hour Traffic Volumes | Signalized Intersection | Stop Sign

Project Site | Study Intersection | Future Study Intersection | Roundabout

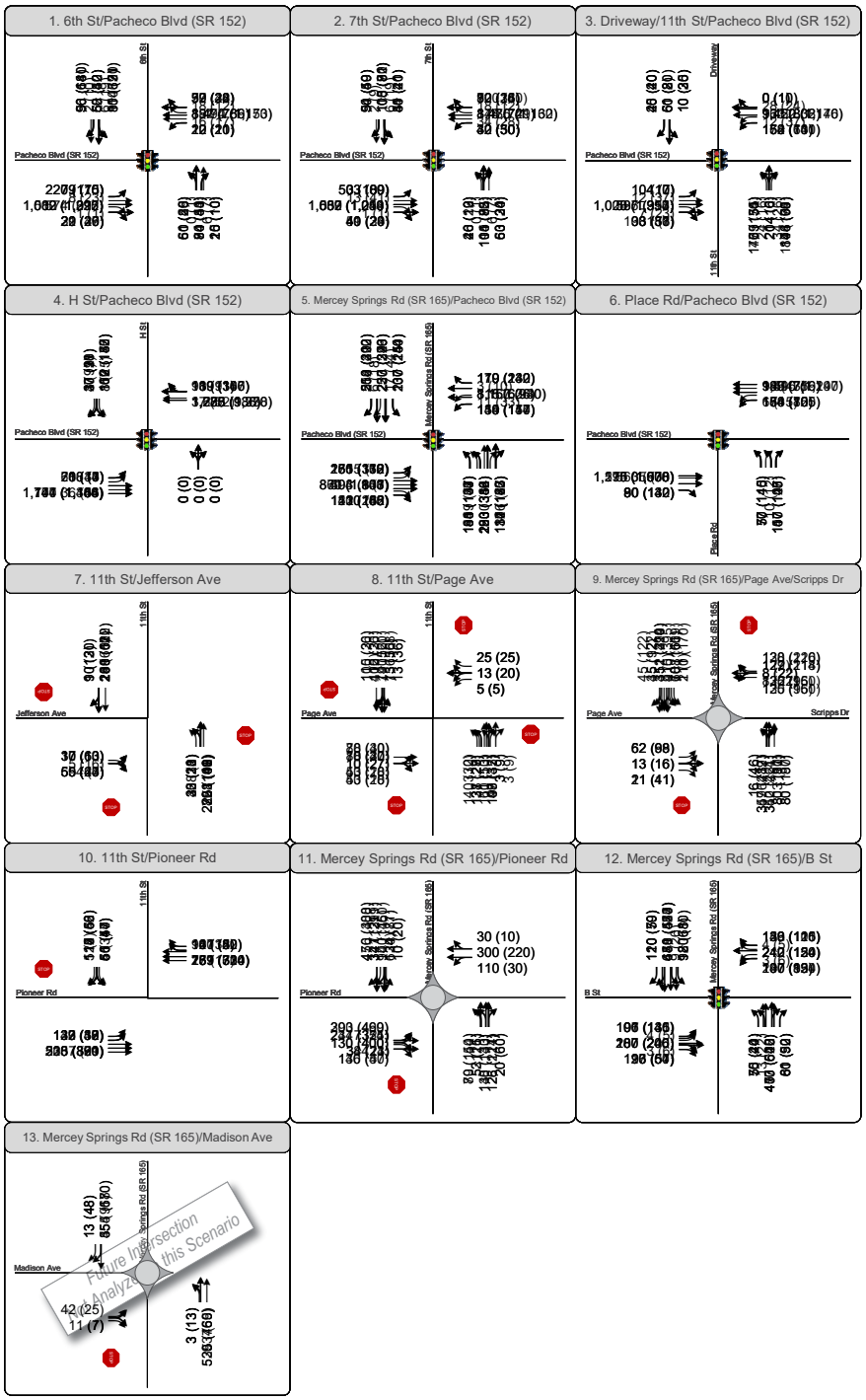
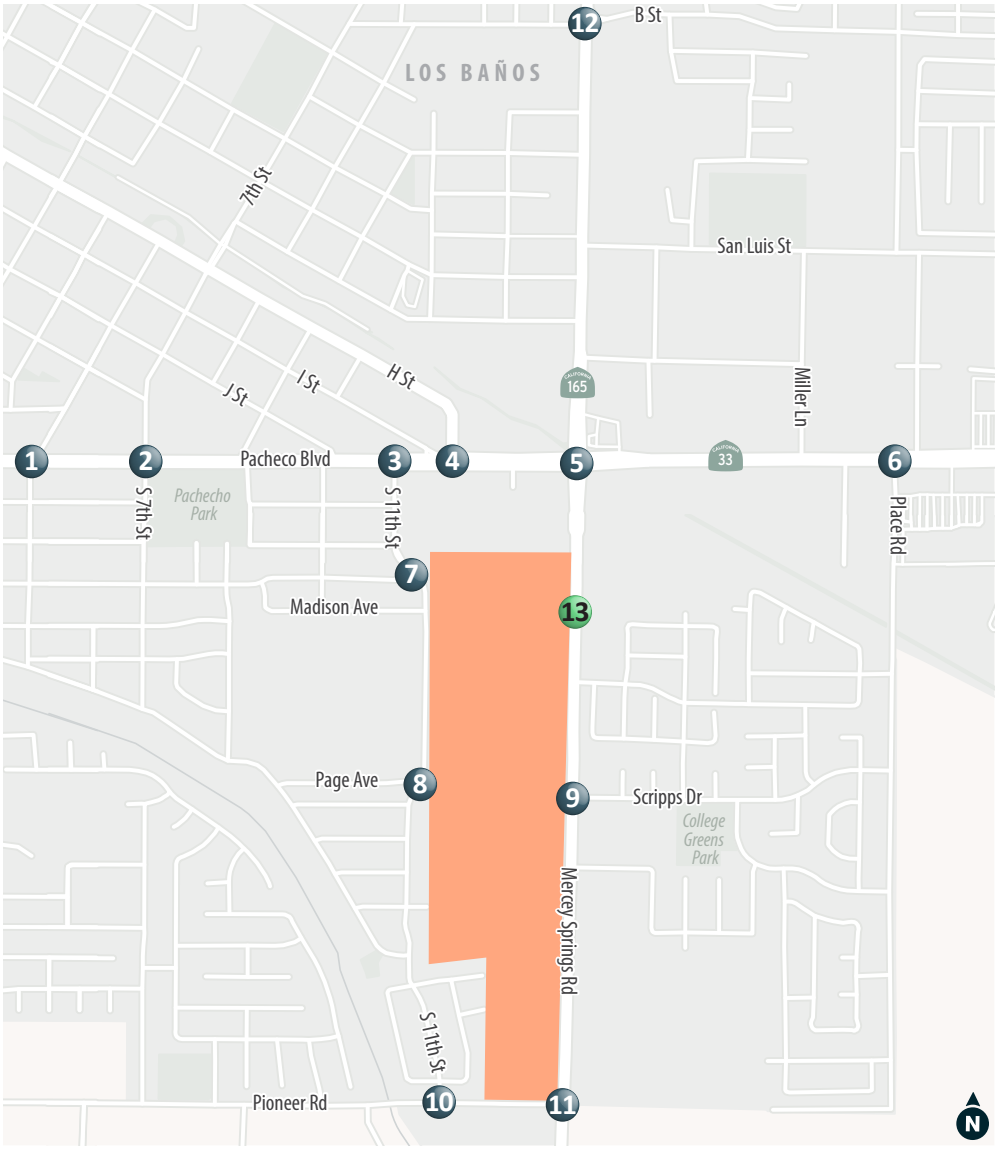


FIGURE 5

Existing Plus Project Conditions Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls



XX (YY) AM (PM) Peak Hour Traffic Volumes | Signalized Intersection | Stop Sign

Project Site | Study Intersection | Future Study Intersection | Roundabout

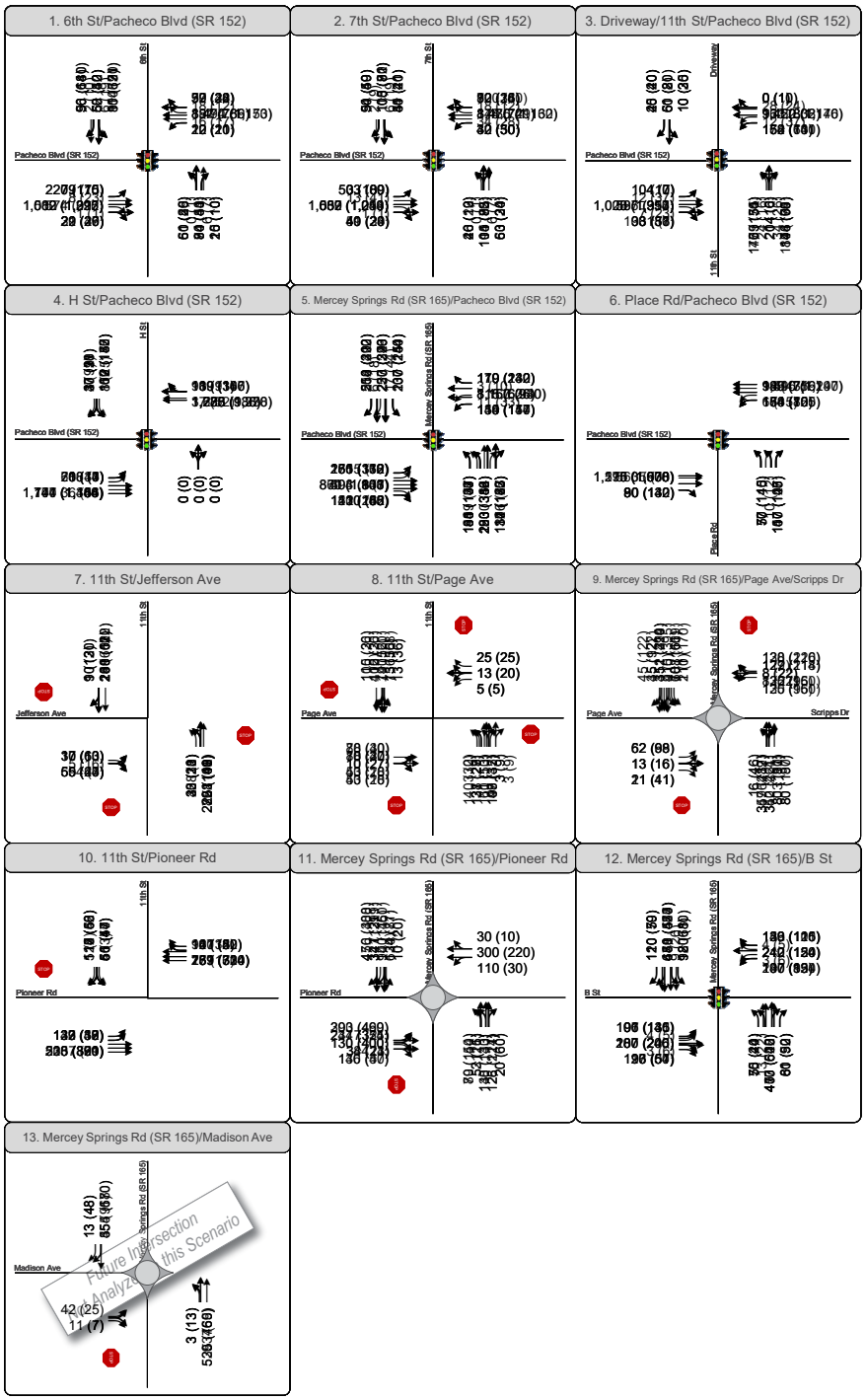


FIGURE 5

Existing Plus Project Conditions Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls

8.3 Cumulative Conditions Intersection Analysis

Cumulative No Project and Cumulative Plus Project Conditions were evaluated using methods described in **Chapter 3**. The delay and LOS results are presented in **Table 13**, while **Appendix B** contains the corresponding calculation sheets. The changes in delay and LOS between Cumulative No Project and Cumulative Plus Project Conditions are used to identify substantial adverse effects on the roadway network.

All study intersections are estimated to meet the City's LOS D standard with exception to the following study intersections and study period:

- Intersection 1: 6th Street/ Pacheco Boulevard (SR 152) – LOS E in the AM peak hour
- Intersection 5: Pacheco Boulevard (SR 152)/Mercey Springs Road (SR 165) – LOS E in the AM and PM peak hour for Cumulative No Project Conditions, LOS F in the AM and PM peak hour for Cumulative Plus Project Conditions
- Intersection 9: Mercey Springs Road (SR 165)/Scripps Drive – LOS E in the AM peak hour and LOS F in the PM peak hour for Cumulative No Project Conditions
- Intersection 10: Pioneer Road/11th Street – LOS F in the AM peak hour

Table 13. Cumulative Conditions Intersection Level of Service

	Intersection	Control[1]	Peak Hour	Cumulative No Project Conditions		Cumulative Plus Project Conditions	
				Delay[2] (sec)	LOS[3]	Delay[2] (sec)	LOS[3]
1	6th Street/Pacheco Boulevard (SR 152)	Signalized	AM	**55.0**	**E**	**57.2**	**E**
			PM	19.1	B	20.8	C
2	7th Street/Pacheco Boulevard (SR 152)	Signalized	AM	19.4	B	21.1	C
			PM	23.4	C	24.8	C
3	11th Street/Pacheco Boulevard (SR 152)	Signalized	AM	39.3	D	50.0	D
			PM	21.9	C	32.6	C
4	H Street/Pacheco Boulevard (SR 152)	Signalized	AM	19.3	B	22.5	C
			PM	17.3	B	23.5	C
5	Pacheco Boulevard (SR 152)/Mercey Springs Road (SR 165)	Signalized	AM	**76.1**	**E**	**85.8**	**F**
			PM	**76.8**	**E**	**82.3**	**F**
6	Place Road/Pacheco Boulevard (SR 152)	Signalized	AM	20.6	C	20.8	C
			PM	7.4	A	7.9	A
7	11th Street/Jefferson Avenue	AWSC	AM	15.5	C	22.6	C
			PM	8.5	A	9.6	A
8	11th Street/Page Avenue	AWSC	AM	16.9	C	24.7	C
			PM	7.7	A	8.2	A
9	Mercey Springs Road (SR 165)/Scripps Drive	SSSC, Roundabout[4]	AM	**38.8 (>80.0)**	**E (F)**	6.8	A
			PM	**>80.0 (>80.0)**	**F (F)**	7.8	A
10	Pioneer Road/11th Street	SSSC	AM	**65.6 (>80.0)**	**F (F)**	**>80.0 (>80.0)**	**F (F)**
			PM	1.9 (29.0)	A (D)	2.3 (33.8)	A (D)
11	Pioneer Road/Mercey Springs Road (SR 165)	Roundabout	AM	10.4	B	10.6	B
			PM	9.8	A	10.0	A
12	B Street/Mercey Springs Road (SR 165)	Signalized	AM	26.7	C	27.0	C
			PM	21.7	C	22.0	C
13	Mercey Springs Road (SR 165)/Madison Avenue	Roundabout[4]	AM	*Does not Exist in This Scenario*		4.3	A
			PM			4.3	A

Notes:

1. AWSC = all-way stop control, SSSC = side-street stop-control
2. Delay for signalized and all-way stop-controlled intersections presented as whole-intersection average delay. Delay for side-street stop-controlled intersections presented as whole-intersection (delay on worst movement).
3. LOS per *Highway Capacity Manual, 7th Edition*
4. Roundabout control under Cumulative Plus Project Conditions.

Bold indicates unacceptable operations. **Bold and highlighted** indicates a substantial adverse effect.

Source: Fehr & Peers, 2025.

8.4 Cumulative Conditions Vehicle Queues

Table 14 presents the weekday AM and PM peak hour 95th percentile queues for the study intersections where vehicle queues may occasionally exceed the vehicle storage length. These queues are indicative of maximum design queues occurring during peak period of peak traffic. Queue worksheets are provided in **Appendix B**.

Table 14. Cumulative and Cumulative Plus Project Conditions 95th Percentile Queues

Intersection		Control[1]	Movement	Storage Length[2] (ft)	Cumulative No Project Conditions		Cumulative Plus Project Conditions	
					AM	PM	AM	PM
1	6th Street/Pacheco Boulevard (SR 152)	Signalized	EBL	210	**750**	**275**	**750**	**275**
			EBT	595	400	475	400	525
			EBTR	595	400	500	425	550
			WBL	135	50	50	50	50
			WBT	815	575	50	650	50
			WBTR	815	600	50	675	50
			NBLT	265	250	175	**275**	175
			NBR	100	25	0	25	0
			SBLT	400	275	200	300	250
			SBR	160	25	25	25	50
2	7th Street/Pacheco Boulevard (SR 152)	Signalized	EBL	140	100	**175**	100	**175**
			EBT	840	25	25	25	25
			EBTR	840	25	25	25	25
			WBL	130	75	100	75	100
			WBT	665	525	**675**	600	**700**
			WBTR	665	550	**700**	625	**725**
			NBLTR	255	**325**	225	**325**	225
			SBLT	440	225	175	250	225
			SBR	60	50	25	50	25
3	11th Street/Pacheco Boulevard (SR 152)	Signalized	EBL	130	25	25	25	25
			EBT	530	**725**	325	**725**	375
			EBTR	530	**725**	350	**750**	375
			WBL	160	**300**	**175**	**325**	**325**
			WBT	380	50	200	50	225
			WBTR	380	0	225	0	225
			NBLTR	275	**575**	**425**	**800**	**575**

Intersection		Control[1]	Movement	Storage Length[2] (ft)	Cumulative No Project Conditions		Cumulative Plus Project Conditions	
					AM	PM	AM	PM
			SBLT	150	125	100	125	100
			SBR	150	25	25	25	25
4	H Street/Pacheco Boulevard (SR 152)	Signalized	EBL	160	**175**	100	**225**	125
			EBT1	380	25	175	25	200
			EBT2	380	0	175	25	200
			WBT	900	25	275	25	300
			WBTR	900	25	275	25	300
			SBLR	1,220	475	425	525	550
5	Pacheco Boulevard (SR 152)/ Mercey Springs Road (SR 165)	Signalized	EBL	280	**750**	**800**	**825**	**875**
			EBT1	430	425	**750**	**525**	**750**
			EBT2	430	425	**750**	**525**	**750**
			EBR	120	75	75	**150**	**150**
			WBL	250	225	**275**	250	**400**
			WBT1	1,725	800	600	850	625
			WBT2	1,725	800	600	850	625
			WBR	480	100	125	100	125
			NBL1	145	**150**	100	**175**	**150**
			NBL2	145	**150**	100	**175**	**150**
			NBT	1,730	175	350	200	400
			NBTR	1,730	175	350	200	400
			SBL	185	**700**	**675**	**700**	**675**
			SBT1	750	175	225	175	250
			SBT2	750	175	225	175	250
			SBR	350	**600**	**425**	**625**	**425**
6	Place Road/Pacheco Boulevard (SR 152)	Signalized	EBT1	640	**700**	25	**725**	25
			EBT2	640	**700**	25	**725**	25
			EBR	290	75	0	75	0
			WBL	380	225	225	225	250
			WBT1	865	150	125	150	125
			WBT2	865	150	125	150	125
			NBL1	190	75	125	75	125
			NBL2	190	75	125	75	125
			NBR	470	25	25	50	25

Intersection		Control[1]	Movement	Storage Length[2] (ft)	Cumulative No Project Conditions		Cumulative Plus Project Conditions	
					AM	PM	AM	PM
7	11th Street/Jefferson Avenue	AWSC	EBLR	730	25	25	50	25
			NBLT	230	125	25	225	50
			SBTR	290	125	25	150	50
8	11th Street/Page Avenue	AWSC	EBLR	1,050	75	25	–	–
			NBL	140	75	25	100	25
			NBT	140	75	25	–	–
			SBTR	1,380	150	25	–	–
			EBLTR[4]	1,050	–	–	100	25
			WBLTR[4]	600	–	–	25	25
			NBTR[4]	140	–	–	100	25
			SBLTR[4]	1,380	–	–	250	25
9	Mercey Springs Road (SR 165)/ Scripps Drive	SSSC, Roundabout[3]	WBLR	355	**400**	**700**	–	–
			SBL	190	25	25	–	–
			EBLTR[4]	440	–	–	25	50
			WBLTR[4]	355	–	–	50	100
			NBLTR[4]	500	–	–	75	150
			SBLTR[4]	860	–	–	100	125
10	Pioneer Road/11th Street	SSSC	EBL	80	50	25	50	25
			SBLR	110	**550**	50	**600**	75
11	Pioneer Road/Mercey Springs Road (SR 165)	Roundabout	EBLT	960	50	100	50	100
			EBTR	960	50	75	50	100
			WBLT	2,630	50	25	50	25
			WBTR	2,630	50	25	50	25
			NBLT	2,670	25	50	25	50
			NBTR	2,670	25	50	25	50
			SBLT	1,870	50	50	50	50
			SBTR	960	150	75	150	75
12	B Street/Mercey Springs Road (SR 165)	Signalized	EBL	55	**100**	**100**	**125**	**125**
			EBT	220	200	150	200	175
			EBR	90	25	25	25	25
			WBL	55	**200**	**100**	**200**	**100**
			WBT	640	200	100	200	100
			WBR	50	25	25	50	25

Intersection		Control[1]	Movement	Storage Length[2] (ft)	Cumulative No Project Conditions		Cumulative Plus Project Conditions	
					AM	PM	AM	PM
			NBL	160	75	50	75	50
			NBT1	670	175	175	175	175
			NBT2	670	175	175	175	175
			NBR	200	25	25	25	25
			SBL	305	125	75	125	75
			SBT1	770	225	125	225	150
			SBT2	770	225	125	225	150
			SBR	110	50	25	50	25
13	Mercey Springs Road (SR 165)/ Madison Avenue	Roundabout[3]	EBLR	1,110	*Intersection Does not Exist in This Scenario*		25	25
			NBLT	1,470			75	175
			SBTR	1,140			75	125

Notes:
1. AWSC = all-way stop control, SSSC = side-street stop-control
2. An additional 60 to 90 feet of storage is typically provided in the taper area outside of the through lane, which is not reflected in the storage length above.
3. Roundabout control under Cumulative Plus Project Conditions. New lane configuration under roundabout control.
4. New lane configuration under Cumulative Plus Project Conditions.

Bold indicates queue potentially extends beyond available storage.
Source: Fehr & Peers, 2026.

As shown in **Table 14**, 95th percentile queues at 6th Street/Pacheco Boulevard (SR 152), 7th Street/Pacheco Boulevard (SR 152), 11th Street/Pacheco Boulevard (SR 152), H Street/Pacheco Boulevard (SR 152), Pacheco Boulevard (SR 152)/ Mercey Springs Road (SR 165), Place Road/Pacheco Boulevard (SR 152), Mercey Springs Road (SR 165)/ Scripps Drive , Pioneer Road/11th Street, and B Street/Mercey Springs Road (SR 165) show that motorists may experience periodic queue spillback and delays from the identified individual movements.

8.5 Cumulative Plus Project Signal Warrant Analysis

The peak-hour signal warrants (Warrant 3A and Warrant 3B) from the MUTCD were used to determine if Cumulative Plus Project volumes meet peak hour signal warrants (see **Appendix C**) for the following unsignalized intersections that exceed the intersection LOS threshold:

- Intersection 10: Pioneer Road/11th Street –AM peak hour

Similar to Existing Plus Project Conditions, the Pioneer Road/11th Street intersection meets the peak hour signal warrants under Cumulative Plus Project Conditions.

Table 15 summarizes which warrant is met for the intersection/scenario.

Table 15. Summary of Cumulative Plus Project Signal Warrant Analysis

	Intersection	Scenario Meets Signal Warrant 3?	
		Cumulative Plus Project AM	Cumulative Plus Project PM
10	Pioneer Road/11th Street	Yes	Yes

Source: Fehr & Peers, 2025.

This analysis is intended to examine the general correlation between the current level of development in the region and the need to install new traffic signals. It estimates current traffic compared against a sub-set of the standard traffic signal warrants recommended in the Federal Highway Administration *Manual on Uniform Traffic Control Devices* and associated California MUTCD guidelines. This analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated by an experienced engineer based on field-measured rather than forecast traffic data and a thorough study of traffic and roadway conditions. Furthermore, the decision to install a signal should not be based solely upon the warrants, since the installation of signals can lead to certain types of collisions. The appropriate agency should undertake regular monitoring of actual traffic conditions and accident data, and timely re-evaluation of the full set of warrants to prioritize and program intersections for signalization.

8.6 Cumulative Plus Project Intersection Substantial Adverse Effects

This section of the report evaluates the Cumulative Plus Project Conditions intersection LOS results presented in **Table 13** against intersection substantial adverse effect criteria. As mentioned in **Section 3.2.2,** a proposed Project would result in a substantial adverse effect to intersection operations if the Project traffic causes the LOS to deteriorate from a LOS D to LOS E or F, or if the intersection is already operating at an LOS E or F prior to the addition of Project traffic and increases the delay by five or more seconds. The proposed Project would result in a substantial adverse effect to intersection operations at the following intersections:

- Intersection 1: 6th Street/ Pacheco Boulevard (SR 152) – AM peak hour
- Intersection 5: Pacheco Boulevard (SR 152)/Mercey Springs Road (SR 165) – AM and PM peak hour
- Intersection 10: Pioneer Road/11th Street – AM peak hour

Intersection 1: 6th Street/ Pacheco Boulevard (SR 152) – The 6th Street/Pacheco Boulevard (SR 152) intersection is expected to operate at LOS E, which is below the LOS D standard, during the AM peak hour under Cumulative No Project and Cumulative Plus Project conditions. The Cumulative Plus Project scenario is expected to increase the average delay by less than five seconds, therefore, the Project's effect on intersection operations is ***less-than-substantial***.

Intersection 5: Pacheco Boulevard (SR 152)/Mercey Springs Road (SR 165) – The Pacheco Boulevard (SR 152)/Mercey Springs Road (SR 165) intersection is expected to degrade from LOS E under Cumulative No Project Conditions to LOS F under Cumulative Plus Project Conditions during the AM and PM peak hours. Therefore, the Project would have a substantial adverse effect at this intersection. Retiming the intersection signal timings to accommodate for the addition of Project

trips would decrease the intersection delay to approximately 81 seconds (LOS F) and 79 seconds (LOS E), during the AM and PM peak hours, respectively. Although the intersection delay is slightly improved, the Project would still have a substantial effect at this intersection. Due to restrictions on updating lane geometry at this intersection, per discussion with the City, the applicant must coordinate with the City of Los Banos to support updating the signal timings over time. The Project's effect on intersection operations is ***substantial and unavoidable.***

Intersection 10: Pioneer Road/11th Street – The Pioneer Road/11th Street intersection is expected to operate at LOS F under Cumulative No Project and Cumulative Plus Project Conditions during the AM peak hour. The addition of project trips under the Cumulative Plus Project scenario is expected to increase the worst-movement delay by greater than five seconds in the AM peak hour. The intersection volumes meet the peak hour signal warrants for both the AM and PM peak hours. Therefore, the Project would have a substantial effect to this intersection. Replacing the side-street stop-controlled intersection with a signal would reduce the average intersection delay to approximately 14 seconds (LOS B) and 6 seconds (LOS A), for the AM and PM peak hours, respectively. This improvement would be in addition to the improvements currently in the Pioneer Road Complete Streets Project. With the addition of the improvements the Project's effect would be ***less-than-substantial with improvements.***

9. Phasing Analysis

This chapter presents the results of the phasing analysis of the Project. As requested by the City, this analysis is intended to reflect mid-term conditions after completion of interim development phases of the proposed Project.

9.1 Phasing Analysis Assumptions

According to the Project's Specific Plan (Draft), the Applicant proposes to construct three out of the five access points of the Project site after completion of development Phases 1 through 4. These three access points/intersections are: Mercey Springs Road (SR 165)/Madison Avenue, 11th Street/Madison Avenue, and 11th Street/Page Avenue. The preliminary phasing plan is shown in **Figure 12** below. As shown in **Figure 12**, Phases 1 through 4 assume that 232 out of the 371 single family dwelling units will be built, which could affect intersection operations at the three access points to the Project site as well as the intersection at Pioneer Road/11th Street.

PHASE	SINGLE FAMILY UNITS	APARTMENTS (APPROX. DU/ AC)	COMMERCIAL ACRES(AC.)
Phase 1	45		
Phase 2	97		
Phase 3	28		
Phase 4	62		
Phase 5	22		
Phase 6	56		
Phase 7	61		
Phase 8		~20 du/ac.	2.7 ac.

Site Plan Source: Westwood, June 2025

FIGURE 12

Preliminary Phasing Plan

Fehr & Peers

9.2 Interim Phase Trip Generation

Table 16 summarizes the trip generation analysis for Project Phases 1 through 4 (232 single family dwelling units). A project trip assignment was performed to assess Phase 1 through 4 Project trip volumes at the three Project access points.

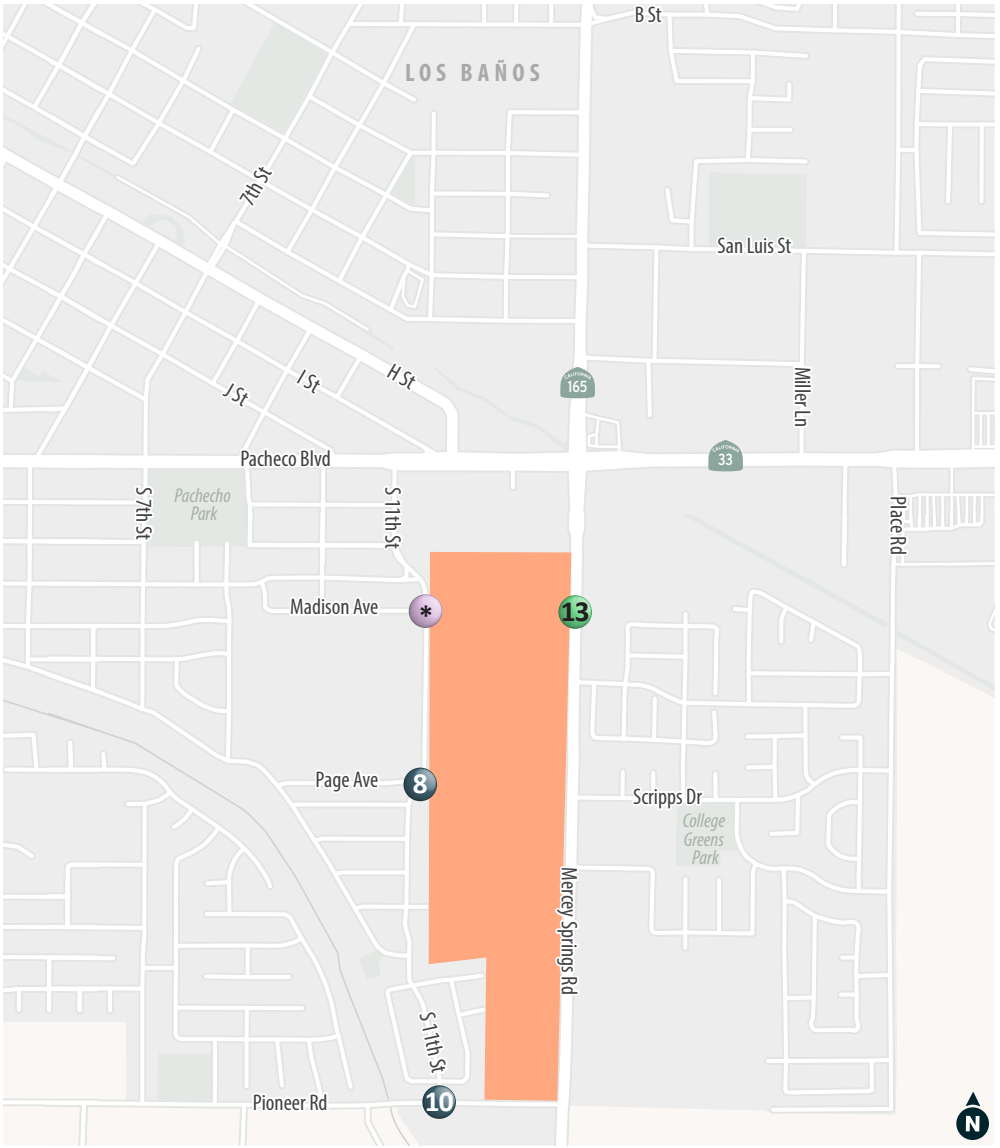
Table 16. Project Trip Generation for Phases 1–4

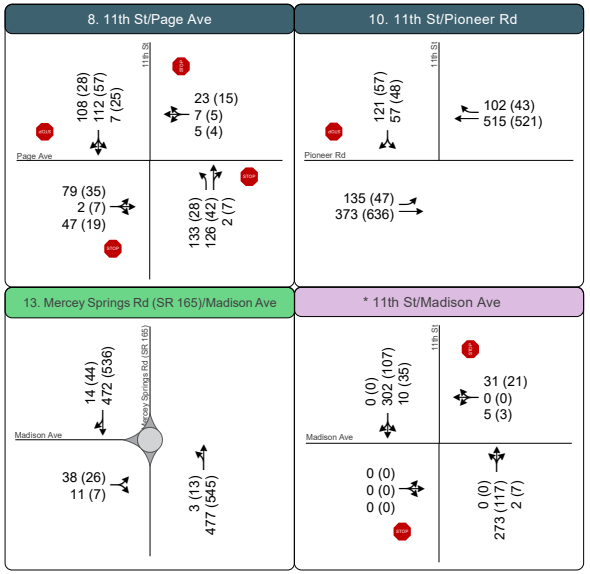
Development Type	ITE Land Use Code	Quantity (Units)	Weekday Trip Generation						
			Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Single Family Residential Units	210	232 Dwelling Units	2,189	40	120	160	138	81	219

Source: *ITE Trip Generation Manual, 11th Edition;* Fehr & Peers, 2025.

9.3 Intersection Operations

Intersection operations analysis was performed at the three Project access points to assess if the intersections would meet the City's LOS D operating standard after completion of Phases 1 through 4. Year 2035 volumes were estimated by interpolating between Existing No Project and Year 2046 (Cumulative No Project) conditions. The Project trip assignment was added to the Year 2035 volumes to establish Near-Term Plus Phase 1 through 4 Development Project intersection volumes, shown in **Figure 13**. The phasing analysis was evaluated using methods described in **Chapter 3**. The analysis is summarized in **Table 17**.





XX (YY) AM (PM) Peak Hour Traffic Volumes | Stop Sign | Roundabout

Project Site | # Study Intersection | # Future Study Intersection | * Not a Study Intersection

FIGURE 13

Phasing Analysis Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls

Fehr & Peers

Table 17. Near-Term Phasing Analysis Intersection Level of Service

	Intersection	Control[1]	Peak Hour	LOS Standard	Year 2035 No Project		Year 2035 + Phase 1 through 4	
					Delay[2] (sec)	LOS[3]	Delay[2] (sec)	LOS[3]
8	11th Street/Page Avenue	AWSC	AM	D	14.2	B	16.4	C
			PM	D	7.6	A	7.9	A
10	Pioneer Road/11th Street	SSSC	AM	D	**34.0 (>80.0)**	**D (F)**	**41.9 (>80.0)**	**E (F)**
			PM	D	2.2 (25.7)	A (D)	2.4 (24.5)	A (D)
13	Mercey Springs Road (SR 165)/ Madison Avenue	Roundabout[4]	AM	D	*Does not Exist in This Scenario*		4.3	A
			PM	D			4.3	A
*	11th Street/ Madison Avenue	SSSC	AM	D	*Does not Exist in This Scenario*		0.8 (11.0)	A (B)
			PM	D			1.7 (9.4)	A (A)

Notes:
*Not a formal study intersection, but was checked in this interim analysis to confirm operational suitability.
1. AWSC = all-way stop control, SSSC = side-street stop-control
2. Delay for signalized and all-way stop-controlled intersections presented as whole-intersection average delay. Delay for side-street stop-controlled intersections presented as whole-intersection (delay on worst movement).
3. LOS per *Highway Capacity Manual, 7th Edition*
4. Roundabout control under Phase 1 through 4 development.

Bold indicates unacceptable operations. **Bold and highlighted** indicates a substantial adverse effect.
Source: Fehr & Peers, 2025.

As shown in **Table 17**, all intersections meet the LOS D standard except the following intersection:

- Intersection 10: Pioneer Road/11th Street – LOS F in the AM peak hour for the worst movement in the Cumulative No Project and Cumulative Plus Project Conditions.

9.3.1 Near-Term Plus Phase 1 through 4 Development Signal Warrant Analysis

The peak-hour signal warrants (Warrant 3A and Warrant 3B) from the *Manual on Uniform Traffic Control Devices* (MUTCD) were used to determine if Near-Term Plus Phase 1 through 4 volumes meet peak hour signal warrants (see **Appendix C**) for the following unsignalized intersection that exceed the intersection LOS threshold:

- Intersection 10: Pioneer Road/11th Street – AM peak hour

Similar to Existing Plus Project and Cumulative Plus Project Conditions, the Pioneer Road/11th Street intersection meets the peak hour signal warrant under Near-Term Plus Phase 1 through 4 Development for the AM and PM peak hours.

This analysis is intended to examine the general correlation between the current level of development in the region and the need to install new traffic signals. It estimates current traffic compared against a sub-set of the standard traffic signal warrants recommended in the Federal Highway Administration

Manual on Uniform Traffic Control Devices and associated California MUTCD guidelines. This analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated by an experienced engineer based on field-measured rather than forecast traffic data and a thorough study of traffic and roadway conditions. Furthermore, the decision to install a signal should not be based solely upon the warrants, since the installation of signals can lead to certain types of collisions. The appropriate agency should undertake regular monitoring of actual traffic conditions and accident data, and timely re-evaluation of the full set of warrants to prioritize and program intersections for signalization.

9.3.2 Near-Term Plus Phase 1 through 4 Development Intersection Substantial Adverse Effects

As mentioned in **Section 3.2.2,** a proposed Project would result in a substantial adverse effect to intersection operations if the Project traffic causes the LOS to deteriorate from a LOS D to LOS E or F, or if the intersection is already operating at an LOS E or F prior to the addition of Project traffic and increases the delay by five or more seconds. The proposed Phase 1 through 4 Development volumes would result in a substantial adverse effect to intersection operations at the following intersection:

- Intersection 10: Pioneer Road/11th Street – AM peak hour

Intersection 10: Pioneer Road/11th Street – The Pioneer Road/11th Street intersection is expected to operate at LOS F under Near-Term No Project and Near-Term Plus Phase 1 through 4 Development during the AM peak hour. The addition of project trips under the Near-Term Plus Phase 1 through 4 Development scenario is expected to increase the worst-movement delay by greater than five seconds in the AM peak hour. Therefore, the Project would have a substantial effect to this intersection. As noted in **Section 9.4**, a mitigation measure will be required to construct the connection of Page Avenue to Mercey Springs Road, which will help improve intersection delay at Pioneer Road/11th Street.

9.4 Multimodal Transportation Impacts

The completion of Phase 1 through 4 does not build out the connection of Page Avenue to Mercey Springs Road (SR 165)/Scripps Drive, which, per **Section 6.2.3** would create a **significant impact** to the bicycle system under the City's CEQA criteria. The non-construction of Page Avenue connection to Mercey Springs Road (SR 165)/Scripps Drive was also evaluated for emergency vehicle access.

9.4.1 Bicycle Access and Circulation

The buildout of Phase 1 through 4 and the partial Page Avenue extension would eliminate the existing Class I bike path that connects Mercey Springs Road (SR 165) to 11th Street. As noted in **Mitigation Measures 1 and 2**, Page Avenue should be built to connect to Mercey Springs Road (SR 165)/Scripps Drive during Phase 4, and to relocate the Class I bike path to the north side of Page Avenue, so as to not disrupt the Class I bike path that connects to the area circulation system.

9.4.2 Emergency Vehicle Access

The buildout of Phases 1 through 4 without the full extension of Page Avenue to Mercey Springs Road (SR 165)/Scripps Drive would not provide adequate emergency vehicle access to portions of the Project site. Fire Station 1, located on 7th Street, is the closest fire station to the Project site, with primary access to the Project site from Mercey Springs Road (SR 165). Non-construction of the Page Avenue extension to Mercey Springs Road (SR 165)/Scripps Drive would require that fire vehicles traverse internal residential streets to reach the majority Phase 4 development (south of Page Avenue), instead of using Mercey Springs Road and Page Avenue. Therefore, this represents a **significant impact**. The mitigation measure (**Mitigation Measure 3**) is to construct the Page Avenue extension to Mercey Springs Road (SR 165)/Scripps Avenue and convert the intersection into a roundabout as part of Phase 4 of the Project. Opening of this connection would result in the emergency vehicle access impact being reduced to a level that is ***less-than-significant with mitigation***. The development of Phase 5 through 8 of the Project cannot begin until the mitigation improvements at Mercey Springs Road (SR 165)/Scripps Avenue have been completed.

10. Site Plan Review

This chapter provides recommendations for site access and circulation for vehicles, pedestrians, and cyclists that are additional to the CEQA compliance mitigation measures. As noted in **Section 3.1.7**, these recommendations are non-binding versus CEQA mitigation measures which are required.

The Project proposes vehicular access to the Project site along 11th Street, Pioneer Road, and Mercey Springs Road (SR 165), with the access points along Mercey Springs Road (SR 165) anticipated to be primary access points to the site due to proximity to the State Highway System and location of the commercial properties on site. The internal roadways vary in width from 58 feet in residential areas to 80 feet near the commercial lots. Although the Project's Specific Plan (Draft) indicates there will be parking provided for the residential and commercial areas, the site plan does not clearly identify where parking will be located. The following recommendations are provided to ensure the provision of adequate vehicle access within the site:

> **Site Recommendation 1:** The Project's Civil Engineer should review the final site improvement plan to ensure adequate sight distance is maintained at all access points and internal intersections. No objects (new signs, above ground utility boxes, landscaping, etc.) greater than three feet in height should be allowed within the project access points sight distance triangles. The Civil engineer should review available speed survey information from the City and adjust the required sight distance if necessary.
>
> **Site Recommendation 2:** The final site plan for the Project should illustrate truck turning templates at Project access points and internal roadways showing that applicable routes of travel provide sufficient space for emergency vehicles, trucks, and automobiles. The local Fire Marshall should be consulted to ensure that appropriate design vehicle's turning template is accommodated at all access points and internal intersections. It is noted that these truck turning templates will be required for modifications to intersections along Mercey Springs Road (SR 165).
>
> **Site Recommendation 3:** The final site plan for the Project should illustrate the parking aisles and parking spaces for the residential and commercial properties. The total number of vehicle parking spaces (including ADA, EV, etc.) should also be included in the final site plan.

The Project proposes sidewalks and pathways all throughout the site internally, and an external sidewalk along Pioneer Road. The following recommendations are provided to ensure the provision of adequate pedestrian access within the site and improvements to off-site pathways:

> **Site Recommendation 4:** External pedestrian paths should be included in this Project to provide pedestrians with connections to surrounding sites and neighborhoods and remove any existing sidewalk gaps within the vicinity of the Project. It is required that **Mitigation Measure 1** be implemented to close the existing sidewalk gaps on the periphery of the project site as part of VMT-related mitigation.
>
> **Site Recommendation 5:** As the site plan is finalized, safe and adequate pedestrian facilities should be provided throughout the site in accordance with City and ADA standards. ADA compliant connections from Mercey Springs Road (SR 165), 11th Street, Pioneer Road, and all internal sidewalks to building entrances shall be provided. At all internal intersections, ADA

complaint ramps shall be provided. Pedestrian paths should be identified and marked crosswalks installed at key pedestrian crossing locations.

The Project proposes construction of a Class I path along the Project frontage on Pioneer Road and, internally, a Class II bicycle lane system along Page Avenue. Bicycles are expected to be permitted on all internal roadways. As currently proposed on the site plan, it is unclear how many bicycle parking spaces will be provided within the Project site. The following recommendations are provided to ensure the provision of adequate bicycle access within the site:

Site Recommendation 6: Relevant bicycle parking requirements are provided using the City Municipal Code §9-3.2006. Based on the City Code, the Project should provide bicycle parking spaces for the commercial and public uses within the site. The current site plan does not indicate the number of bicycle parking spaces to be provided or where bicycle parking will be located, and it should be updated to indicate how many and where.

Site Recommendation 7: The Project proposes to remove the existing Class I path along Page Avenue and replace it with a Class II bike lane. It is required that **Mitigation Measure 2** be implemented to provide a high-quality Class I bicycle facility on the north side of Page Avenue.

Emergency vehicle access is provided at the proposed project access points along 11th Street, Pioneer Road, and Mercey Springs Road (SR 165). Dedicated emergency vehicle only access points are also proposed at the end of "A Street" and "O Court." The following recommendations are provided to ensure the provision of adequate emergency vehicle access within the site:

Site Recommendation 8: In accordance with City and Merced County Fire District requirements and design standards, provide even surface pavement, appropriate signage, delineation, and other features at all emergency access points and internal roadways to accommodate emergency vehicles. As part of the Project's final design and permitting process, seek and obtain approval from the Fire Marshall. All internal roadways and intersections should be of adequate width to meet Fire District standards and accommodate the deign fire vehicle's turning radius.

Site Recommendation 9: It is required that **Mitigation Measure 3** be implemented to construct the Page Avenue extension to Mercey Springs Road (SR 165)/Scripps Drive as part of Phase 4 of the development.

10.1 Proposed Driveway Signal Warrant Analysis

The peak-hour signal warrants (Warrant 3A and Warrant 3B) from the *Manual on Uniform Traffic Control Devices* (MUTCD) were used to evaluate the unsignalized Project access point at 11th Street/Madison Avenue under the Existing Plus Project and Cumulative Plus Project Conditions to determine if a traffic signal or other improvements are warranted (see **Appendix C**).

The analysis indicated that 11th Street/Madison Avenue does not meet Warrant 3A or Warrant 3B in the AM or PM peak hour in both the Existing Plus Project and Cumulative Plus Project condition. Therefore, the access point may remain with side-street stop-control.

The analysis is intended to examine the general correlation between the current level of development in the region and the need to install new traffic signals. It estimates traffic levels compared against a sub-set of the standard traffic signal warrants recommended in the Federal Highway Administration MUTCD and associated California MUTCD guidelines.

This analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated by an experienced engineer based on field analysis rather than forecast traffic data and a thorough study of traffic and roadway conditions. Furthermore, the decision to install a signal should not be based solely on the warrants, since the installation of signals can lead to certain types of collisions. The appropriate agency should undertake regular monitoring of actual traffic conditions and collision data, and timely re-evaluation of the full set of warrants to prioritize and program intersections for signalization.

11. Fair Share Calculations

This chapter describes the fair share obligations and estimated contribution for improvements on study intersections that create a substantial adverse effect to intersection operations.

11.1 Methodology and Fair Share Calculations

To calculate the Project's fair share contribution, Fehr & Peers compared the Project's trips with the traffic volumes at the study intersections. The calculations can differ based on when intersection operations meet the substantial effect criteria. The types of calculations are listed below:

- For study intersections where the Project's primary access points cause the intersection to operate at an LOS E or F, the Project's fair share contribution would be 100% of improvement costs.
- For study intersections where the Existing Conditions operate at an acceptable LOS and the Project-related traffic causes the LOS to deteriorate from LOS D or better to LOS E or F, the Project's fair share contribution would be 100% of improvement costs.
- For study intersections that already operate at an acceptable LOS without the Project but increases delay (worst approach/movement for side-street stop-control, and whole intersection delay for all-way stop-control and roundabouts) by five or more seconds in the Existing Conditions, the Project's fair share contribution would be calculated by taking the Project vehicle trips divided by the Existing Conditions volumes entering at the study intersection.
- For study intersections that meet the substantial effect criteria mentioned in **Section 3.2.2** under Cumulative No Project and Cumulative Plus Project Conditions, the Project's fair share contribution would be calculated by taking the Project vehicle trips divided by the growth in traffic volumes between Existing and Cumulative No Project Conditions entering at the study intersection.

The following intersections meet the substantial effect criteria, and would need to be evaluated for fair share contribution on intersection operation improvements:

- Intersection 5: Pacheco Boulevard (SR 152)/Mercey Springs Road (SR 165) – The Pacheco Boulevard (SR 152)/Mercey Springs Road (SR 165) intersection is expected to have a substantial adverse effect under the Cumulative No Project and Cumulative Plus Project Conditions.
- Intersection 9: Mercey Springs Road (SR 165)/Scripps Drive – The Mercy Springs Road (SR 165)/Scripps Drive is a Project access point and will need to be converted to a roundabout as a result of the project modifying the intersection (per Caltrans ISOAP methods).
- Intersection 10: Pioneer Road/11th Street – The Pioneer Road/11th Street worst approach is expected to have a substantial adverse effect under the Existing Plus Project Conditions.
- Intersection 11: Pioneer Road/Mercey Springs Road (SR 165) – The Pioneer Road/Mercey Springs Road (SR 165) worst approach is expected to have a substantial adverse effect under the Existing Plus Project Conditions.

- Intersection 13: Mercey Springs Road (SR 165)/Madison Avenue – The Mercey Springs Road (SR 165)/Madison Avenue intersection is a Project access point and will need to be built as a roundabout as a result of the project creating the intersection (per Caltrans ISOAP methods).

Table 18 summarizes the study intersections that meet the substantial effect criteria and the estimated percentage contribution.

Table 18. Fair Share Contribution

	Intersection	Estimated Fair Share Contribution
5	Pacheco Boulevard (SR 152)/Mercey Springs Road (SR 165)	25.2%
9	Mercey Springs Road (SR 165)/Scripps Drive (Project Access)	100%
10	Pioneer Road/11th Street	100%
11	Pioneer Road/Mercey Springs Road (SR 165)	4.5%
13	Mercey Springs Road (SR 165)/Madison Avenue (Project Access)	100%

Source: Fehr & Peers, 2025.

A more detailed description of the fair share contributions are as follows:

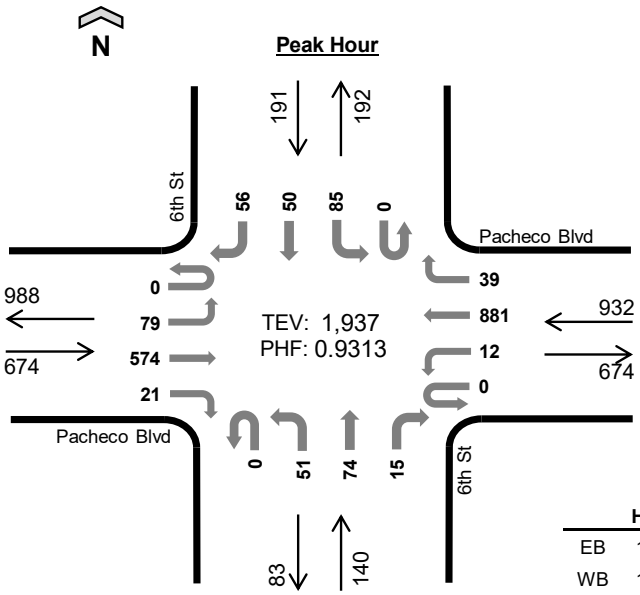
- The Pacheco Boulevard (SR 152)/Mercey Springs Road (SR 165) intersection would need periodic signal retiming beginning in the Cumulative Year 2046 onward. The estimated fair share contribution was calculated to be 25.2% of improvement costs.
- The Mercey Springs Road (SR 165)/Scripps Drive intersection would be a primary access point to the Project site, which substantially affects intersection operations and will need to be built as a single-lane roundabout. Therefore, the Project would be fully responsible for intersection improvements.
- The estimated fair share of Pioneer Road/11th Street intersection is calculated to be 100% of improvement costs due to the substantial effect on intersection operations under the Existing Plus Project Conditions.
- The Mercey Springs Road (SR 165)/Madison Avenue intersection would be another primary access point to the Project site, which substantially affects intersection operations and will need to be built as a single-lane roundabout. Therefore, the Project would be fully responsible for intersection improvements.
- The Pioneer Road/Mercey Springs Road (SR 165) intersection would have a substantial effect on intersection operations under Existing Plus Project Conditions. A proposed roundabout in the Pioneer Road Complete Streets Project will improve intersection operations and create a **less-than-substantial with improvements** effect for the Cumulative No Project and Cumulative Plus Project Conditions, therefore the Project should contribute on 4.5% of improvement costs at the intersection.

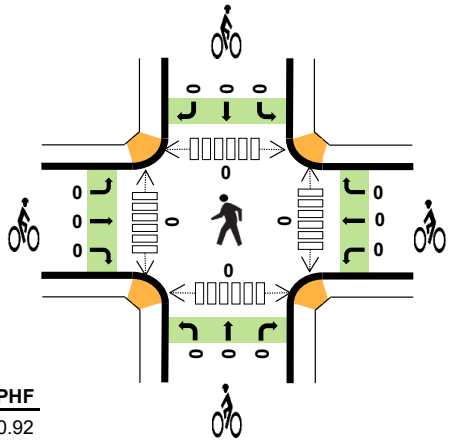
The mitigation measure (**Mitigation Measure 4**) is to contribute to the improvements needed at the intersections listed in **Table 18** accordingly.

Appendix A.
Traffic Count Data

6th St
Pacheco Blvd

Date: 5/29/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM





	HV%	PHF
EB	11%	0.92
WB	10%	0.90
NB	2%	0.66
SB	2%	0.70
TOTAL	9%	0.93

Peak Hour Count Summaries

Peak Hour Interval Start		Pacheco Blvd Eastbound				Pacheco Blvd Westbound				6th St Northbound				6th St Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
8:00 AM		0	34	133	8	0	5	189	20	0	13	23	5	0	27	14	18	489	0
8:15 AM		0	19	141	5	0	3	225	6	0	18	30	5	0	30	25	13	520	0
8:30 AM		0	7	136	7	0	3	248	7	0	12	13	3	0	14	7	14	471	0
8:45 AM		0	19	164	1	0	1	219	6	0	8	8	2	0	14	4	11	457	1,937
Pk Hr	All	0	79	574	21	0	12	881	39	0	51	74	15	0	85	50	56	1,937	
	HV	0	1	70	0	0	0	92	0	0	2	0	1	0	3	1	0	170	
	HV%	-	1%	12%	0%	-	0%	10%	0%	-	4%	0%	7%	-	4%	2%	0%	9%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
8:00 AM	15	17	1	1	*34*	0	0	0	0	*0*	0	0	0	0	*0*
8:15 AM	16	26	2	3	*47*	0	0	0	0	*0*	0	0	0	0	*0*
8:30 AM	17	27	0	0	*44*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	23	22	0	0	*45*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	71	92	3	4	*170*	0	0	0	0	*0*	0	0	0	0	*0*

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Count Summaries - All Vehicles

Interval Start	Pacheco Blvd Eastbound				Pacheco Blvd Westbound				6th St Northbound				6th St Southbound				15-min Total	Rolling Hour Total
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	4	105	1	0	1	174	8	0	3	3	1	0	2	0	5	307	0
7:15 AM	0	5	105	4	0	1	179	12	0	2	0	0	0	3	2	1	314	0
7:30 AM	0	12	134	3	0	6	195	13	0	5	8	5	0	7	1	3	392	0
7:45 AM	0	25	146	3	0	4	176	9	0	6	27	9	0	9	6	14	434	1,447
8:00 AM	**0**	**34**	**133**	**8**	**0**	**5**	**189**	**20**	**0**	**13**	**23**	**5**	**0**	**27**	**14**	**18**	**489**	**1,629**
8:15 AM	**0**	**19**	**141**	**5**	**0**	**3**	**225**	**6**	**0**	**18**	**30**	**5**	**0**	**30**	**25**	**13**	**520**	**1,835**
8:30 AM	**0**	**7**	**136**	**7**	**0**	**3**	**248**	**7**	**0**	**12**	**13**	**3**	**0**	**14**	**7**	**14**	**471**	**1,914**
8:45 AM	**0**	**19**	**164**	**1**	**0**	**1**	**219**	**6**	**0**	**8**	**8**	**2**	**0**	**14**	**4**	**11**	**457**	**1,937**
Count Total	0	125	1,064	32	0	24	1,605	81	0	67	112	30	0	106	59	79	3,384	
Pk Hr All	**0**	**79**	**574**	**21**	**0**	**12**	**881**	**39**	**0**	**51**	**74**	**15**	**0**	**85**	**50**	**56**	**1,937**	
Pk Hr HV	**0**	**1**	**70**	**0**	**0**	**0**	**92**	**0**	**0**	**2**	**0**	**1**	**0**	**3**	**1**	**0**	**170**	
Pk Hr HV%	**-**	**1%**	**12%**	**0%**	**-**	**0%**	**10%**	**0%**	**-**	**4%**	**0%**	**7%**	**-**	**4%**	**2%**	**0%**	**9%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	12	31	0	0	*43*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	15	25	0	1	*41*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	20	29	1	0	*50*	0	0	0	0	*0*	0	1	0	0	*1*
7:45 AM	18	20	0	0	*38*	0	0	0	0	*0*	0	2	0	0	*2*
8:00 AM	**15**	**17**	**1**	**1**	**34**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**16**	**26**	**2**	**3**	**47**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	**17**	**27**	**0**	**0**	**44**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	**23**	**22**	**0**	**0**	**45**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	136	197	4	5	*342*	0	0	0	0	*0*	0	3	0	0	*3*
Peak Hour	**71**	**92**	**3**	**4**	***170***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**

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Count Summaries - Heavy Vehicles

Interval Start	Pacheco Blvd				Pacheco Blvd				6th St				6th St				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	11	0	0	0	30	1	0	0	0	0	0	0	0	0	43	0
7:15 AM	0	0	14	1	0	0	24	1	0	0	0	0	0	1	0	0	41	0
7:30 AM	0	1	19	0	0	0	29	0	0	1	0	0	0	0	0	0	50	0
7:45 AM	0	1	17	0	0	0	20	0	0	0	0	0	0	0	0	0	38	172
8:00 AM	**0**	**0**	**15**	**0**	**0**	**0**	**17**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**34**	**163**
8:15 AM	**0**	**0**	**16**	**0**	**0**	**0**	**26**	**0**	**0**	**1**	**0**	**1**	**0**	**2**	**1**	**0**	**47**	**169**
8:30 AM	**0**	**0**	**17**	**0**	**0**	**0**	**27**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**44**	**163**
8:45 AM	**0**	**1**	**22**	**0**	**0**	**0**	**22**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**45**	**170**
Count Total	0	4	131	1	0	0	195	2	0	3	0	1	0	4	1	0	342	
Pk Hr Heavy	**0**	**1**	**70**	**0**	**0**	**0**	**92**	**0**	**0**	**2**	**0**	**1**	**0**	**3**	**1**	**0**	**170**	

Count Summaries - Bikes

Interval Start	Pacheco Blvd				Pacheco Blvd				6th St				6th St				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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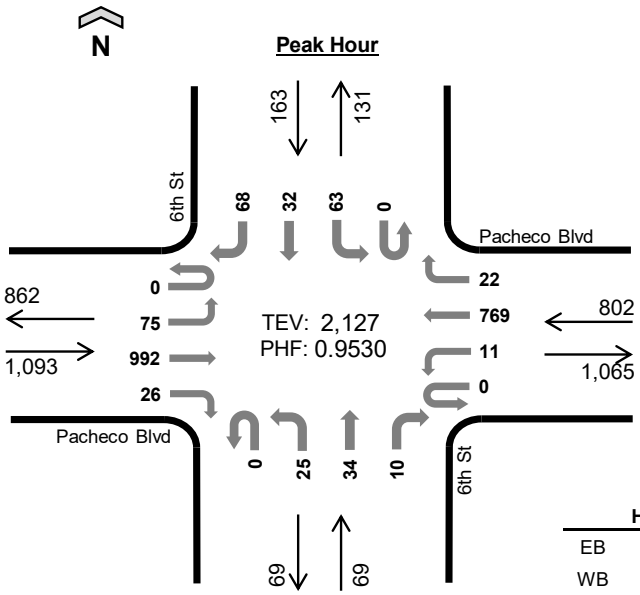
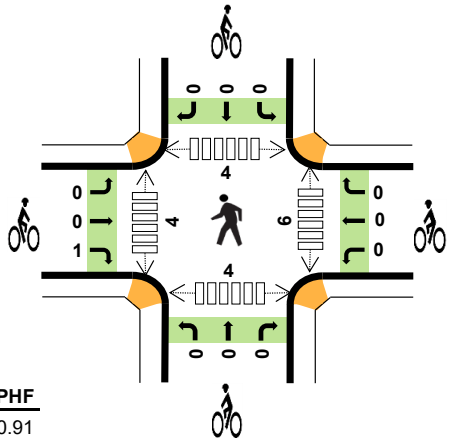
6th St
Pacheco Blvd

Date: 5/29/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM





	HV%	PHF
EB	8%	0.91
WB	9%	0.95
NB	1%	0.69
SB	1%	0.82
TOTAL	8%	0.95

Peak Hour Count Summaries

Peak Hour Interval Start		Pacheco Blvd Eastbound				Pacheco Blvd Westbound				6th St Northbound				6th St Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:15 PM		0	17	214	7	0	5	198	7	0	10	13	2	0	17	11	22	523	0
4:30 PM		0	11	240	9	0	2	181	4	0	3	10	3	0	18	8	19	508	0
4:45 PM		0	23	267	5	0	4	196	3	0	9	6	1	0	7	6	11	538	0
5:00 PM		0	24	271	5	0	0	194	8	0	3	5	4	0	21	7	16	558	2,127
Pk Hr	All	0	75	992	26	0	11	769	22	0	25	34	10	0	63	32	68	2,127	
	HV	0	0	86	0	0	0	76	0	0	0	0	1	0	1	1	0	165	
	HV%	-	0%	9%	0%	-	0%	10%	0%	-	0%	0%	10%	-	2%	3%	0%	8%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:15 PM	21	22	1	2	*46*	1	0	0	0	*1*	0	2	0	0	*2*
4:30 PM	22	20	0	0	*42*	0	0	0	0	*0*	6	0	4	3	*13*
4:45 PM	26	8	0	0	*34*	0	0	0	0	*0*	0	2	0	0	*2*
5:00 PM	17	26	0	0	*43*	0	0	0	0	*0*	0	0	0	1	*1*
Peak Hour	86	76	1	2	*165*	1	0	0	0	*1*	6	4	4	4	*18*

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Count Summaries - All Vehicles

Interval Start	Pacheco Blvd				Pacheco Blvd				6th St				6th St				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	17	226	9	0	3	174	11	0	10	9	6	0	19	7	21	512	0
4:15 PM	**0**	**17**	**214**	**7**	**0**	**5**	**198**	**7**	**0**	**10**	**13**	**2**	**0**	**17**	**11**	**22**	**523**	**0**
4:30 PM	**0**	**11**	**240**	**9**	**0**	**2**	**181**	**4**	**0**	**3**	**10**	**3**	**0**	**18**	**8**	**19**	**508**	**0**
4:45 PM	**0**	**23**	**267**	**5**	**0**	**4**	**196**	**3**	**0**	**9**	**6**	**1**	**0**	**7**	**6**	**11**	**538**	**2,081**
5:00 PM	**0**	**24**	**271**	**5**	**0**	**0**	**194**	**8**	**0**	**3**	**5**	**4**	**0**	**21**	**7**	**16**	**558**	**2,127**
5:15 PM	0	15	269	4	0	2	160	6	0	3	6	4	0	11	8	7	495	2,099
5:30 PM	0	24	254	5	0	1	174	5	0	5	7	1	0	7	5	12	500	2,091
5:45 PM	0	25	288	3	0	2	126	4	0	2	5	3	0	15	2	12	487	2,040
Count Total	0	156	2,029	47	0	19	1,403	48	0	45	61	24	0	115	54	120	4,121	
Pk Hr All	**0**	**75**	**992**	**26**	**0**	**11**	**769**	**22**	**0**	**25**	**34**	**10**	**0**	**63**	**32**	**68**	**2,127**	
Pk Hr HV	**0**	**0**	**86**	**0**	**0**	**0**	**76**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**1**	**0**	**165**	
Pk Hr HV%	**-**	**0%**	**9%**	**0%**	**-**	**0%**	**10%**	**0%**	**-**	**0%**	**0%**	**10%**	**-**	**2%**	**3%**	**0%**	**8%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	17	20	1	0	*38*	0	0	0	1	*1*	0	5	1	1	*7*
4:15 PM	**21**	**22**	**1**	**2**	**46**	**1**	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**2**
4:30 PM	**22**	**20**	**0**	**0**	**42**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**4**	**3**	**13**
4:45 PM	**26**	**8**	**0**	**0**	**34**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**2**
5:00 PM	**17**	**26**	**0**	**0**	**43**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
5:15 PM	16	7	0	1	*24*	0	0	0	0	*0*	1	0	0	0	*1*
5:30 PM	15	7	0	0	*22*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	17	19	1	0	*37*	0	0	0	0	*0*	0	3	0	0	*3*
Count Total	151	129	3	3	*286*	1	0	0	1	*2*	7	12	5	5	*29*
Peak Hour	**86**	**76**	**1**	**2**	***165***	**1**	**0**	**0**	**0**	***1***	**6**	**4**	**4**	**4**	**18**

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Count Summaries - Heavy Vehicles

Interval Start	Pacheco Blvd				Pacheco Blvd				6th St				6th St				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	17	0	0	0	20	0	0	1	0	0	0	0	0	0	38	0
4:15 PM	**0**	**0**	**21**	**0**	**0**	**0**	**22**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**1**	**0**	**46**	**0**
4:30 PM	**0**	**0**	**22**	**0**	**0**	**0**	**20**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**42**	**0**
4:45 PM	**0**	**0**	**26**	**0**	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**34**	**160**
5:00 PM	**0**	**0**	**17**	**0**	**0**	**0**	**26**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**43**	**165**
5:15 PM	0	0	16	0	0	0	7	0	0	0	0	0	0	1	0	0	24	143
5:30 PM	0	0	15	0	0	0	7	0	0	0	0	0	0	0	0	0	22	123
5:45 PM	0	0	17	0	0	0	19	0	0	0	0	1	0	0	0	0	37	126
Count Total	0	0	151	0	0	0	129	0	0	1	0	2	0	2	1	0	286	
Pk Hr Heavy	**0**	**0**	**86**	**0**	**0**	**0**	**76**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**1**	**0**	**165**	

Count Summaries - Bikes

Interval Start	Pacheco Blvd				Pacheco Blvd				6th St				6th St				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
4:15 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	2	
Pk Hr Bike	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	

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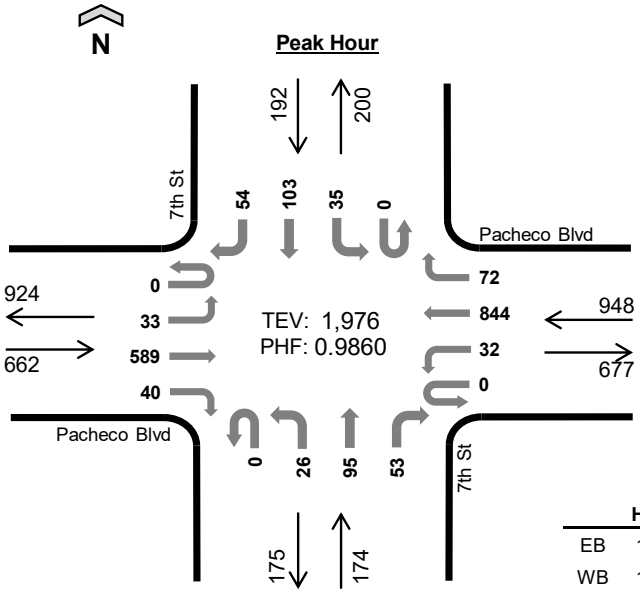
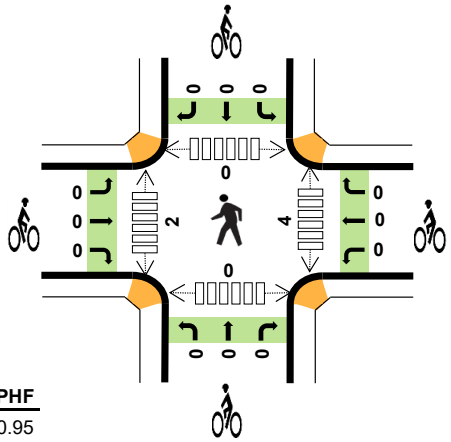
7th St
Pacheco Blvd

Date: 5/29/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV%	PHF
EB	11%	0.95
WB	10%	0.87
NB	2%	0.87
SB	3%	0.84
TOTAL	9%	0.99

Peak Hour Count Summaries

Peak Hour Interval Start		Pacheco Blvd Eastbound				Pacheco Blvd Westbound				7th St Northbound				7th St Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:45 AM		0	10	152	6	0	6	200	20	0	5	18	10	0	8	31	16	482	0
8:00 AM		0	7	143	16	0	7	185	35	0	6	29	15	0	8	29	12	492	0
8:15 AM		0	7	156	12	0	10	197	15	0	5	23	19	0	11	27	19	501	0
8:30 AM		0	9	138	6	0	9	262	2	0	10	25	9	0	8	16	7	501	1,976
Pk Hr	All	0	33	589	40	0	32	844	72	0	26	95	53	0	35	103	54	1,976	
	HV	0	0	71	3	0	6	90	0	0	1	1	1	0	1	4	1	179	
	HV%	-	0%	12%	8%	-	19%	11%	0%	-	4%	1%	2%	-	3%	4%	2%	9%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:45 AM	20	22	1	5	*48*	0	0	0	0	*0*	1	1	0	0	*2*
8:00 AM	17	18	1	1	*37*	0	0	0	0	*0*	2	0	0	0	*2*
8:15 AM	17	28	1	0	*46*	0	0	0	0	*0*	1	1	0	0	*2*
8:30 AM	20	28	0	0	*48*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	74	96	3	6	*179*	0	0	0	0	*0*	4	2	0	0	*6*

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Count Summaries - All Vehicles

Interval Start	Pacheco Blvd Eastbound				Pacheco Blvd Westbound				7th St Northbound				7th St Southbound				15-min Total	Rolling Hour Total
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	3	100	3	0	2	195	2	0	1	12	10	0	5	13	6	352	0
7:15 AM	0	3	103	0	0	2	162	4	0	3	10	5	0	0	5	6	303	0
7:30 AM	0	7	142	2	0	4	197	15	0	3	14	14	0	3	9	7	417	0
7:45 AM	**0**	**10**	**152**	**6**	**0**	**6**	**200**	**20**	**0**	**5**	**18**	**10**	**0**	**8**	**31**	**16**	**482**	**1,554**
8:00 AM	**0**	**7**	**143**	**16**	**0**	**7**	**185**	**35**	**0**	**6**	**29**	**15**	**0**	**8**	**29**	**12**	**492**	**1,694**
8:15 AM	**0**	**7**	**156**	**12**	**0**	**10**	**197**	**15**	**0**	**5**	**23**	**19**	**0**	**11**	**27**	**19**	**501**	**1,892**
8:30 AM	**0**	**9**	**138**	**6**	**0**	**9**	**262**	**2**	**0**	**10**	**25**	**9**	**0**	**8**	**16**	**7**	**501**	**1,976**
8:45 AM	0	12	168	6	0	10	192	5	0	5	9	6	0	3	6	16	438	1,932
Count Total	0	58	1,102	51	0	50	1,590	98	0	38	140	88	0	46	136	89	3,486	
Pk Hr All	**0**	**33**	**589**	**40**	**0**	**32**	**844**	**72**	**0**	**26**	**95**	**53**	**0**	**35**	**103**	**54**	**1,976**	
Pk Hr HV	**0**	**0**	**71**	**3**	**0**	**6**	**90**	**0**	**0**	**1**	**1**	**1**	**0**	**1**	**4**	**1**	**179**	
Pk Hr HV%	**-**	**0%**	**12%**	**8%**	**-**	**19%**	**11%**	**0%**	**-**	**4%**	**1%**	**2%**	**-**	**3%**	**4%**	**2%**	**9%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	12	31	0	1	*44*	0	0	0	0	*0*	1	0	0	0	*1*
7:15 AM	14	23	1	0	*38*	0	0	0	1	*1*	1	0	0	0	*1*
7:30 AM	15	30	0	1	*46*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	**20**	**22**	**1**	**5**	**48**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**2**
8:00 AM	**17**	**18**	**1**	**1**	**37**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**2**
8:15 AM	**17**	**28**	**1**	**0**	**46**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**2**
8:30 AM	**20**	**28**	**0**	**0**	**48**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	20	23	0	0	*43*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	135	203	4	8	*350*	0	0	0	1	*1*	6	2	0	0	*8*
Peak Hour	**74**	**96**	**3**	**6**	***179***	**0**	**0**	**0**	**0**	***0***	**4**	**2**	**0**	**0**	**6**

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Count Summaries - Heavy Vehicles

Interval Start	Pacheco Blvd				Pacheco Blvd				7th St				7th St				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	12	0	0	0	31	0	0	0	0	0	0	1	0	0	44	0
7:15 AM	0	0	14	0	0	0	23	0	0	0	1	0	0	0	0	0	38	0
7:30 AM	0	0	15	0	0	0	29	1	0	0	0	0	0	0	1	0	46	0
7:45 AM	**0**	**0**	**19**	**1**	**0**	**0**	**22**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**4**	**1**	**48**	**176**
8:00 AM	**0**	**0**	**15**	**2**	**0**	**2**	**16**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**37**	**169**
8:15 AM	**0**	**0**	**17**	**0**	**0**	**4**	**24**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**46**	**177**
8:30 AM	**0**	**0**	**20**	**0**	**0**	**0**	**28**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**48**	**179**
8:45 AM	0	0	20	0	0	0	23	0	0	0	0	0	0	0	0	0	43	174
Count Total	0	0	132	3	0	6	196	1	0	1	2	1	0	2	5	1	350	
Pk Hr Heavy	**0**	**0**	**71**	**3**	**0**	**6**	**90**	**0**	**0**	**1**	**1**	**1**	**0**	**1**	**4**	**1**	**179**	

Count Summaries - Bikes

Interval Start	Pacheco Blvd				Pacheco Blvd				7th St				7th St				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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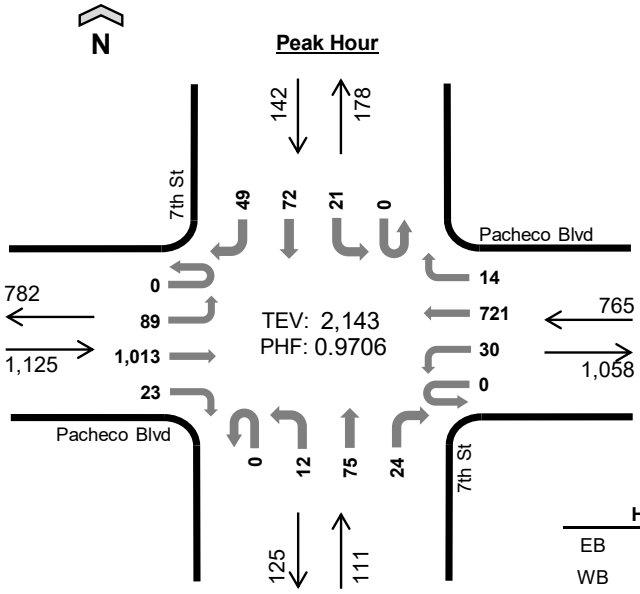
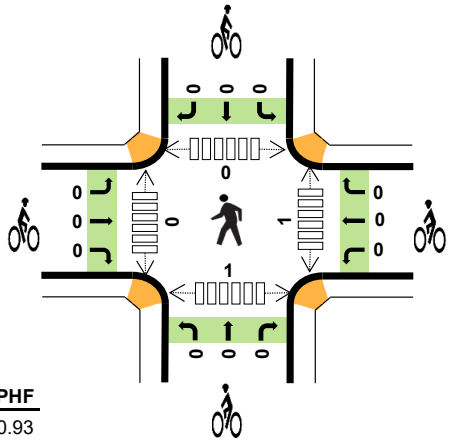
7th St
Pacheco Blvd

Date: 5/29/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM





	HV%	PHF
EB	7%	0.93
WB	8%	0.90
NB	0%	0.77
SB	0%	0.85
TOTAL	7%	0.97

Peak Hour Count Summaries

Peak Hour Interval Start		Pacheco Blvd Eastbound				Pacheco Blvd Westbound				7th St Northbound				7th St Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM		0	18	229	5	0	6	168	5	0	6	25	5	0	7	12	15	501	0
4:45 PM		0	23	249	7	0	5	203	5	0	1	14	6	0	3	23	10	549	0
5:00 PM		0	29	256	6	0	9	180	2	0	3	20	6	0	9	13	8	541	0
5:15 PM		0	19	279	5	0	10	170	2	0	2	16	7	0	2	24	16	552	2,143
Pk Hr	All	0	89	1,013	23	0	30	721	14	0	12	75	24	0	21	72	49	2,143	
	HV	0	0	80	0	0	1	60	0	0	0	0	0	0	0	0	0	141	
	HV%	-	0%	8%	0%	-	3%	8%	0%	-	0%	0%	0%	-	0%	0%	0%	7%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:30 PM	19	20	0	0	*39*	0	0	0	0	*0*	0	0	0	1	*1*
4:45 PM	26	11	0	0	*37*	0	0	0	0	*0*	0	0	0	0	*0*
5:00 PM	18	22	0	0	*40*	0	0	0	0	*0*	0	0	0	0	*0*
5:15 PM	17	8	0	0	*25*	0	0	0	0	*0*	1	0	0	0	*1*
Peak Hour	80	61	0	0	*141*	0	0	0	0	*0*	1	0	0	1	*2*

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Count Summaries - All Vehicles

Interval Start	Pacheco Blvd				Pacheco Blvd				7th St				7th St				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	17	235	6	0	9	156	6	0	6	37	6	0	8	9	15	510	0
4:15 PM	0	20	218	6	0	8	201	2	0	2	10	10	0	6	17	6	506	0
4:30 PM	**0**	**18**	**229**	**5**	**0**	**6**	**168**	**5**	**0**	**6**	**25**	**5**	**0**	**7**	**12**	**15**	**501**	**0**
4:45 PM	**0**	**23**	**249**	**7**	**0**	**5**	**203**	**5**	**0**	**1**	**14**	**6**	**0**	**3**	**23**	**10**	**549**	**2,066**
5:00 PM	**0**	**29**	**256**	**6**	**0**	**9**	**180**	**2**	**0**	**3**	**20**	**6**	**0**	**9**	**13**	**8**	**541**	**2,097**
5:15 PM	**0**	**19**	**279**	**5**	**0**	**10**	**170**	**2**	**0**	**2**	**16**	**7**	**0**	**2**	**24**	**16**	**552**	**2,143**
5:30 PM	0	21	249	4	0	7	149	1	0	2	13	5	0	9	15	8	483	2,125
5:45 PM	0	21	279	4	0	10	132	1	0	4	16	12	0	4	13	3	499	2,075
Count Total	0	168	1,994	43	0	64	1,359	24	0	26	151	57	0	48	126	81	4,141	
Pk Hr All	**0**	**89**	**1,013**	**23**	**0**	**30**	**721**	**14**	**0**	**12**	**75**	**24**	**0**	**21**	**72**	**49**	**2,143**	
Pk Hr HV	**0**	**0**	**80**	**0**	**0**	**1**	**60**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**141**	
Pk Hr HV%	**-**	**0%**	**8%**	**0%**	**-**	**3%**	**8%**	**0%**	**-**	**0%**	**0%**	**0%**	**-**	**0%**	**0%**	**0%**	**7%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	17	19	1	1	*38*	0	0	0	0	*0*	2	0	2	1	*5*
4:15 PM	23	21	0	0	*44*	0	0	0	0	*0*	1	0	1	1	*3*
4:30 PM	**19**	**20**	**0**	**0**	**39**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
4:45 PM	**26**	**11**	**0**	**0**	**37**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:00 PM	**18**	**22**	**0**	**0**	**40**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:15 PM	**17**	**8**	**0**	**0**	**25**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**
5:30 PM	20	9	0	0	*29*	0	0	0	0	*0*	0	0	1	0	*1*
5:45 PM	14	20	0	0	*34*	0	0	0	1	*1*	1	0	0	0	*1*
Count Total	154	130	1	1	*286*	0	0	0	1	*1*	5	0	4	3	*12*
Peak Hour	**80**	**61**	**0**	**0**	***141***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**1**	**2**

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Count Summaries - Heavy Vehicles

Interval Start	Pacheco Blvd				Pacheco Blvd				7th St				7th St				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	17	0	0	0	19	0	0	1	0	0	0	0	1	0	38	0
4:15 PM	0	1	22	0	0	0	21	0	0	0	0	0	0	0	0	0	44	0
4:30 PM	**0**	**0**	**19**	**0**	**0**	**0**	**20**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**39**	**0**
4:45 PM	**0**	**0**	**26**	**0**	**0**	**0**	**11**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**37**	**158**
5:00 PM	**0**	**0**	**18**	**0**	**0**	**0**	**22**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**40**	**160**
5:15 PM	**0**	**0**	**17**	**0**	**0**	**1**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**25**	**141**
5:30 PM	0	1	19	0	0	0	9	0	0	0	0	0	0	0	0	0	29	131
5:45 PM	0	0	14	0	0	0	20	0	0	0	0	0	0	0	0	0	34	128
Count Total	0	2	152	0	0	1	129	0	0	1	0	0	0	0	1	0	286	
Pk Hr Heavy	**0**	**0**	**80**	**0**	**0**	**1**	**60**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**141**	

Count Summaries - Bikes

Interval Start	Pacheco Blvd				Pacheco Blvd				7th St				7th St				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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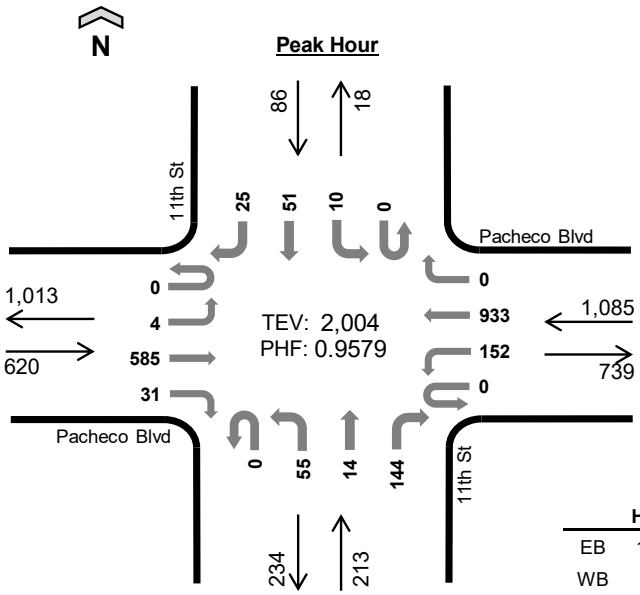
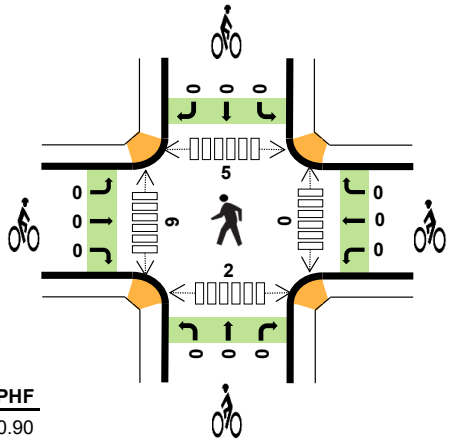
11th St
Pacheco Blvd

Date: 5/29/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV%	PHF
EB	10%	0.90
WB	9%	0.93
NB	3%	0.72
SB	1%	0.69
TOTAL	8%	0.96

Peak Hour Count Summaries

Peak Hour Interval Start		Pacheco Blvd Eastbound				Pacheco Blvd Westbound				11th St Northbound				11th St Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:45 AM		0	0	145	4	0	28	238	0	0	9	2	21	0	1	1	7	456	0
8:00 AM		0	1	118	14	0	50	239	0	0	15	4	45	0	2	20	7	515	0
8:15 AM		0	2	154	10	0	52	187	0	0	17	5	52	0	5	25	1	510	0
8:30 AM		0	1	168	3	0	22	269	0	0	14	3	26	0	2	5	10	523	2,004
Pk Hr	All	0	4	585	31	0	152	933	0	0	55	14	144	0	10	51	25	2,004	
	HV	0	0	64	1	0	4	90	0	0	1	0	6	0	0	0	1	167	
	HV%	-	0%	11%	3%	-	3%	10%	-	-	2%	0%	4%	-	0%	0%	4%	8%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:45 AM	18	23	0	0	*41*	0	0	0	0	*0*	0	1	3	0	*4*
8:00 AM	16	21	2	0	*39*	0	0	0	0	*0*	0	5	0	1	*6*
8:15 AM	13	24	0	1	*38*	0	0	0	0	*0*	0	2	1	1	*4*
8:30 AM	18	26	5	0	*49*	0	0	0	0	*0*	0	1	1	0	*2*
Peak Hour	65	94	7	1	*167*	0	0	0	0	*0*	0	9	5	2	*16*

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Count Summaries - All Vehicles

Interval Start	Pacheco Blvd Eastbound				Pacheco Blvd Westbound				11th St Northbound				11th St Southbound				15-min Total	Rolling Hour Total
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	111	2	0	7	193	0	0	2	0	12	0	2	0	7	336	0
7:15 AM	0	3	107	2	0	15	186	0	0	6	0	10	0	4	1	3	337	0
7:30 AM	0	1	146	9	0	19	200	0	0	3	0	7	0	1	2	3	391	0
7:45 AM	**0**	**0**	**145**	**4**	**0**	**28**	**238**	**0**	**0**	**9**	**2**	**21**	**0**	**1**	**1**	**7**	**456**	**1,520**
8:00 AM	**0**	**1**	**118**	**14**	**0**	**50**	**239**	**0**	**0**	**15**	**4**	**45**	**0**	**2**	**20**	**7**	**515**	**1,699**
8:15 AM	**0**	**2**	**154**	**10**	**0**	**52**	**187**	**0**	**0**	**17**	**5**	**52**	**0**	**5**	**25**	**1**	**510**	**1,872**
8:30 AM	**0**	**1**	**168**	**3**	**0**	**22**	**269**	**0**	**0**	**14**	**3**	**26**	**0**	**2**	**5**	**10**	**523**	**2,004**
8:45 AM	0	1	165	4	0	12	218	0	0	1	3	15	0	3	1	2	425	1,973
Count Total	0	9	1,114	48	0	205	1,730	0	0	67	17	188	0	20	55	40	3,493	
Pk Hr All	**0**	**4**	**585**	**31**	**0**	**152**	**933**	**0**	**0**	**55**	**14**	**144**	**0**	**10**	**51**	**25**	**2,004**	
Pk Hr HV	**0**	**0**	**64**	**1**	**0**	**4**	**90**	**0**	**0**	**1**	**0**	**6**	**0**	**0**	**0**	**1**	**167**	
Pk Hr HV%	**-**	**0%**	**11%**	**3%**	**-**	**3%**	**10%**	**-**	**-**	**2%**	**0%**	**4%**	**-**	**0%**	**0%**	**4%**	**8%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	12	34	2	0	*48*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	13	28	1	2	*44*	0	0	0	0	*0*	0	0	0	1	*1*
7:30 AM	15	27	0	0	*42*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	**18**	**23**	**0**	**0**	**41**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**	**0**	**4**
8:00 AM	**16**	**21**	**2**	**0**	**39**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**1**	**6**
8:15 AM	**13**	**24**	**0**	**1**	**38**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**1**	**4**
8:30 AM	**18**	**26**	**5**	**0**	**49**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**2**
8:45 AM	23	22	0	0	*45*	0	0	0	0	*0*	0	1	0	0	*1*
Count Total	128	205	10	3	*346*	0	0	0	0	*0*	0	10	5	3	*18*
Peak Hour	**65**	**94**	**7**	**1**	***167***	**0**	**0**	**0**	**0**	***0***	**0**	**9**	**5**	**2**	**16**

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Count Summaries - Heavy Vehicles

Interval Start	Pacheco Blvd				Pacheco Blvd				11th St				11th St				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	11	1	0	0	34	0	0	1	0	1	0	0	0	0	48	0
7:15 AM	0	0	13	0	0	0	28	0	0	0	0	1	0	1	0	1	44	0
7:30 AM	0	0	15	0	0	0	27	0	0	0	0	0	0	0	0	0	42	0
7:45 AM	**0**	**0**	**18**	**0**	**0**	**1**	**22**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**41**	**175**
8:00 AM	**0**	**0**	**15**	**1**	**0**	**1**	**20**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**39**	**166**
8:15 AM	**0**	**0**	**13**	**0**	**0**	**2**	**22**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**38**	**160**
8:30 AM	**0**	**0**	**18**	**0**	**0**	**0**	**26**	**0**	**0**	**1**	**0**	**4**	**0**	**0**	**0**	**0**	**49**	**167**
8:45 AM	0	0	23	0	0	0	22	0	0	0	0	0	0	0	0	0	45	171
Count Total	0	0	126	2	0	4	201	0	0	2	0	8	0	1	0	2	346	
Pk Hr Heavy	**0**	**0**	**64**	**1**	**0**	**4**	**90**	**0**	**0**	**1**	**0**	**6**	**0**	**0**	**0**	**1**	**167**	

Count Summaries - Bikes

Interval Start	Pacheco Blvd				Pacheco Blvd				11th St				11th St				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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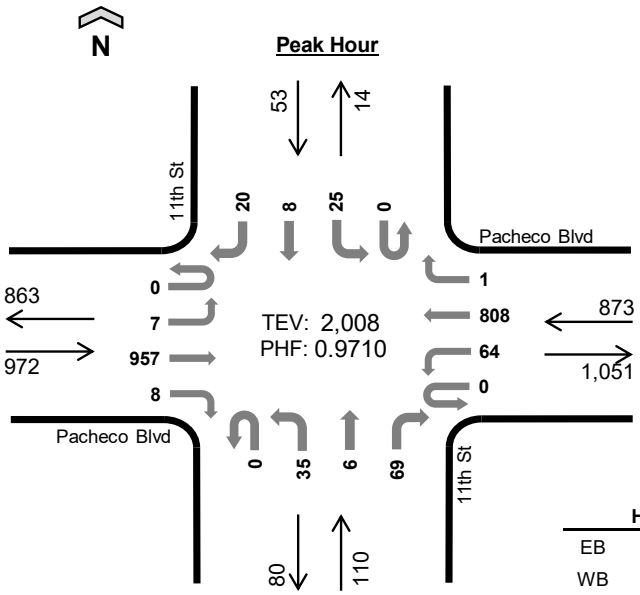
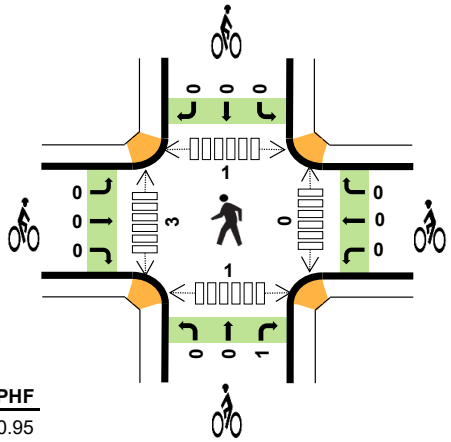
11th St
Pacheco Blvd

Date: 5/29/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM





	HV%	PHF
EB	9%	0.95
WB	8%	0.97
NB	0%	0.89
SB	0%	0.83
TOTAL	8%	0.97

Peak Hour Count Summaries

Peak Hour Interval Start		Pacheco Blvd Eastbound				Pacheco Blvd Westbound				11th St Northbound				11th St Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		**0**	**3**	**245**	**3**	**0**	**24**	**195**	**0**	**0**	**10**	**2**	**19**	**0**	**6**	**2**	**8**	**517**	**0**
4:15 PM		**0**	**1**	**216**	**0**	**0**	**16**	**208**	**1**	**0**	**10**	**1**	**13**	**0**	**5**	**4**	**5**	**480**	**0**
4:30 PM		**0**	**1**	**245**	**1**	**0**	**16**	**208**	**0**	**0**	**8**	**1**	**20**	**0**	**9**	**1**	**5**	**515**	**0**
4:45 PM		**0**	**2**	**251**	**4**	**0**	**8**	**197**	**0**	**0**	**7**	**2**	**17**	**0**	**5**	**1**	**2**	**496**	**2,008**
Pk Hr	All	**0**	**7**	**957**	**8**	**0**	**64**	**808**	**1**	**0**	**35**	**6**	**69**	**0**	**25**	**8**	**20**	**2,008**	
	HV	**0**	**0**	**84**	**0**	**0**	**0**	**70**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**154**	
	HV%	**-**	**0%**	**9%**	**0%**	**-**	**0%**	**9%**	**0%**	**-**	**0%**	**0%**	**0%**	**-**	**0%**	**0%**	**0%**	**8%**	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	**14**	**21**	**0**	**0**	***35***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	***1***
4:15 PM	**21**	**20**	**0**	**0**	***41***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**0**	***1***
4:30 PM	**26**	**21**	**0**	**0**	***47***	**0**	**0**	**1**	**0**	***1***	**0**	**2**	**0**	**1**	***3***
4:45 PM	**23**	**8**	**0**	**0**	***31***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
Peak Hour	**84**	**70**	**0**	**0**	***154***	**0**	**0**	**1**	**0**	***1***	**0**	**3**	**1**	**1**	***5***

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Count Summaries - All Vehicles

Interval Start	Pacheco Blvd Eastbound				Pacheco Blvd Westbound				11th St Northbound				11th St Southbound				15-min Total	Rolling Hour Total
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**3**	**245**	**3**	**0**	**24**	**195**	**0**	**0**	**10**	**2**	**19**	**0**	**6**	**2**	**8**	**517**	0
4:15 PM	**0**	**1**	**216**	**0**	**0**	**16**	**208**	**1**	**0**	**10**	**1**	**13**	**0**	**5**	**4**	**5**	**480**	**0**
4:30 PM	**0**	**1**	**245**	**1**	**0**	**16**	**208**	**0**	**0**	**8**	**1**	**20**	**0**	**9**	**1**	**5**	**515**	**0**
4:45 PM	**0**	**2**	**251**	**4**	**0**	**8**	**197**	**0**	**0**	**7**	**2**	**17**	**0**	**5**	**1**	**2**	**496**	**2,008**
5:00 PM	0	1	233	3	0	11	205	1	0	9	1	17	0	12	6	2	501	1,992
5:15 PM	0	3	265	4	0	19	171	0	0	6	3	17	0	5	1	2	496	2,008
5:30 PM	0	0	236	1	0	9	148	1	0	6	2	16	0	3	4	6	432	1,925
5:45 PM	0	2	281	1	0	6	150	0	0	2	3	14	0	10	1	3	473	1,902
Count Total	0	13	1,972	17	0	109	1,482	3	0	58	15	133	0	55	20	33	3,910	
Pk Hr All	**0**	**7**	**957**	**8**	**0**	**64**	**808**	**1**	**0**	**35**	**6**	**69**	**0**	**25**	**8**	**20**	**2,008**	
Pk Hr HV	**0**	**0**	**84**	**0**	**0**	**0**	**70**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**154**	
Pk Hr HV%	**-**	**0%**	**9%**	**0%**	**-**	**0%**	**9%**	**0%**	**-**	**0%**	**0%**	**0%**	**-**	**0%**	**0%**	**0%**	**8%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	**14**	**21**	**0**	**0**	**35**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**
4:15 PM	**21**	**20**	**0**	**0**	**41**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**
4:30 PM	**26**	**21**	**0**	**0**	**47**	**0**	**0**	**1**	**0**	**1**	**0**	**2**	**0**	**1**	**3**
4:45 PM	**23**	**8**	**0**	**0**	**31**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:00 PM	18	24	0	1	*43*	0	0	0	0	*0*	0	2	0	0	*2*
5:15 PM	18	6	1	0	*25*	0	0	0	0	*0*	0	1	0	0	*1*
5:30 PM	15	8	0	0	*23*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	13	22	0	0	*35*	0	0	0	0	*0*	0	0	0	2	*2*
Count Total	148	130	1	1	*280*	0	0	1	0	*1*	0	6	1	3	*10*
Peak Hour	**84**	**70**	**0**	**0**	***154***	**0**	**0**	**1**	**0**	***1***	**0**	**3**	**1**	**1**	**5**

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Count Summaries - Heavy Vehicles

Interval Start	Pacheco Blvd				Pacheco Blvd				11th St				11th St				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**14**	**0**	**0**	**0**	**21**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**35**	0
4:15 PM	**0**	**0**	**21**	**0**	**0**	**0**	**20**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**41**	**0**
4:30 PM	**0**	**0**	**26**	**0**	**0**	**0**	**21**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**47**	**0**
4:45 PM	**0**	**0**	**23**	**0**	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**31**	**154**
5:00 PM	0	0	18	0	0	0	24	0	0	0	0	0	0	0	0	1	43	162
5:15 PM	0	0	18	0	0	1	5	0	0	1	0	0	0	0	0	0	25	146
5:30 PM	0	0	15	0	0	0	8	0	0	0	0	0	0	0	0	0	23	122
5:45 PM	0	0	13	0	0	0	22	0	0	0	0	0	0	0	0	0	35	126
Count Total	0	0	148	0	0	1	129	0	0	1	0	0	0	0	0	1	280	
Pk Hr Heavy	**0**	**0**	**84**	**0**	**0**	**0**	**70**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**154**	

Count Summaries - Bikes

Interval Start	Pacheco Blvd				Pacheco Blvd				11th St				11th St				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	

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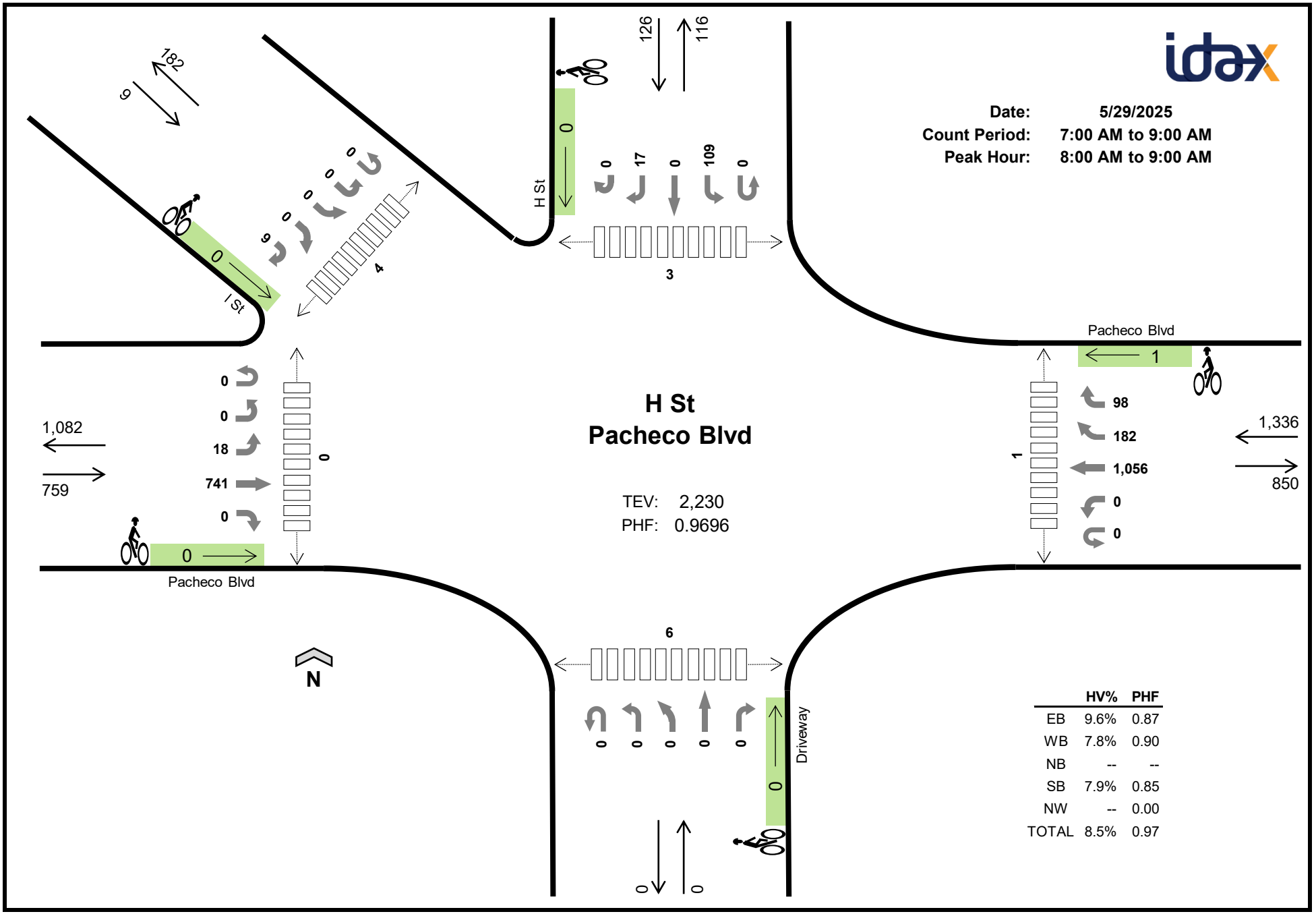

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Peak Hour Count Summaries

Peak Hour Interval Start	Pacheco Blvd Eastbound					Pacheco Blvd Westbound					Driveway Northbound					H St Southbound					I St Southeastbound					15-min Total	Rolling Hour Total
	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	HL	BL	BR	HR		
8:00 AM	0	0	2	158	0	0	0	294	58	20	0	0	0	0	0	0	22	0	8	0	0	0	0	0	2	564	0
8:15 AM	0	0	9	210	0	0	0	251	34	21	0	0	0	0	0	0	34	0	3	0	0	0	0	0	2	564	0
8:30 AM	0	0	6	192	0	0	0	272	45	25	0	0	0	0	0	0	30	0	4	0	0	0	0	0	1	575	0
8:45 AM	0	0	1	181	0	0	0	239	45	32	0	0	0	0	0	0	23	0	2	0	0	0	0	0	4	527	2,230
Pk Hr All	0	0	18	741	0	0	0	1,056	182	98	0	0	0	0	0	0	109	0	17	0	0	0	0	0	9	2,230	
Pk Hr HV	0	0	1	72	0	0	0	89	4	11	0	0	0	0	0	0	9	0	1	0	0	0	0	0	2	189	
Pk Hr HV%	-	-	6%	10%	-	-	-	8%	2%	11%	-	-	-	-	-	-	8%	-	6%	-	-	-	-	-	22%	8%	

Note: For complete count summary (all intervals), see following pages.

*** Heavy Vehicle Classifications include FHWA Classes 4-13.*

*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals						Bicycle Totals						Pedestrians (Crossing Leg)					
	EB	WB	NB	SB	SEB	Total	EB	WB	NB	SB	SEB	Total	E	W	N	S	NW	Total
8:00 AM	15	24	0	3	0	*42*	0	0	0	0	0	*0*	1	0	1	2	1	*5*
8:15 AM	16	28	0	3	0	*47*	0	0	0	0	0	*0*	0	0	0	2	1	*3*
8:30 AM	23	24	0	3	0	*50*	0	0	0	0	0	*0*	0	0	1	0	2	*3*
8:45 AM	19	28	0	1	2	*50*	0	1	0	0	0	*1*	0	0	1	2	0	*3*
Peak Hour	73	104	0	10	2	*189*	0	1	0	0	0	*1*	1	0	3	6	4	*14*

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Count Summaries - All Vehicles

Interval Start	Pacheco Blvd Eastbound					Pacheco Blvd Westbound					Driveway Northbound					H St Southbound					I St Southeastbound					15-min Total	Rolling Hour Total
	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	HL	BL	BR	HR		
7:00 AM	0	0	1	123	0	0	0	208	16	11	0	0	0	0	0	0	8	0	1	0	0	0	0	0	1	369	0
7:15 AM	0	0	0	115	0	0	0	196	24	24	0	0	0	0	1	0	11	0	4	0	0	0	0	0	2	377	0
7:30 AM	0	0	2	153	0	0	0	224	28	16	0	0	0	0	0	0	11	0	3	0	0	0	0	0	2	439	0
7:45 AM	0	0	3	166	0	0	0	260	51	15	0	0	0	0	0	0	17	0	3	1	0	0	0	0	0	516	1,701
8:00 AM	**0**	**0**	**2**	**158**	**0**	**0**	**0**	**294**	**58**	**20**	**0**	**0**	**0**	**0**	**0**	**0**	**22**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**2**	**564**	**1,896**
8:15 AM	**0**	**0**	**9**	**210**	**0**	**0**	**0**	**251**	**34**	**21**	**0**	**0**	**0**	**0**	**0**	**0**	**34**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**2**	**564**	**2,083**
8:30 AM	**0**	**0**	**6**	**192**	**0**	**0**	**0**	**272**	**45**	**25**	**0**	**0**	**0**	**0**	**0**	**0**	**30**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**1**	**575**	**2,219**
8:45 AM	**0**	**0**	**1**	**181**	**0**	**0**	**0**	**239**	**45**	**32**	**0**	**0**	**0**	**0**	**0**	**0**	**23**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**4**	**527**	**2,230**
Count Total	0	0	24	1,298	0	0	0	1,944	301	164	0	0	0	0	1	0	156	0	28	1	0	0	0	0	14	3,931	
Pk Hr All	**0**	**0**	**18**	**741**	**0**	**0**	**0**	**1,056**	**182**	**98**	**0**	**0**	**0**	**0**	**0**	**0**	**109**	**0**	**17**	**0**	**0**	**0**	**0**	**0**	**9**	**2,230**	
Pk Hr HV	**0**	**0**	**1**	**72**	**0**	**0**	**0**	**89**	**4**	**11**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**189**	
Pk Hr HV%	-	-	**6%**	**10%**	-	-	-	**8%**	**2%**	**11%**	-	-	-	-	-	-	**8%**	-	**6%**	-	-	-	-	-	**22%**	**8%**	

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	SEB	Total	Bicycle Totals EB	WB	NB	SB	SEB	Total	Pedestrians (Crossing Leg) E	W	N	S	NW	Total
7:00 AM	12	32	0	1	0	*45*	0	0	0	0	0	*0*	0	0	0	0	1	*1*
7:15 AM	14	33	0	2	1	*50*	0	0	0	0	0	*0*	0	0	1	1	0	*2*
7:30 AM	17	28	0	2	0	*47*	0	0	0	0	0	*0*	0	0	0	1	0	*1*
7:45 AM	19	28	0	1	0	*48*	0	0	0	0	0	*0*	0	0	0	1	2	*3*
8:00 AM	**15**	**24**	**0**	**3**	**0**	**42**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**2**	**1**	**5**
8:15 AM	**16**	**28**	**0**	**3**	**0**	**47**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**3**
8:30 AM	**23**	**24**	**0**	**3**	**0**	**50**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**3**
8:45 AM	**19**	**28**	**0**	**1**	**2**	**50**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**2**	**0**	**3**
Count Total	135	225	0	16	3	*379*	0	1	0	0	0	*1*	1	0	4	9	7	*21*
Peak Hour	**73**	**104**	**0**	**10**	**2**	***189***	**0**	**1**	**0**	**0**	**0**	***1***	**1**	**0**	**3**	**6**	**4**	***14***

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Count Summaries - Heavy Vehicles

Interval Start	Pacheco Blvd					Pacheco Blvd					Driveway					H St					I St					15-min Total	Rolling Hour Total
	Eastbound					Westbound					Northbound					Southbound					Southeastbound						
	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	HL	BL	BR	HR		
7:00 AM	0	0	0	12	0	0	0	32	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	45	0
7:15 AM	0	0	0	14	0	0	0	27	1	5	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	50	0
7:30 AM	0	0	0	17	0	0	0	26	2	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	47	0
7:45 AM	0	0	0	19	0	0	0	23	2	3	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	48	190
8:00 AM	**0**	**0**	**0**	**15**	**0**	**0**	**0**	**21**	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**42**	**187**
8:15 AM	**0**	**0**	**0**	**16**	**0**	**0**	**0**	**25**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**47**	**184**
8:30 AM	**0**	**0**	**1**	**22**	**0**	**0**	**0**	**23**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**50**	**187**
8:45 AM	**0**	**0**	**0**	**19**	**0**	**0**	**0**	**20**	**2**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**50**	**189**
Count Total	0	0	1	134	0	0	0	197	9	19	0	0	0	0	0	0	13	0	3	0	0	0	0	0	3	379	
Pk Hr Heavy	**0**	**0**	**1**	**72**	**0**	**0**	**0**	**89**	**4**	**11**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**189**	

Count Summaries - Bikes

Interval Start	Pacheco Blvd					Pacheco Blvd					Driveway					H St					I St					15-min Total	Rolling Hour Total
	Eastbound					Westbound					Northbound					Southbound					Southeastbound						
	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	HL	BL	BR	HR		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
Count Total	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	

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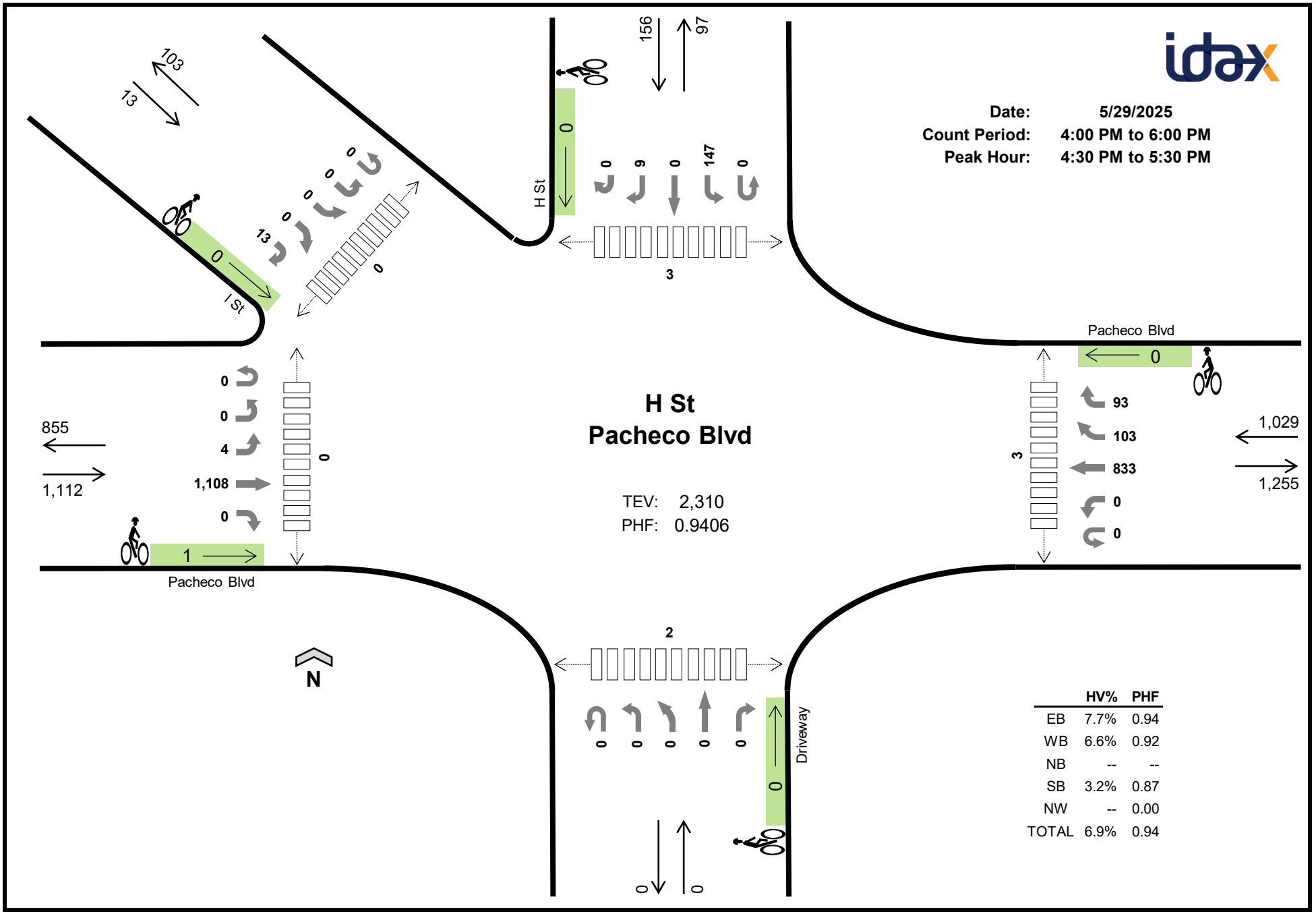

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Peak Hour Count Summaries

Peak Hour Interval Start	Pacheco Blvd Eastbound					Pacheco Blvd Westbound					Driveway Northbound					H St Southbound					I St Southeastbound					15-min Total	Rolling Hour Total
	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	HL	BL	BR	HR		
4:30 PM	**0**	**0**	**1**	**289**	**0**	**0**	**0**	**223**	**31**	**27**	**0**	**0**	**0**	**0**	**0**	**0**	**39**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**3**	**614**	**0**
4:45 PM	**0**	**0**	**2**	**258**	**0**	**0**	**0**	**205**	**24**	**17**	**0**	**0**	**0**	**0**	**0**	**0**	**38**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**3**	**549**	**0**
5:00 PM	**0**	**0**	**0**	**266**	**0**	**0**	**0**	**212**	**24**	**20**	**0**	**0**	**0**	**0**	**0**	**0**	**42**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**3**	**570**	**0**
5:15 PM	**0**	**0**	**1**	**295**	**0**	**0**	**0**	**193**	**24**	**29**	**0**	**0**	**0**	**0**	**0**	**0**	**28**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**4**	**577**	**2,310**
Pk Hr All	**0**	**0**	**4**	**1,108**	**0**	**0**	**0**	**833**	**103**	**93**	**0**	**0**	**0**	**0**	**0**	**0**	**147**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**13**	**2,310**	
Pk Hr HV	**0**	**0**	**0**	**86**	**0**	**0**	**0**	**60**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**159**	
Pk Hr HV%	-	-	**0%**	**8%**	-	-	-	**7%**	**0%**	**9%**	-	-	-	-	-	-	**3%**	-	**11%**	-	-	-	-	-	**0%**	**7%**	

Note: For complete count summary (all intervals), see following pages.

*** Heavy Vehicle Classifications include FHWA Classes 4-13.*

*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	SEB	Total	Bicycle Totals EB	WB	NB	SB	SEB	Total	Pedestrians (Crossing Leg) E	W	N	S	NW	Total
4:30 PM	**26**	**22**	**0**	**0**	**0**	***48***	**1**	**0**	**0**	**0**	**0**	***1***	**0**	**0**	**0**	**1**	**0**	***1***
4:45 PM	**20**	**13**	**0**	**4**	**0**	***37***	**0**	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	**0**	***1***
5:00 PM	**20**	**25**	**0**	**0**	**0**	***45***	**0**	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**2**	**0**	**0**	***3***
5:15 PM	**20**	**8**	**0**	**1**	**0**	***29***	**0**	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**1**	**0**	**0**	***3***
Peak Hour	**86**	**68**	**0**	**5**	**0**	***159***	**1**	**0**	**0**	**0**	**0**	***1***	**3**	**0**	**3**	**2**	**0**	***8***

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Count Summaries - All Vehicles

Interval Start	Pacheco Blvd Eastbound					Pacheco Blvd Westbound					Driveway Northbound					H St Southbound					I St Southeastbound					15-min Total	Rolling Hour Total
	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	HL	BL	BR	HR		
4:00 PM	0	0	3	260	0	0	0	210	29	21	0	0	0	0	0	0	37	0	1	0	0	0	0	0	2	563	0
4:15 PM	0	0	1	222	0	0	0	229	18	29	0	0	0	0	0	0	56	0	2	1	0	0	0	0	2	560	0
4:30 PM	**0**	**0**	**1**	**289**	**0**	**0**	**0**	**223**	**31**	**27**	**0**	**0**	**0**	**0**	**0**	**0**	**39**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**3**	**614**	**0**
4:45 PM	**0**	**0**	**2**	**258**	**0**	**0**	**0**	**205**	**24**	**17**	**0**	**0**	**0**	**0**	**0**	**0**	**38**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**3**	**549**	**2,286**
5:00 PM	**0**	**0**	**0**	**266**	**0**	**0**	**0**	**212**	**24**	**20**	**0**	**0**	**0**	**0**	**0**	**0**	**42**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**3**	**570**	**2,293**
5:15 PM	**0**	**0**	**1**	**295**	**0**	**0**	**0**	**193**	**24**	**29**	**0**	**0**	**0**	**0**	**0**	**0**	**28**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**4**	**577**	**2,310**
5:30 PM	0	0	1	264	0	0	0	165	26	19	0	0	0	0	0	0	31	0	2	0	0	0	0	0	1	509	2,205
5:45 PM	0	0	3	294	0	0	0	155	38	21	0	0	0	0	0	0	36	0	0	0	0	0	0	0	2	549	2,205
Count Total	0	0	12	2,148	0	0	0	1,592	214	183	0	0	0	0	0	0	307	0	14	1	0	0	0	0	20	4,491	
Pk Hr All	**0**	**0**	**4**	**1,108**	**0**	**0**	**0**	**833**	**103**	**93**	**0**	**0**	**0**	**0**	**0**	**0**	**147**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**13**	**2,310**	
Pk Hr HV	**0**	**0**	**0**	**86**	**0**	**0**	**0**	**60**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**159**	
Pk Hr HV%	**-**	**-**	**0%**	**8%**	**-**	**-**	**-**	**7%**	**0%**	**9%**	**-**	**-**	**-**	**-**	**-**	**-**	**3%**	**-**	**11%**	**-**	**-**	**-**	**-**	**-**	**0%**	**7%**	

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	SEB	Total	Bicycle Totals EB	WB	NB	SB	SEB	Total	Pedestrians (Crossing Leg) E	W	N	S	NW	Total
4:00 PM	13	20	0	4	0	*37*	0	0	0	0	0	*0*	1	0	1	0	0	*2*
4:15 PM	21	25	0	0	0	*46*	0	0	0	0	0	*0*	0	0	1	0	1	*2*
4:30 PM	**26**	**22**	**0**	**0**	**0**	**48**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**1**
4:45 PM	**20**	**13**	**0**	**4**	**0**	**37**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**
5:00 PM	**20**	**25**	**0**	**0**	**0**	**45**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**3**
5:15 PM	**20**	**8**	**0**	**1**	**0**	**29**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**3**
5:30 PM	15	10	0	1	0	*26*	0	1	0	0	0	*1*	0	0	0	1	0	*1*
5:45 PM	13	21	0	0	0	*34*	0	0	0	0	0	*0*	0	0	0	0	0	*0*
Count Total	148	144	0	10	0	*302*	1	1	0	0	0	*2*	4	0	5	3	1	*13*
Peak Hour	**86**	**68**	**0**	**5**	**0**	***159***	**1**	**0**	**0**	**0**	**0**	***1***	**3**	**0**	**3**	**2**	**0**	***8***

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Count Summaries - Heavy Vehicles

Interval Start	Pacheco Blvd Eastbound					Pacheco Blvd Westbound					Driveway Northbound					H St Southbound					I St Southeastbound					15-min Total	Rolling Hour Total
	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	HL	BL	BR	HR		
4:00 PM	0	0	0	13	0	0	0	20	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	37	0
4:15 PM	0	0	0	21	0	0	0	21	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	46	0
4:30 PM	**0**	**0**	**0**	**26**	**0**	**0**	**0**	**19**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**48**	**0**
4:45 PM	**0**	**0**	**0**	**20**	**0**	**0**	**0**	**10**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**37**	**168**
5:00 PM	**0**	**0**	**0**	**20**	**0**	**0**	**0**	**24**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**45**	**176**
5:15 PM	**0**	**0**	**0**	**20**	**0**	**0**	**0**	**7**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**29**	**159**
5:30 PM	0	0	0	15	0	0	0	10	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	26	137
5:45 PM	0	0	0	13	0	0	0	19	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34	134
Count Total	0	0	0	148	0	0	0	130	1	13	0	0	0	0	0	0	9	0	1	0	0	0	0	0	0	302	
Pk Hr Heavy	**0**	**0**	**0**	**86**	**0**	**0**	**0**	**60**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**159**	

Count Summaries - Bikes

Interval Start	Pacheco Blvd Eastbound					Pacheco Blvd Westbound					Driveway Northbound					H St Southbound					I St Southeastbound					15-min Total	Rolling Hour Total
	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	HL	BL	BR	HR		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
5:30 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
Pk Hr Bike	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	

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Prepared by National Data & Surveying Services

Mercy Springs Rd & SR 152

Peak Hour Turning Movement Count

ID: 21-090084-006
City: Los Banos

Day: Tuesday
Date: 9/14/2021

Mercy Springs Rd

SOUTHBOUND

AM	252	220	107	0	525	AM
NOON	0	0	0	0	0	NOON
PM	190	272	136	0	681	PM
	1	2	1	0		

PEAK HOURS

07:30 AM - 08:30 AM	
NONE	
03:00 PM - 04:00 PM	

COUNT PERIODS

7:00 AM - 09:00 AM	
NONE	
3:00 PM - 06:00 PM	

SR 152

EASTBOUND

AM	NOON	PM	
1222	0	1026	
3	0	4	0
153	0	155	1
494	0	796	2
121	0	160	1
AM	NOON	PM	

WESTBOUND

	PM	NOON	AM
1	182	0	119
2	675	0	815
1	146	0	143
0	5	0	1
	1118	0	713
	PM	NOON	AM

SR 152

CONTROL

Signalized

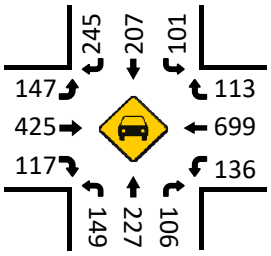
	AM	NOON	PM
TEV	2947	0	3404
PHF	0.91		0.94

		0	2	2	0	
PM	579	1	157	344	181	PM
NOON	0	0	0	0	0	NOON
AM	487	3	152	253	111	AM

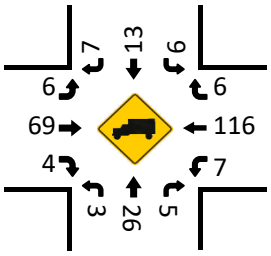
NORTHBOUND

Mercy Springs Rd

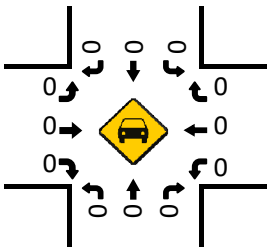
Cars (AM)



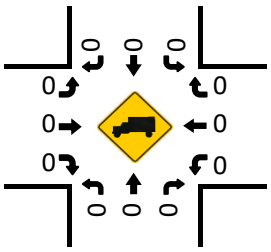
HT (AM)



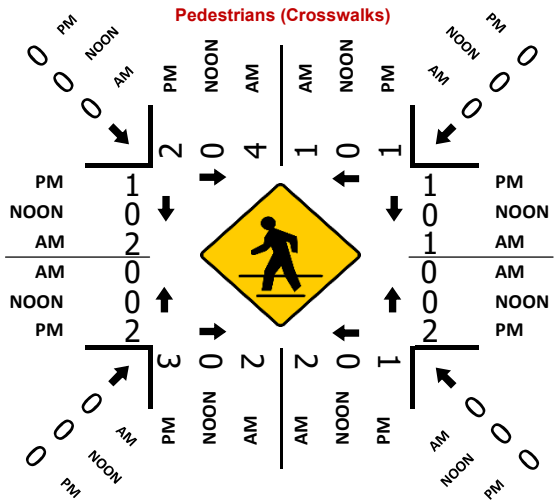
Cars (NOON)



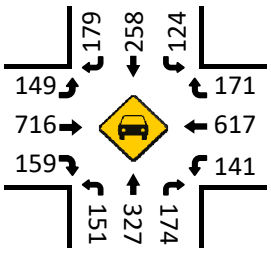
HT (NOON)



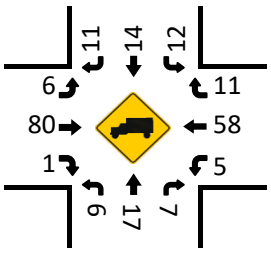
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Place Rd & SR 152

Peak Hour Turning Movement Count

ID: 21-090084-007
City: Los Banos

Day: Tuesday
Date: 9/14/2021

PEAK HOURS

AM	07:15 AM - 08:15 AM
NOON	NONE
PM	03:00 PM - 04:00 PM

COUNT PERIODS

AM	7:00 AM - 09:00 AM
NOON	NONE
PM	3:00 PM - 06:00 PM

CONTROL: Signalized

	AM	NOON	PM
TEV	1947	0	2371
PHF	0.85		0.90

SOUTHBOUND (Place Rd)

	Left	Thru	Right	U-Turn	
AM	0	0	0	0	AM
NOON	0	0	0	0	NOON
PM	0	0	0	0	PM

EASTBOUND (SR 152)

	Left	Thru	Right	U-Turn	
AM	0	0	0	0	AM
NOON	0	0	0	0	NOON
PM	0	0	0	0	PM

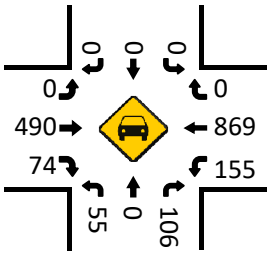
WESTBOUND (SR 152)

	Left	Thru	Right	U-Turn	
AM	0	0	0	0	AM
NOON	0	0	0	0	NOON
PM	0	0	0	0	PM

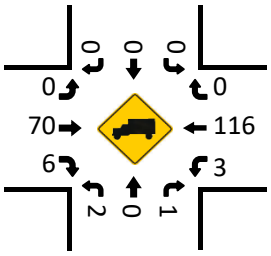
NORTHBOUND (Place Rd)

	Left	Thru	Right	U-Turn	
AM	238	0	57	0	107	AM
NOON	0	0	0	0	0	NOON
PM	198	0	143	0	114	PM

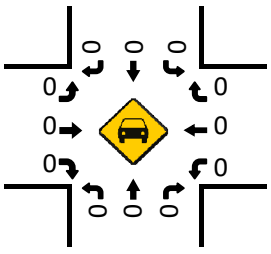
Cars (AM)



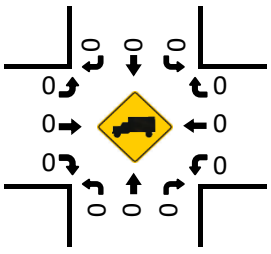
HT (AM)



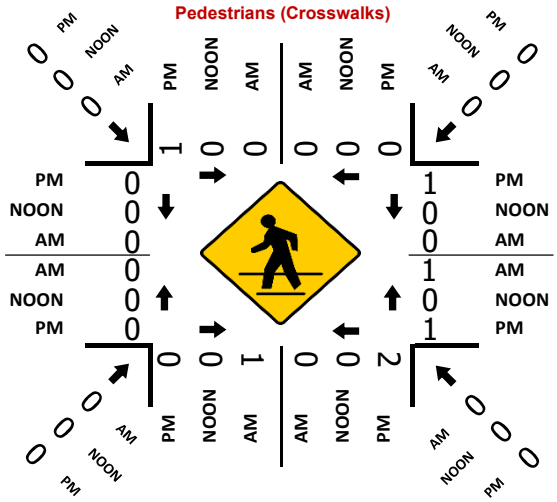
Cars (NOON)



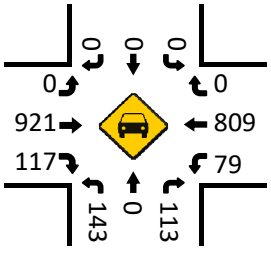
HT (NOON)



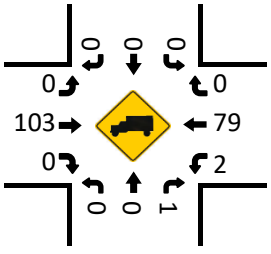
Pedestrians (Crosswalks)



Cars (PM)

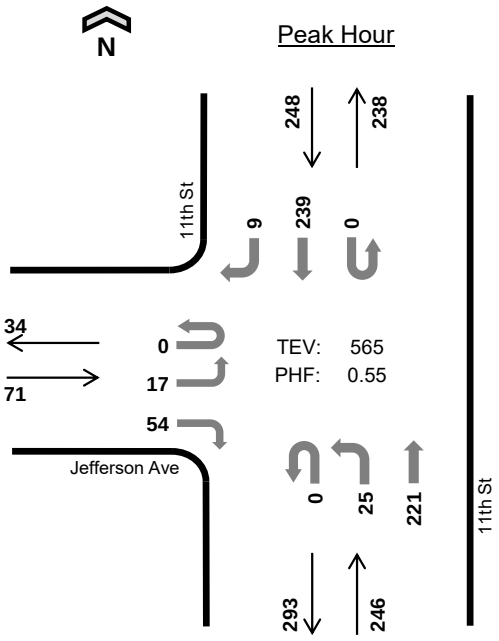


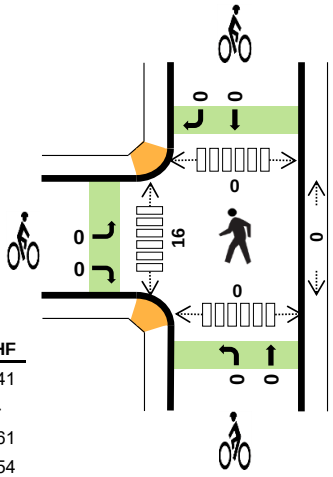
HT (PM)



11th St
Jefferson Ave

Date: 10/24/2023
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV %:	PHF
EB	0.0%	0.41
WB	-	-
NB	1.6%	0.61
SB	1.6%	0.54
TOTAL	1.4%	0.55

Two-Hour Count Summaries

Interval Start	Jefferson Ave Eastbound				N/A Westbound				11th St Northbound				11th St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	0	3	0	0	0	0	0	0	7	0	0	0	5	0	16	0
7:15 AM	0	3	0	5	0	0	0	0	0	0	8	0	0	0	14	0	30	0
7:30 AM	0	1	0	1	0	0	0	0	0	0	30	0	0	0	7	0	39	0
7:45 AM	**0**	**7**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**3**	**33**	**0**	**0**	**0**	**30**	**4**	**79**	164
8:00 AM	**0**	**2**	**0**	**12**	**0**	**0**	**0**	**0**	**0**	**3**	**53**	**0**	**0**	**0**	**78**	**0**	**148**	296
8:15 AM	**0**	**4**	**0**	**39**	**0**	**0**	**0**	**0**	**0**	**16**	**85**	**0**	**0**	**0**	**114**	**1**	**259**	525
8:30 AM	**0**	**4**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**3**	**50**	**0**	**0**	**0**	**17**	**4**	**79**	**565**
8:45 AM	0	3	0	3	0	0	0	0	0	2	13	0	0	0	10	1	32	518
Count Total	0	25	0	66	0	0	0	0	0	27	279	0	0	0	275	10	682	0
Peak Hour All	**0**	**17**	**0**	**54**	**0**	**0**	**0**	**0**	**0**	**25**	**221**	**0**	**0**	**0**	**239**	**9**	**565**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**4**	**0**	**8**	**0**
Peak Hour HV%	**-**	**0%**	**-**	**0%**	**-**	**-**	**-**	**-**	**-**	**0%**	**2%**	**-**	**-**	**-**	**2%**	**0%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	1	0	*1*	0	0	0	0	*0*	1	2	0	0	*3*
7:15 AM	0	0	0	0	*0*	0	0	0	0	*0*	2	0	0	0	*2*
7:30 AM	0	0	2	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**0**	**5**	**0**	**0**	*5*
8:00 AM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**0**	**5**	**0**	**0**	*5*
8:15 AM	**0**	**0**	**0**	**1**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**6**	**0**	**0**	*6*
8:30 AM	**0**	**0**	**4**	**3**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:45 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	0	0	7	4	*11*	0	0	0	0	*0*	3	18	0	0	*21*
Peak Hr	**0**	**0**	**4**	**4**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**16**	**0**	**0**	***16***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Jefferson Ave				N/A				11th St				11th St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	3
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**3**	**0**	**7**	**8**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
Count Total	0	0	0	0	0	0	0	0	0	0	7	0	0	0	4	0	11	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**4**	**0**	**8**	**0**

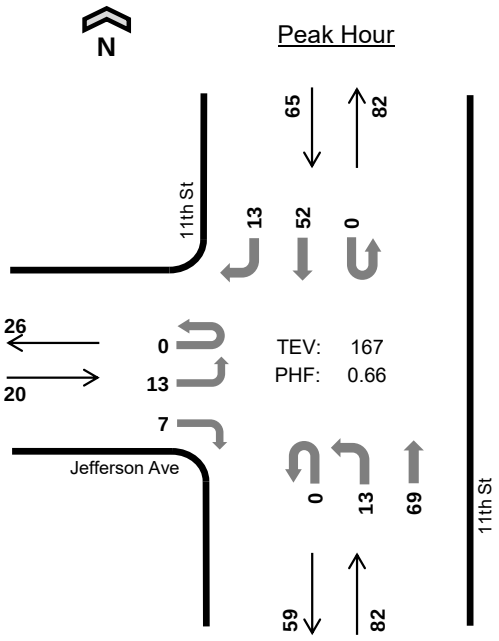
Two-Hour Count Summaries - Bikes

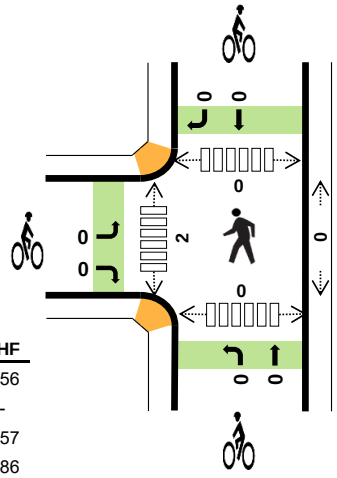
Interval Start	Jefferson Ave			N/A			11th St			11th St			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

11th St
Jefferson Ave

Date: 10/24/2023
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM





	HV %:	PHF
EB	0.0%	0.56
WB	-	-
NB	1.2%	0.57
SB	1.5%	0.86
TOTAL	1.2%	0.66

Two-Hour Count Summaries

Interval Start		Jefferson Ave Eastbound				N/A Westbound				11th St Northbound				11th St Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		**0**	**7**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**6**	**30**	**0**	**0**	**0**	**17**	**1**	**63**	0
4:15 PM		**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**4**	**7**	**0**	**0**	**0**	**13**	**6**	**33**	0
4:30 PM		**0**	**2**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**3**	**18**	**0**	**0**	**0**	**12**	**4**	**40**	0
4:45 PM		**0**	**4**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**14**	**0**	**0**	**0**	**10**	**2**	**31**	**167**
5:00 PM		0	1	0	1	0	0	0	0	0	5	21	0	0	0	10	5	43	147
5:15 PM		0	3	0	1	0	0	0	0	0	2	9	0	0	0	10	4	29	143
5:30 PM		0	1	0	2	0	0	0	0	0	0	6	0	0	0	6	4	19	122
5:45 PM		0	2	0	1	0	0	0	0	0	3	6	0	0	0	9	3	24	115
Count Total		0	20	0	12	0	0	0	0	0	23	111	0	0	0	87	29	282	0
Peak Hour	**All**	**0**	**13**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**13**	**69**	**0**	**0**	**0**	**52**	**13**	**167**	**0**
	HV	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**2**	**0**
	HV%	**-**	**0%**	**-**	**0%**	**-**	**-**	**-**	**-**	**-**	**0%**	**1%**	**-**	**-**	**-**	**2%**	**0%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
4:00 PM	**0**	**0**	**1**	**1**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	*1*
4:15 PM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	*1*
4:30 PM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:00 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	2	0	0	*2*
5:15 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	0	0	0	0	*0*	1	0	1	0	*2*	0	0	0	0	*0*
Count Total	0	0	1	1	*2*	1	0	1	0	*2*	0	4	0	0	*4*
Peak Hr	**0**	**0**	**1**	**1**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**0**	**0**	***2***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Jefferson Ave				N/A				11th St				11th St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**2**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**2**	**0**

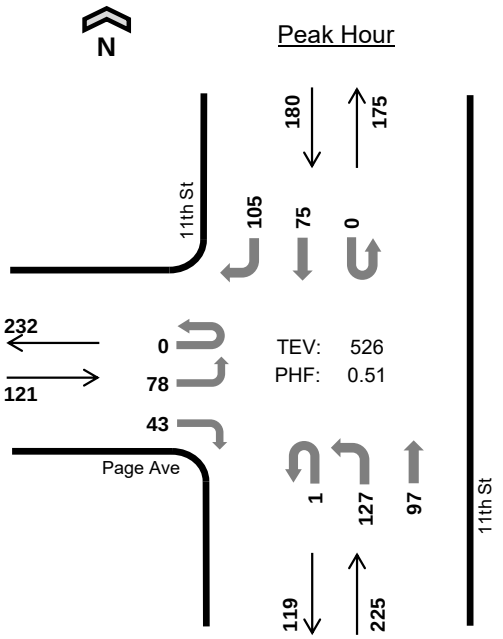
Two-Hour Count Summaries - Bikes

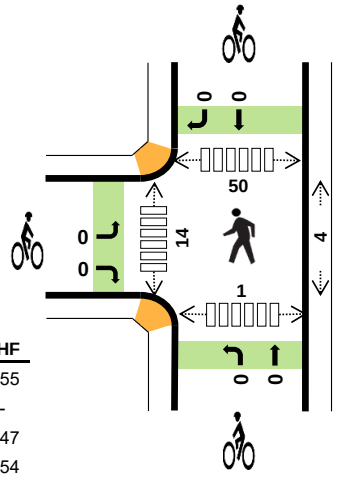
Interval Start	Jefferson Ave			N/A			11th St			11th St			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	1	0	0	0	0	1	0	0	0	0	2	2
Count Total	0	0	1	0	0	0	0	1	0	0	0	0	2	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

11th St
Page Ave

Date: 10/24/2023
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV %:	PHF
EB	3.3%	0.55
WB	-	-
NB	0.9%	0.47
SB	3.3%	0.54
TOTAL	2.3%	0.51

Two-Hour Count Summaries

Interval Start		Page Ave Eastbound				N/A Westbound				11th St Northbound				11th St Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	2	0	2	0	0	0	0	0	1	5	0	0	0	2	2	14	0
7:15 AM		0	5	0	2	0	0	0	0	0	5	7	0	0	0	2	4	25	0
7:30 AM		0	4	0	2	0	0	0	0	0	3	8	0	0	0	7	10	34	0
7:45 AM		**0**	**13**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**13**	**15**	**0**	**0**	**0**	**6**	**12**	**61**	134
8:00 AM		**0**	**18**	**0**	**11**	**0**	**0**	**0**	**0**	**0**	**36**	**25**	**0**	**0**	**0**	**11**	**36**	**137**	257
8:15 AM		**0**	**28**	**0**	**27**	**0**	**0**	**0**	**0**	**1**	**68**	**51**	**0**	**0**	**0**	**47**	**37**	**259**	491
8:30 AM		**0**	**19**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**10**	**6**	**0**	**0**	**0**	**11**	**20**	**69**	**526**
8:45 AM		0	4	0	2	0	0	0	0	0	3	6	0	0	0	5	5	25	490
Count Total		0	93	0	51	0	0	0	0	1	139	123	0	0	0	91	126	624	0
Peak Hour	**All**	**0**	**78**	**0**	**43**	**0**	**0**	**0**	**0**	**1**	**127**	**97**	**0**	**0**	**0**	**75**	**105**	**526**	**0**
	HV	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**6**	**12**	**0**
	HV%	**-**	**5%**	**-**	**0%**	**-**	**-**	**-**	**-**	**0%**	**2%**	**0%**	**-**	**-**	**-**	**0%**	**6%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	1	0	1	*2*
7:15 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	1	1	0	*2*
7:30 AM	0	0	0	1	*1*	0	0	0	0	*0*	0	1	1	0	*2*
7:45 AM	**0**	**0**	**1**	**2**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**1**	**1**	*3*
8:00 AM	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**4**	**2**	**29**	**0**	*35*
8:15 AM	**1**	**0**	**0**	**1**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**9**	**17**	**0**	*26*
8:30 AM	**3**	**0**	**0**	**3**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**3**	**0**	***5***
8:45 AM	0	0	0	0	*0*	1	0	0	0	*1*	0	0	1	0	*1*
Count Total	4	0	2	7	*13*	1	0	0	0	*1*	4	17	53	2	*76*
Peak Hr	**4**	**0**	**2**	**6**	***12***	**0**	**0**	**0**	**0**	***0***	**4**	**14**	**50**	**1**	***69***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Page Ave Eastbound				N/A Westbound				11th St Northbound				11th St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**3**	4
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	5
8:15 AM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	7
8:30 AM	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**6**	**12**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
Count Total	0	4	0	0	0	0	0	0	0	2	0	0	0	0	0	7	13	0
Peak Hour	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**6**	**12**	**0**

Two-Hour Count Summaries - Bikes

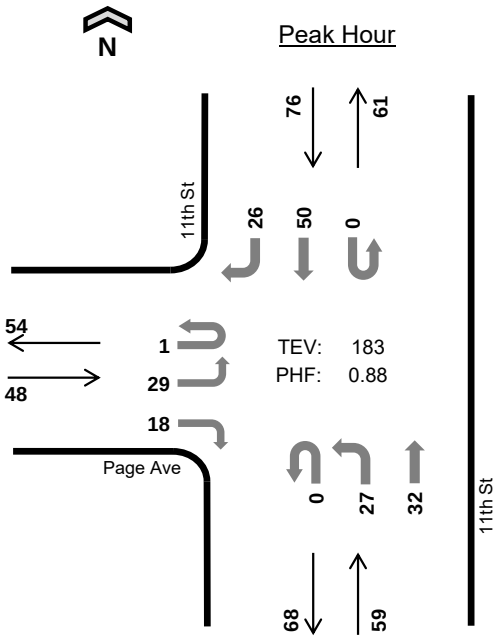
Interval Start	Page Ave Eastbound			N/A Westbound			11th St Northbound			11th St Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	1	0	0	0	0	0	0	0	0	0	0	0	1	1
Count Total	1	0	0	0	0	0	0	0	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

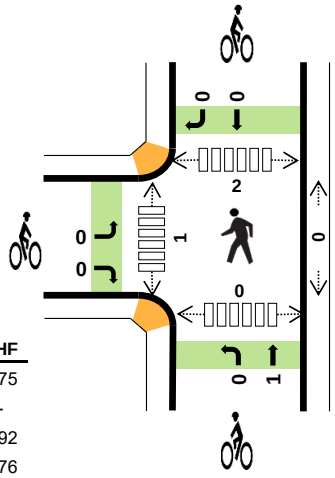
11th St
Page Ave

Peak Hour

Date: 10/24/2023
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM



	HV %:	PHF
EB	2.1%	0.75
WB	-	-
NB	0.0%	0.92
SB	1.3%	0.76
TOTAL	1.1%	0.88



Two-Hour Count Summaries

Interval Start	Page Ave Eastbound				N/A Westbound				11th St Northbound				11th St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**8**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**5**	**10**	**0**	**0**	**0**	**17**	**8**	**52**	0
4:15 PM	**0**	**4**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**5**	**9**	**0**	**0**	**0**	**12**	**2**	**34**	0
4:30 PM	**0**	**6**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**7**	**7**	**0**	**0**	**0**	**12**	**8**	**48**	0
4:45 PM	**1**	**11**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**10**	**6**	**0**	**0**	**0**	**9**	**8**	**49**	**183**
5:00 PM	0	10	0	4	0	0	0	0	0	0	5	0	0	0	12	4	35	166
5:15 PM	0	3	0	2	0	0	0	0	0	0	8	0	0	0	10	1	24	156
5:30 PM	0	1	0	0	0	0	0	0	0	1	5	0	0	0	9	0	16	124
5:45 PM	0	1	0	0	0	0	0	0	0	2	5	0	0	0	4	5	17	92
Count Total	1	44	0	24	0	0	0	0	0	30	55	0	0	0	85	36	275	0
Peak Hour **All**	**1**	**29**	**0**	**18**	**0**	**0**	**0**	**0**	**0**	**27**	**32**	**0**	**0**	**0**	**50**	**26**	**183**	**0**
Peak Hour **HV**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**
Peak Hour **HV%**	**0%**	**3%**	**-**	**0%**	**-**	**-**	**-**	**-**	**-**	**0%**	**0%**	**-**	**-**	**-**	**0%**	**4%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	**1**	**0**	**0**	**1**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	*1*
4:15 PM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**2**	**0**	*2*
4:30 PM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:00 PM	0	0	0	0	*0*	0	0	0	0	*0*	1	0	2	0	*3*
5:15 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	1	0	*1*
5:30 PM	0	0	0	0	*0*	1	0	1	0	*2*	0	0	0	0	*0*
5:45 PM	0	0	0	0	*0*	0	0	2	0	*2*	0	4	0	0	*4*
Count Total	1	0	0	1	*2*	1	0	4	0	*5*	1	5	5	0	*11*
Peak Hr	**1**	**0**	**0**	**1**	***2***	**0**	**0**	**1**	**0**	***1***	**0**	**1**	**2**	**0**	***3***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Page Ave Eastbound				N/A Westbound				11th St Northbound				11th St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0
Peak Hour	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**

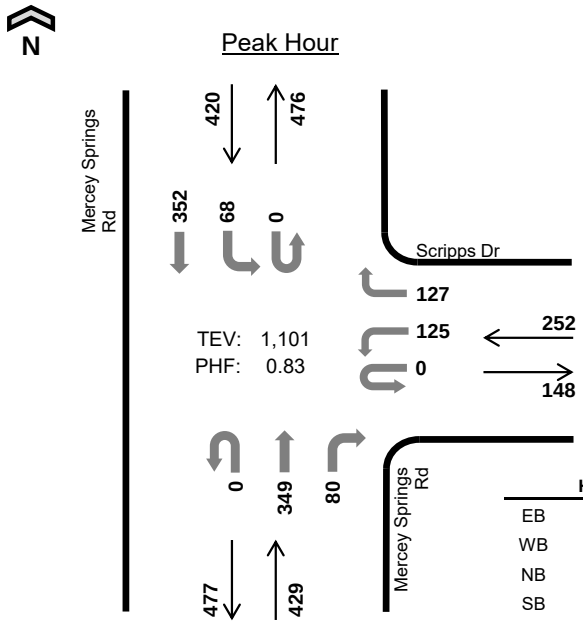
Two-Hour Count Summaries - Bikes

Interval Start	Page Ave Eastbound			N/A Westbound			11th St Northbound			11th St Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	1	0	0	0	0	0	0	1	0	0	0	0	2	2
5:45 PM	0	0	0	0	0	0	1	1	0	0	0	0	2	4
Count Total	1	0	0	0	0	0	1	3	0	0	0	0	5	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**

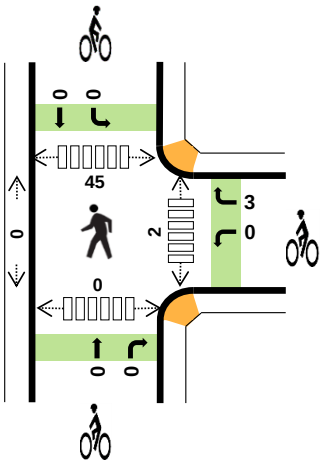
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Mercey Springs Rd
Scripps Dr

Date: 09/24/2024
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM



	HV %:	PHF
EB	-	-
WB	1.2%	0.86
NB	7.5%	0.78
SB	7.6%	0.85
TOTAL	6.1%	0.83



Two-Hour Count Summaries

Interval Start	n/a Eastbound				Scripps Dr Westbound				Mercey Springs Rd Northbound				Mercey Springs Rd Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	10	0	16	0	0	38	18	0	9	47	0	138	0
7:15 AM	0	0	0	0	0	17	0	18	0	0	55	18	0	11	54	0	173	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**34**	**0**	**27**	**0**	**0**	**50**	**13**	**0**	**13**	**80**	**0**	**217**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**22**	**0**	**31**	**0**	**0**	**112**	**17**	**0**	**8**	**92**	**0**	**282**	810
8:00 AM	**0**	**0**	**0**	**0**	**0**	**29**	**0**	**44**	**0**	**0**	**113**	**24**	**0**	**24**	**99**	**0**	**333**	1,005
8:15 AM	**0**	**0**	**0**	**0**	**0**	**40**	**0**	**25**	**0**	**0**	**74**	**26**	**0**	**23**	**81**	**0**	**269**	**1,101**
8:30 AM	0	0	0	0	0	29	0	17	0	0	58	17	0	19	67	0	207	1,091
8:45 AM	0	0	0	0	0	9	0	24	0	0	59	20	0	10	67	0	189	998
Count Total	0	0	0	0	0	190	0	202	0	0	559	153	0	117	587	0	1,808	0
Peak Hour All	**0**	**0**	**0**	**0**	**0**	**125**	**0**	**127**	**0**	**0**	**349**	**80**	**0**	**68**	**352**	**0**	**1,101**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**27**	**5**	**0**	**3**	**29**	**0**	**67**	**0**
Peak Hour HV%	**-**	**-**	**-**	**-**	**-**	**1%**	**-**	**2%**	**-**	**-**	**8%**	**6%**	**-**	**4%**	**8%**	**-**	**6%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	0	0	7	5	*12*	0	0	0	1	*1*	0	0	1	0	*1*
7:15 AM	0	3	11	15	*29*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	**0**	**2**	**3**	**4**	***9***	**0**	**2**	**0**	**0**	***2***	**0**	**0**	**2**	**0**	*2*
7:45 AM	**0**	**1**	**9**	**8**	***18***	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**13**	**0**	*13*
8:00 AM	**0**	**0**	**10**	**10**	***20***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**18**	**0**	*18*
8:15 AM	**0**	**0**	**10**	**10**	***20***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**12**	**0**	***14***
8:30 AM	0	0	6	6	*12*	0	0	0	0	*0*	0	0	1	0	*1*
8:45 AM	0	0	14	10	*24*	0	0	0	0	*0*	0	0	1	0	*1*
Count Total	0	6	70	68	*144*	0	3	0	1	*4*	2	0	48	0	*50*
Peak Hr	**0**	**3**	**32**	**32**	***67***	**0**	**3**	**0**	**0**	***3***	**2**	**0**	**45**	**0**	***47***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	n/a				Scripps Dr				Mercey Springs Rd				Mercey Springs Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	6	1	0	0	5	0	12	0
7:15 AM	0	0	0	0	0	0	0	3	0	0	11	0	0	0	15	0	29	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**2**	**1**	**0**	**1**	**3**	**0**	**9**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**7**	**2**	**0**	**0**	**8**	**0**	**18**	68
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**1**	**0**	**1**	**9**	**0**	**20**	76
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**1**	**0**	**1**	**9**	**0**	**20**	**67**
8:30 AM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	6	0	12	70
8:45 AM	0	0	0	0	0	0	0	0	0	0	14	0	0	0	10	0	24	76
Count Total	0	0	0	0	0	1	0	5	0	0	64	6	0	3	65	0	144	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**27**	**5**	**0**	**3**	**29**	**0**	**67**	**0**

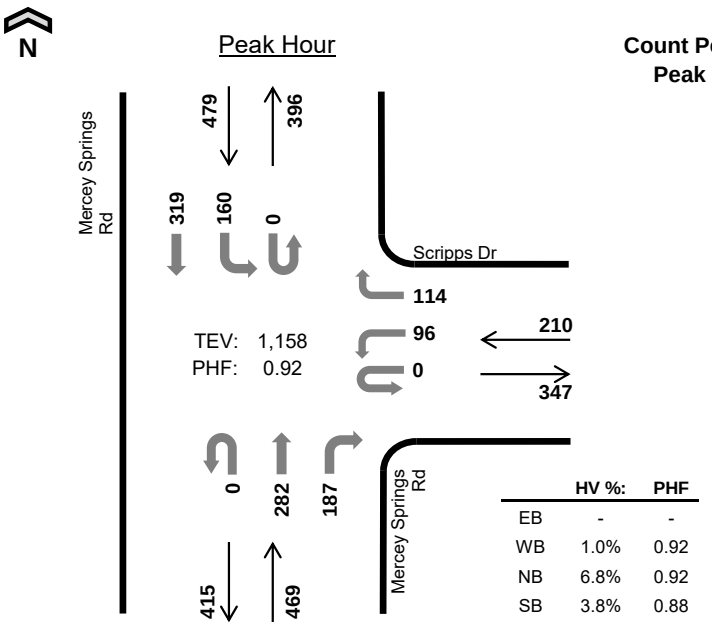
Two-Hour Count Summaries - Bikes

Interval Start	n/a			Scripps Dr			Mercey Springs Rd			Mercey Springs Rd			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	4
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	3	0	0	0	1	0	0	4	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**

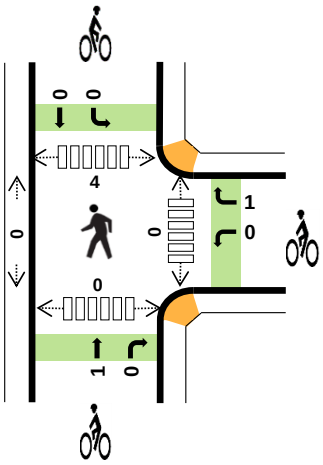
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Mercey Springs Rd
Scripps Dr

Date: 09/24/2024
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM



	HV %:	PHF
EB	-	-
WB	1.0%	0.92
NB	6.8%	0.92
SB	3.8%	0.88
TOTAL	4.5%	0.92



Two-Hour Count Summaries

Interval Start	n/a Eastbound				Scripps Dr Westbound				Mercey Springs Rd Northbound				Mercey Springs Rd Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	19	0	26	0	0	74	47	0	39	80	0	285	0
4:15 PM	0	0	0	0	0	23	0	17	0	0	63	35	0	32	70	0	240	0
4:30 PM	0	0	0	0	0	22	0	18	0	0	55	43	0	38	80	0	256	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**22**	**0**	**35**	**0**	**0**	**66**	**58**	**0**	**37**	**88**	**0**	**306**	1,087
5:00 PM	**0**	**0**	**0**	**0**	**0**	**26**	**0**	**24**	**0**	**0**	**70**	**35**	**0**	**41**	**70**	**0**	**266**	1,068
5:15 PM	**0**	**0**	**0**	**0**	**0**	**25**	**0**	**28**	**0**	**0**	**70**	**43**	**0**	**35**	**72**	**0**	**273**	1,101
5:30 PM	**0**	**0**	**0**	**0**	**0**	**23**	**0**	**27**	**0**	**0**	**76**	**51**	**0**	**47**	**89**	**0**	**313**	**1,158**
5:45 PM	0	0	0	0	0	50	0	30	0	0	48	39	0	22	88	0	277	1,129
Count Total	0	0	0	0	0	210	0	205	0	0	522	351	0	291	637	0	2,216	0
Peak Hour All	**0**	**0**	**0**	**0**	**0**	**96**	**0**	**114**	**0**	**0**	**282**	**187**	**0**	**160**	**319**	**0**	**1,158**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**26**	**6**	**0**	**1**	**17**	**0**	**52**	**0**
Peak Hour HV%	**-**	**-**	**-**	**-**	**-**	**2%**	**-**	**0%**	**-**	**-**	**9%**	**3%**	**-**	**1%**	**5%**	**-**	**4%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	6	8	*14*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	0	0	7	6	*13*	0	0	0	1	*1*	0	0	0	0	*0*
4:30 PM	0	0	6	2	*8*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	**0**	**1**	**8**	**6**	***15***	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**1**	**0**	*1*
5:00 PM	**0**	**1**	**10**	**4**	***15***	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**1**	**0**	*1*
5:15 PM	**0**	**0**	**4**	**3**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**0**	*1*
5:30 PM	**0**	**0**	**10**	**5**	***15***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**0**	***1***
5:45 PM	0	0	5	3	*8*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	0	2	56	37	*95*	0	1	1	1	*3*	0	0	4	0	*4*
Peak Hr	**0**	**2**	**32**	**18**	***52***	**0**	**1**	**1**	**0**	***2***	**0**	**0**	**4**	**0**	***4***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	n/a				Scripps Dr				Mercey Springs Rd				Mercey Springs Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	8	0	14	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	6	0	13	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	2	0	8	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**5**	**3**	**0**	**0**	**6**	**0**	**15**	50
5:00 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**9**	**1**	**0**	**0**	**4**	**0**	**15**	51
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**1**	**0**	**1**	**2**	**0**	**7**	45
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**1**	**0**	**0**	**5**	**0**	**15**	**52**
5:45 PM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	3	0	8	45
Count Total	0	0	0	0	0	2	0	0	0	0	50	6	0	1	36	0	95	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**26**	**6**	**0**	**1**	**17**	**0**	**52**	**0**

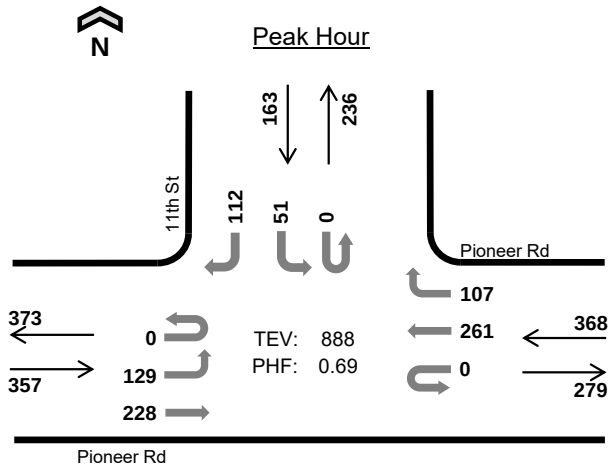
Two-Hour Count Summaries - Bikes

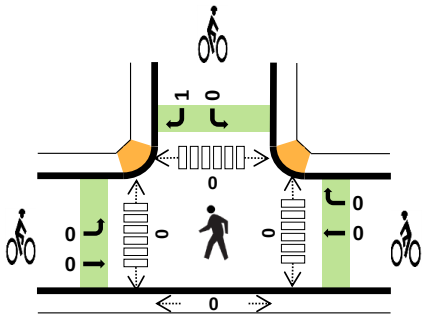
Interval Start	n/a			Scripps Dr			Mercey Springs Rd			Mercey Springs Rd			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	2
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	3
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	0	1	0	1	0	1	0	0	3	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

11th St
Pioneer Rd

Date: 10/24/2023
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV %:	PHF
EB	1.7%	0.78
WB	2.4%	0.69
NB	-	-
SB	0.0%	0.49
TOTAL	1.7%	0.69

Two-Hour Count Summaries

Interval Start		Pioneer Rd Eastbound				Pioneer Rd Westbound				n/a Northbound				11th St Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	5	35	0	0	0	23	2	0	0	0	0	0	7	0	4	76	0
7:15 AM		0	11	26	0	0	0	31	12	0	0	0	0	0	16	0	5	101	0
7:30 AM		0	10	36	0	0	0	61	10	0	0	0	0	0	12	0	11	140	0
7:45 AM		**0**	**15**	**66**	**0**	**0**	**0**	**62**	**16**	**0**	**0**	**0**	**0**	**0**	**9**	**0**	**10**	**178**	495
8:00 AM		**0**	**48**	**67**	**0**	**0**	**0**	**57**	**32**	**0**	**0**	**0**	**0**	**0**	**16**	**0**	**21**	**241**	660
8:15 AM		**0**	**59**	**48**	**0**	**0**	**0**	**76**	**57**	**0**	**0**	**0**	**0**	**0**	**21**	**0**	**62**	**323**	882
8:30 AM		**0**	**7**	**47**	**0**	**0**	**0**	**66**	**2**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**19**	**146**	**888**
8:45 AM		0	1	44	0	0	0	37	5	0	0	0	0	0	4	0	4	95	805
Count Total		0	156	369	0	0	0	413	136	0	0	0	0	0	90	0	136	1,300	0
Peak Hour	**All**	**0**	**129**	**228**	**0**	**0**	**0**	**261**	**107**	**0**	**0**	**0**	**0**	**0**	**51**	**0**	**112**	**888**	**0**
	HV	**0**	**1**	**5**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**15**	**0**
	HV%	**-**	**1%**	**2%**	**-**	**-**	**-**	**3%**	**0%**	**-**	**-**	**-**	**-**	**-**	**0%**	**-**	**0%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	1	3	0	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	2	1	0	0	*3*	0	0	0	0	*0*	0	0	1	0	*1*
7:45 AM	**1**	**5**	**0**	**0**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**2**	**2**	**0**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**1**	**1**	**0**	**0**	***2***	**0**	**0**	**0**	**1**	***1***	**0**	**0**	**0**	**0**	*0*
8:30 AM	**2**	**1**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:45 AM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	10	14	0	0	*24*	0	0	0	1	*1*	0	0	1	0	*1*
Peak Hr	**6**	**9**	**0**	**0**	***15***	**0**	**0**	**0**	**1**	***1***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Pioneer Rd				Pioneer Rd				n/a				11th St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	4	0
7:15 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
7:30 AM	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0
7:45 AM	**0**	**0**	**1**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	14
8:00 AM	**0**	**1**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	14
8:15 AM	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	15
8:30 AM	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**15**
8:45 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	10
Count Total	0	2	8	0	0	0	14	0	0	0	0	0	0	0	0	0	24	0
Peak Hour	**0**	**1**	**5**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**15**	**0**

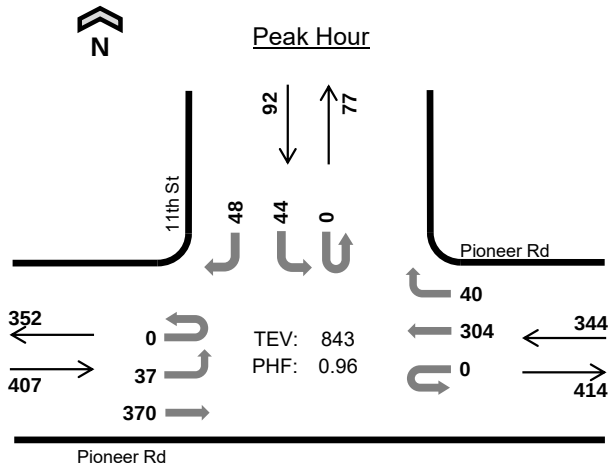
Two-Hour Count Summaries - Bikes

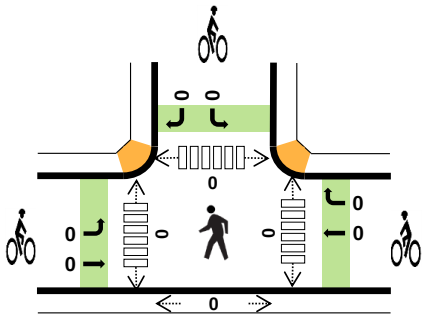
Interval Start	Pioneer Rd			Pioneer Rd			n/a			11th St			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	1
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	0	0	0	0	0	0	0	1	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

11th St
Pioneer Rd

Date: 10/24/2023
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM





	HV %:	PHF
EB	0.7%	0.87
WB	0.3%	0.95
NB	-	-
SB	0.0%	0.72
TOTAL	0.5%	0.96

Two-Hour Count Summaries

Interval Start	Pioneer Rd Eastbound				Pioneer Rd Westbound				n/a Northbound				11th St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	9	66	0	0	0	50	10	0	0	0	0	0	15	0	18	168	0
4:15 PM	**0**	**6**	**81**	**0**	**0**	**0**	**78**	**13**	**0**	**0**	**0**	**0**	**0**	**16**	**0**	**16**	**210**	0
4:30 PM	**0**	**10**	**89**	**0**	**0**	**0**	**76**	**15**	**0**	**0**	**0**	**0**	**0**	**15**	**0**	**10**	**215**	0
4:45 PM	**0**	**12**	**105**	**0**	**0**	**0**	**75**	**11**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**9**	**219**	812
5:00 PM	**0**	**9**	**95**	**0**	**0**	**0**	**75**	**1**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**13**	**199**	**843**
5:15 PM	0	6	91	0	0	0	70	3	0	0	0	0	0	12	0	10	192	825
5:30 PM	0	13	69	0	0	0	77	12	0	0	0	0	0	4	0	7	182	792
5:45 PM	0	8	83	0	0	0	82	9	0	0	0	0	0	7	0	5	194	767
Count Total	0	73	679	0	0	0	583	74	0	0	0	0	0	82	0	88	1,579	0
Peak Hour All	**0**	**37**	**370**	**0**	**0**	**0**	**304**	**40**	**0**	**0**	**0**	**0**	**0**	**44**	**0**	**48**	**843**	**0**
Peak Hour HV	**0**	**0**	**3**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**
Peak Hour HV%	**-**	**0%**	**1%**	**-**	**-**	**-**	**0%**	**0%**	**-**	**-**	**-**	**-**	**-**	**0%**	**-**	**0%**	**0%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:30 PM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**1**	**1**	**0**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:15 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	1	0	*1*
5:45 PM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	4	2	0	0	*6*	0	0	0	0	*0*	0	0	1	0	*1*
Peak Hr	**3**	**1**	**0**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Pioneer Rd				Pioneer Rd				n/a				11th St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	2
5:00 PM	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**4**
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:45 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	4
Count Total	0	0	4	0	0	0	2	0	0	0	0	0	0	0	0	0	6	0
Peak Hour	**0**	**0**	**3**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Pioneer Rd			Pioneer Rd			n/a			11th St			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Prepared by National Data & Surveying Services

Mercy Springs Rd & Pioneer Rd

Peak Hour Turning Movement Count

ID: 21-090084-011
City: Los Banos

Day: Tuesday
Date: 9/14/2021

PEAK HOURS

AM	07:00 AM - 08:00 AM
NOON	NONE
PM	03:45 PM - 04:45 PM

COUNT PERIODS

AM	7:00 AM - 09:00 AM
NOON	NONE
PM	3:00 PM - 06:00 PM

SOUTHBOUND (Mercy Springs Rd)

AM	327	124	0	0	363	AM
NOON	0	0	0	0	0	NOON
PM	290	78	0	1	499	PM

EASTBOUND (Pioneer Rd)

AM	NOON	PM	
379	0	308	
0	0	0	0
237	0	372	0
0	0	0	1
34	0	19	0

WESTBOUND (Pioneer Rd)

	PM	NOON	AM
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
	0	0	0

NORTHBOUND (Mercy Springs Rd)

PM	97	0	18	126	0	PM
NOON	0	0	0	0	0	NOON
AM	158	0	52	126	0	AM

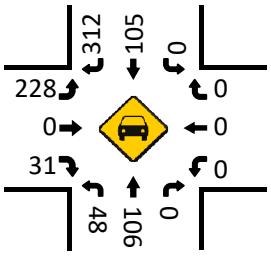
0	0	1	0

CONTROL

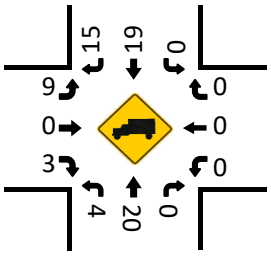
1-Way Stop(EB)

TEV	900 AM	0 NOON	904 PM
PHF	0.85		0.96

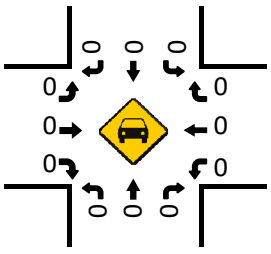
Cars (AM)



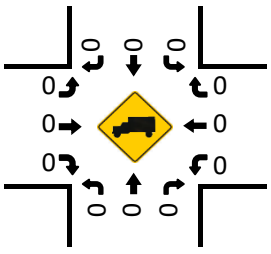
HT (AM)



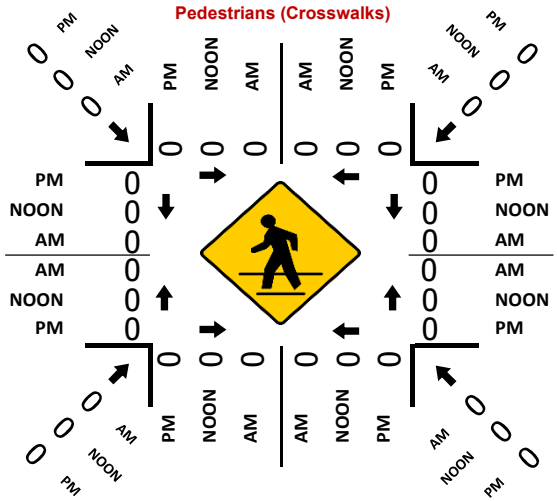
Cars (NOON)



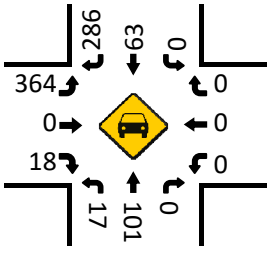
HT (NOON)



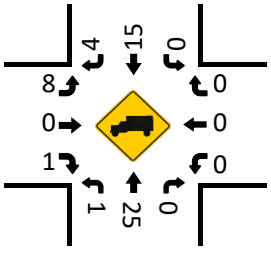
Pedestrians (Crosswalks)



Cars (PM)

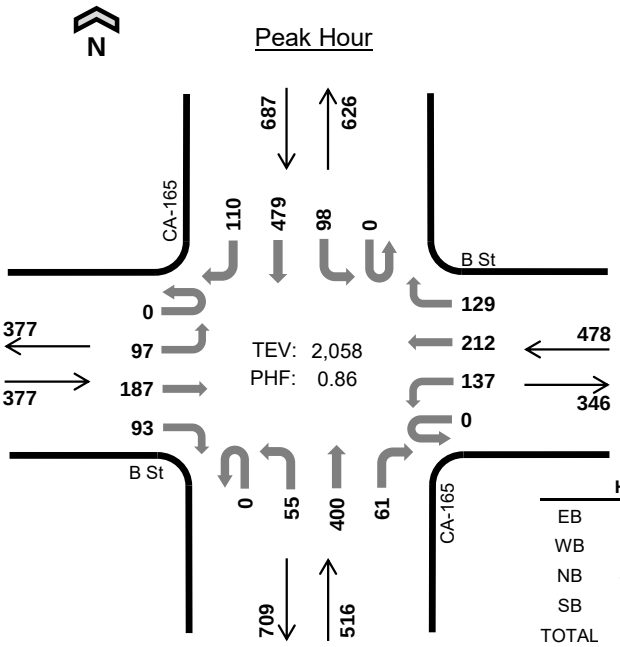


HT (PM)

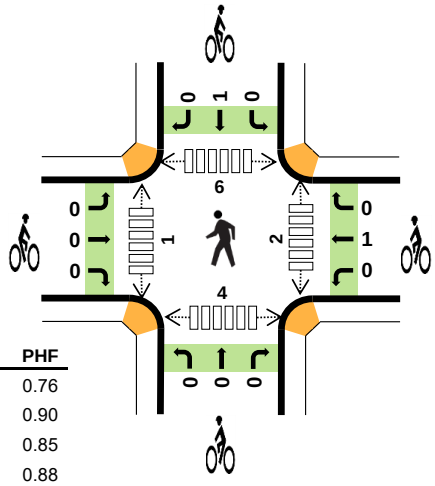


CA-165
B St

Date: 10/24/2023
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM



	HV %:	PHF
EB	1.9%	0.76
WB	0.8%	0.90
NB	4.5%	0.85
SB	2.5%	0.88
TOTAL	2.5%	0.86



Two-Hour Count Summaries

Interval Start		B St Eastbound				B St Westbound				CA-165 Northbound				CA-165 Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	6	5	2	0	16	18	16	0	5	58	6	0	7	58	12	209	0
7:15 AM		0	11	15	7	0	21	23	20	0	9	50	10	0	17	100	14	297	0
7:30 AM		0	15	23	19	0	16	44	27	0	18	72	10	0	11	103	22	380	0
7:45 AM		**0**	**22**	**48**	**21**	**0**	**32**	**59**	**27**	**0**	**18**	**79**	**19**	**0**	**16**	**132**	**37**	**510**	1,396
8:00 AM		**0**	**20**	**55**	**24**	**0**	**46**	**59**	**28**	**0**	**16**	**73**	**17**	**0**	**38**	**120**	**35**	**531**	1,718
8:15 AM		**0**	**33**	**60**	**31**	**0**	**37**	**51**	**35**	**0**	**10**	**125**	**17**	**0**	**30**	**139**	**27**	**595**	2,016
8:30 AM		**0**	**22**	**24**	**17**	**0**	**22**	**43**	**39**	**0**	**11**	**123**	**8**	**0**	**14**	**88**	**11**	**422**	**2,058**
8:45 AM		0	11	14	9	0	20	21	22	0	9	84	5	0	4	99	15	313	1,861
Count Total		0	140	244	130	0	210	318	214	0	96	664	92	0	137	839	173	3,257	0
Peak Hour	**All**	**0**	**97**	**187**	**93**	**0**	**137**	**212**	**129**	**0**	**55**	**400**	**61**	**0**	**98**	**479**	**110**	**2,058**	**0**
	HV	**0**	**3**	**4**	**0**	**0**	**1**	**0**	**3**	**0**	**0**	**20**	**3**	**0**	**3**	**14**	**0**	**51**	**0**
	HV%	**-**	**3%**	**2%**	**0%**	**-**	**1%**	**0%**	**2%**	**-**	**0%**	**5%**	**5%**	**-**	**3%**	**3%**	**0%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	3	1	9	5	*18*	0	1	0	0	*1*	0	0	1	0	*1*
7:15 AM	1	3	4	12	*20*	0	0	0	0	*0*	0	1	0	0	*1*
7:30 AM	3	0	5	6	*14*	0	0	0	0	*0*	2	2	1	1	*6*
7:45 AM	**1**	**0**	**5**	**3**	***9***	**0**	**0**	**0**	**1**	***1***	**1**	**0**	**4**	**0**	*5*
8:00 AM	**5**	**0**	**6**	**6**	***17***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**2**	**1**	*3*
8:15 AM	**0**	**1**	**10**	**5**	***16***	**0**	**1**	**0**	**0**	***1***	**1**	**0**	**0**	**3**	*4*
8:30 AM	**1**	**3**	**2**	**3**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	***1***
8:45 AM	2	1	6	7	*16*	0	0	0	0	*0*	0	2	1	0	*3*
Count Total	16	9	47	47	*119*	0	2	0	1	*3*	4	6	9	5	*24*
Peak Hour	**7**	**4**	**23**	**17**	***51***	**0**	**1**	**0**	**1**	***2***	**2**	**1**	**6**	**4**	***13***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	B St Eastbound				B St Westbound				CA-165 Northbound				CA-165 Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	2	1	0	0	0	0	1	0	0	9	0	0	0	5	0	18	0
7:15 AM	0	1	0	0	0	1	1	1	0	0	4	0	0	0	11	1	20	0
7:30 AM	0	0	2	1	0	0	0	0	0	0	5	0	0	0	6	0	14	0
7:45 AM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**1**	**2**	**0**	**9**	61
8:00 AM	**0**	**1**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**1**	**5**	**0**	**17**	60
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**7**	**3**	**0**	**1**	**4**	**0**	**16**	56
8:30 AM	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**2**	**0**	**0**	**0**	**3**	**0**	**9**	**51**
8:45 AM	0	0	1	1	0	0	1	0	0	0	6	0	0	0	7	0	16	58
Count Total	0	6	8	2	0	2	2	5	0	0	44	3	0	3	43	1	119	0
Peak Hour	**0**	**3**	**4**	**0**	**0**	**1**	**0**	**3**	**0**	**0**	**20**	**3**	**0**	**3**	**14**	**0**	**51**	**0**

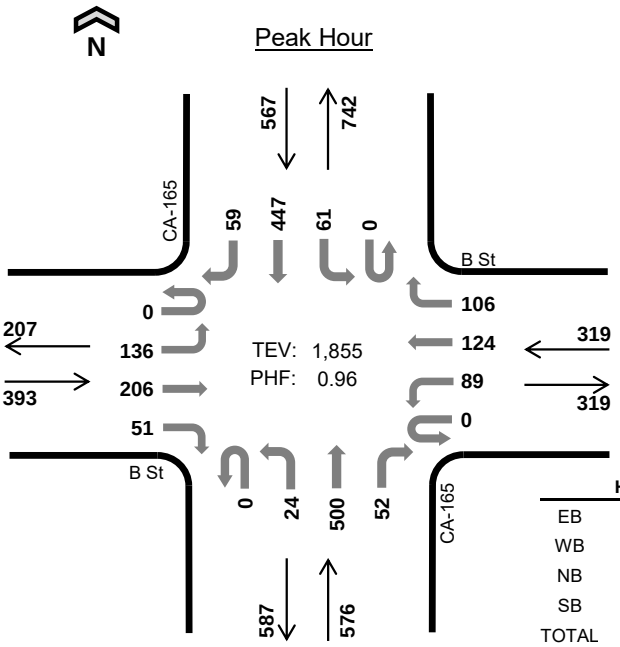
Two-Hour Count Summaries - Bikes

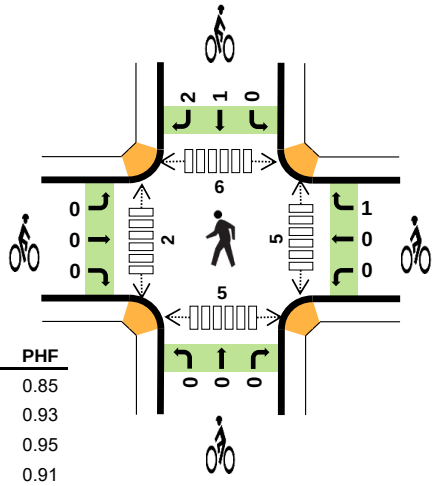
Interval Start	B St Eastbound			B St Westbound			CA-165 Northbound			CA-165 Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	2
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
8:15 AM	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	2
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	2	0	0	0	0	0	1	0	3	0
Peak Hour	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

CA-165
B St

Date: 10/24/2023
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM





	HV %:	PHF
EB	0.3%	0.85
WB	1.9%	0.93
NB	1.9%	0.95
SB	3.4%	0.91
TOTAL	2.0%	0.96

Two-Hour Count Summaries

Interval Start	B St Eastbound				B St Westbound				CA-165 Northbound				CA-165 Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**39**	**62**	**14**	**0**	**19**	**27**	**37**	**0**	**8**	**132**	**8**	**0**	**11**	**109**	**15**	**481**	0
4:15 PM	**0**	**30**	**42**	**9**	**0**	**23**	**31**	**25**	**0**	**4**	**136**	**11**	**0**	**19**	**125**	**11**	**466**	0
4:30 PM	**0**	**25**	**55**	**9**	**0**	**23**	**29**	**19**	**0**	**6**	**115**	**21**	**0**	**16**	**102**	**14**	**434**	0
4:45 PM	**0**	**42**	**47**	**19**	**0**	**24**	**37**	**25**	**0**	**6**	**117**	**12**	**0**	**15**	**111**	**19**	**474**	**1,855**
5:00 PM	0	34	54	5	0	18	18	18	0	12	140	11	0	24	122	18	474	1,848
5:15 PM	0	35	54	14	0	17	27	30	0	5	131	14	0	14	101	15	457	1,839
5:30 PM	0	23	42	8	0	14	33	16	1	7	127	12	0	21	124	21	449	1,854
5:45 PM	0	32	29	11	0	16	17	15	0	4	112	16	0	11	123	17	403	1,783
Count Total	0	260	385	89	0	154	219	185	1	52	1,010	105	0	131	917	130	3,638	0
Peak Hour All	**0**	**136**	**206**	**51**	**0**	**89**	**124**	**106**	**0**	**24**	**500**	**52**	**0**	**61**	**447**	**59**	**1,855**	**0**
Peak Hour HV	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**5**	**0**	**0**	**11**	**0**	**0**	**1**	**17**	**1**	**37**	**0**
Peak Hour HV%	**-**	**0%**	**0%**	**0%**	**-**	**1%**	**0%**	**5%**	**-**	**0%**	**2%**	**0%**	**-**	**2%**	**4%**	**2%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	**1**	**3**	**5**	**6**	***15***	**0**	**0**	**0**	**1**	***1***	**0**	**0**	**5**	**2**	*7*
4:15 PM	**0**	**1**	**2**	**1**	***4***	**0**	**0**	**0**	**0**	***0***	**4**	**0**	**0**	**2**	*6*
4:30 PM	**0**	**2**	**2**	**9**	***13***	**0**	**1**	**0**	**0**	***1***	**0**	**2**	**0**	**0**	*2*
4:45 PM	**0**	**0**	**2**	**3**	***5***	**0**	**0**	**0**	**2**	***2***	**1**	**0**	**1**	**1**	***3***
5:00 PM	0	0	5	2	*7*	0	0	0	0	*0*	2	1	0	2	*5*
5:15 PM	0	0	10	4	*14*	0	0	0	0	*0*	1	0	0	2	*3*
5:30 PM	0	1	7	6	*14*	0	0	0	0	*0*	0	3	0	0	*3*
5:45 PM	0	0	5	5	*10*	0	0	0	0	*0*	2	1	1	0	*4*
Count Total	1	7	38	36	*82*	0	1	0	3	*4*	10	7	7	9	*33*
Peak Hour	**1**	**6**	**11**	**19**	***37***	**0**	**1**	**0**	**3**	***4***	**5**	**2**	**6**	**5**	***18***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	B St Eastbound				B St Westbound				CA-165 Northbound				CA-165 Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**5**	**0**	**0**	**0**	**6**	**0**	**15**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**4**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**2**	**0**	**0**	**1**	**7**	**1**	**13**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**3**	**0**	**5**	**37**
5:00 PM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	2	0	7	29
5:15 PM	0	0	0	0	0	0	0	0	0	0	10	0	0	0	4	0	14	39
5:30 PM	0	0	0	0	0	0	0	1	0	0	7	0	0	0	5	1	14	40
5:45 PM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	5	0	10	45
Count Total	0	0	1	0	0	1	0	6	0	0	38	0	0	1	33	2	82	0
Peak Hour	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**5**	**0**	**0**	**11**	**0**	**0**	**1**	**17**	**1**	**37**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	B St Eastbound			B St Westbound			CA-165 Northbound			CA-165 Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**2**	**4**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	1	0	0	0	0	1	2	4	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**2**	**4**	**0**

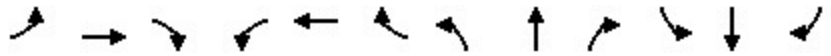
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Appendix B.
Intersection LOS and Queue Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	574	21	12	881	39	51	74	15	85	50	56
Future Volume (veh/h)	79	574	21	12	881	39	51	74	15	85	50	56
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		1.00	1.00		1.00	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	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767
Adj Flow Rate, veh/h	85	617	22	13	947	41	55	80	2	91	54	7
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	9	9	9	9	9	9	9	9	9	9	9	9
Cap, veh/h	104	2133	76	24	1958	85	67	98	143	110	65	153
Arrive On Green	0.06	0.65	0.65	0.03	1.00	1.00	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	1682	3306	118	1682	3277	142	705	1026	1497	1075	638	1497
Grp Volume(v), veh/h	85	313	326	13	485	503	135	0	2	145	0	7
Grp Sat Flow(s),veh/h/ln	1682	1678	1745	1682	1678	1741	1731	0	1497	1713	0	1497
Q Serve(g_s), s	7.0	11.4	11.4	1.1	0.0	0.0	10.7	0.0	0.2	11.6	0.0	0.6
Cycle Q Clear(g_c), s	7.0	11.4	11.4	1.1	0.0	0.0	10.7	0.0	0.2	11.6	0.0	0.6
Prop In Lane	1.00		0.07	1.00		0.08	0.41		1.00	0.63		1.00
Lane Grp Cap(c), veh/h	104	1083	1126	24	1003	1040	165	0	143	175	0	153
V/C Ratio(X)	0.82	0.29	0.29	0.55	0.48	0.48	0.82	0.00	0.01	0.83	0.00	0.05
Avail Cap(c_a), veh/h	120	1083	1126	120	1003	1040	433	0	374	392	0	342
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.93	0.93	0.93	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	64.9	10.8	10.8	67.6	0.0	0.0	62.1	0.0	57.4	61.6	0.0	56.7
Incr Delay (d2), s/veh	30.3	0.7	0.6	16.8	1.6	1.5	9.4	0.0	0.0	9.5	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(95%),veh/ln	7.0	7.7	8.0	1.0	0.8	0.8	8.9	0.0	0.1	9.4	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	95.1	11.5	11.5	84.4	1.6	1.5	71.5	0.0	57.4	71.1	0.0	56.8
LnGrp LOS	F	B	B	F	A	A	E		E	E		E
Approach Vol, veh/h		724			1001			137			152	
Approach Delay, s/veh		21.3			2.6			71.3			70.4	
Approach LOS		C			A			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.6	95.7		19.3	13.3	89.0		18.4				
Change Period (Y+Rc), s	4.6	5.4		5.0	4.6	5.4		5.0				
Max Green Setting (Gmax), s	10.0	43.0		32.0	10.0	43.0		35.0				
Max Q Clear Time (g_c+I1), s	3.1	13.4		13.6	9.0	2.0		12.7				
Green Ext Time (p_c), s	0.0	10.2		0.7	0.0	20.2		0.7				

Intersection Summary			
HCM 7th Control Delay, s/veh		19.1	
HCM 7th LOS		B	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	589	40	32	844	72	26	95	53	35	103	54
Future Volume (veh/h)	33	589	40	32	844	72	26	95	53	35	103	54
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		1.00	1.00		1.00	1.00		0.99	1.00		0.99
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	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767
Adj Flow Rate, veh/h	33	595	38	32	853	70	26	96	41	35	104	8
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	9	9	9	9	9	9	9	9	9	9	9	9
Cap, veh/h	87	2273	145	43	2146	176	47	132	50	71	183	238
Arrive On Green	0.10	1.00	1.00	0.01	0.23	0.23	0.16	0.16	0.16	0.16	0.16	0.16
Sat Flow, veh/h	1682	3204	204	1682	3141	258	110	823	314	240	1145	1486
Grp Volume(v), veh/h	33	311	322	32	456	467	163	0	0	139	0	8
Grp Sat Flow(s),veh/h/ln	1682	1678	1730	1682	1678	1720	1247	0	0	1385	0	1486
Q Serve(g_s), s	2.6	0.0	0.0	2.7	32.3	32.4	6.2	0.0	0.0	0.0	0.0	0.6
Cycle Q Clear(g_c), s	2.6	0.0	0.0	2.7	32.3	32.4	18.8	0.0	0.0	12.6	0.0	0.6
Prop In Lane	1.00		0.12	1.00		0.15	0.16		0.25	0.25		1.00
Lane Grp Cap(c), veh/h	87	1191	1227	43	1147	1175	230	0	0	254	0	238
V/C Ratio(X)	0.38	0.26	0.26	0.75	0.40	0.40	0.71	0.00	0.00	0.55	0.00	0.03
Avail Cap(c_a), veh/h	144	1191	1227	144	1147	1175	348	0	0	373	0	350
HCM Platoon Ratio	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96	0.91	0.91	0.91	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	60.7	0.0	0.0	69.0	29.7	29.7	56.8	0.0	0.0	54.1	0.0	49.6
Incr Delay (d2), s/veh	5.5	0.5	0.5	20.8	0.9	0.9	4.0	0.0	0.0	1.8	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(95%),veh/ln	2.2	0.3	0.3	2.5	20.9	21.3	9.9	0.0	0.0	8.3	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	66.2	0.5	0.5	89.7	30.6	30.6	60.9	0.0	0.0	55.9	0.0	49.7
LnGrp LOS	E	A	A	F	C	C	E			E		D
Approach Vol, veh/h		666			955			163			147	
Approach Delay, s/veh		3.8			32.6			60.9			55.6	
Approach LOS		A			C			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.2	104.8		27.0	11.8	101.1		27.0				
Change Period (Y+Rc), s	4.6	5.5		4.6	4.6	5.5		4.6				
Max Green Setting (Gmax), s	12.6	80.3		33.0	12.0	80.3		33.0				
Max Q Clear Time (g_c+I1), s	4.7	2.0		14.6	4.6	34.4		20.8				
Green Ext Time (p_c), s	0.0	12.9		0.7	0.0	19.5		0.7				

Intersection Summary	
HCM 7th Control Delay, s/veh	26.8
HCM 7th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	585	31	152	933	0	55	14	144	10	51	25
Future Volume (veh/h)	4	585	31	152	933	0	55	14	144	10	51	25
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		1.00	1.00		1.00	1.00		1.00	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	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781
Adj Flow Rate, veh/h	4	609	30	158	972	0	57	15	97	10	53	2
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	8	8	8	8	8	8	8	8	8	8	8	8
Cap, veh/h	9	1786	88	179	2181	0	61	16	104	19	103	100
Arrive On Green	0.00	0.18	0.18	0.21	1.00	0.00	0.11	0.11	0.11	0.07	0.07	0.07
Sat Flow, veh/h	1697	3283	162	1697	3474	0	536	141	913	281	1487	1451
Grp Volume(v), veh/h	4	314	325	158	972	0	169	0	0	63	0	2
Grp Sat Flow(s),veh/h/ln	1697	1692	1752	1697	1692	0	1590	0	0	1767	0	1451
Q Serve(g_s), s	0.3	22.7	22.7	12.6	0.0	0.0	14.7	0.0	0.0	4.8	0.0	0.2
Cycle Q Clear(g_c), s	0.3	22.7	22.7	12.6	0.0	0.0	14.7	0.0	0.0	4.8	0.0	0.2
Prop In Lane	1.00		0.09	1.00		0.00	0.34		0.57	0.16		1.00
Lane Grp Cap(c), veh/h	9	921	953	179	2181	0	182	0	0	122	0	100
V/C Ratio(X)	0.46	0.34	0.34	0.88	0.45	0.00	0.93	0.00	0.00	0.52	0.00	0.02
Avail Cap(c_a), veh/h	109	921	953	230	2181	0	182	0	0	379	0	311
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97	1.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	69.7	35.5	35.5	54.4	0.0	0.0	61.4	0.0	0.0	62.9	0.0	60.7
Incr Delay (d2), s/veh	32.3	1.0	0.9	25.9	0.7	0.0	47.0	0.0	0.0	3.0	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(95%),veh/ln	0.4	15.8	16.3	10.1	0.4	0.0	13.1	0.0	0.0	4.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	102.0	36.5	36.5	80.3	0.7	0.0	108.4	0.0	0.0	65.9	0.0	60.8
LnGrp LOS	F	D	D	F	A		F			E		E
Approach Vol, veh/h		643			1130			169			65	
Approach Delay, s/veh		36.9			11.8			108.4			65.8	
Approach LOS		D			B			F			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	20.5	82.6		15.3	6.4	96.6		21.7
Change Period (Y+Rc), s	5.7	6.4		5.6	5.7	6.4		5.7
Max Green Setting (Gmax), s	14.8	51.6		30.0	9.0	61.6		16.0
Max Q Clear Time (g_c+I1), s	4.6	24.7		6.8	2.3	2.0		16.7
Green Ext Time (p_c), s	0.1	4.4		0.2	0.0	9.5		0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	29.7
HCM 7th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	741	0	0	1238	98	0	0	0	109	0	17
Future Volume (veh/h)	18	741	0	0	1238	98	0	0	0	109	0	17
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		1.00	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	1781	1781	0	0	1781	1781	1781	1781	1781	1781	1781	1781
Adj Flow Rate, veh/h	19	764	0	0	1276	99	0	0	0	112	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	8	8	0	0	8	8	8	8	8	8	8	8
Cap, veh/h	25	2866	0	0	2538	196	0	1	0	136	0	0
Arrive On Green	0.03	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.08	0.00	0.00
Sat Flow, veh/h	1697	3474	0	0	3266	246	0	1781	0	1690	0	0
Grp Volume(v), veh/h	19	764	0	0	678	697	0	0	0	112	0	0
Grp Sat Flow(s),veh/h/ln	1697	1692	0	0	1692	1731	0	1781	0	1690	0	0
Q Serve(g_s), s	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.1	0.0	0.0
Cycle Q Clear(g_c), s	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.1	0.0	0.0
Prop In Lane	1.00		0.00	0.00		0.14	0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	25	2866	0	0	1352	1382	0	1	0	136	0	0
V/C Ratio(X)	0.75	0.27	0.00	0.00	0.50	0.50	0.00	0.00	0.00	0.82	0.00	0.00
Avail Cap(c_a), veh/h	121	2866	0	0	1352	1382	0	522	0	241	0	0
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.78	0.78	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	67.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	63.4	0.0	0.0
Incr Delay (d2), s/veh	35.2	0.2	0.0	0.0	1.0	1.0	0.0	0.0	0.0	11.1	0.0	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(95%),veh/ln	1.6	0.2	0.0	0.0	0.7	0.7	0.0	0.0	0.0	7.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	102.8	0.2	0.0	0.0	1.0	1.0	0.0	0.0	0.0	74.5	0.0	0.0
LnGrp LOS	F	A			A	A				E		
Approach Vol, veh/h		783			1375			0			112	
Approach Delay, s/veh		2.7			1.0			0.0			74.5	
Approach LOS		A			A						E	

Timer - Assigned Phs	2	4	5	6	8
Phs Duration (G+Y+Rc), s	123.6	16.4	6.7	116.9	0.0
Change Period (Y+Rc), s	5.1	5.1	4.6	5.1	5.6
Max Green Setting (Gmax), s	63.2	20.0	10.0	48.6	41.0
Max Q Clear Time (g_c+I1), s	2.0	11.1	3.6	2.0	0.0
Green Ext Time (p_c), s	6.0	0.3	0.0	16.7	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	5.2
HCM 7th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	156	494	121	144	815	119	155	253	111	107	220	252
Future Volume (veh/h)	156	494	121	144	815	119	155	253	111	107	220	252
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		1.00	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	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767
Adj Flow Rate, veh/h	171	543	76	158	896	61	170	278	81	118	242	52
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	9	9	9	9	9	9	9	9	9	9	9	9
Cap, veh/h	195	1763	784	181	1734	761	215	355	101	139	521	228
Arrive On Green	0.04	0.17	0.17	0.11	0.52	0.52	0.07	0.14	0.14	0.08	0.16	0.16
Sat Flow, veh/h	1682	3357	1494	1682	3357	1474	3264	2566	732	1682	3357	1469
Grp Volume(v), veh/h	171	543	76	158	896	61	170	180	179	118	242	52
Grp Sat Flow(s),veh/h/ln	1682	1678	1494	1682	1678	1474	1632	1678	1620	1682	1678	1469
Q Serve(g_s), s	14.2	19.8	6.0	13.0	24.7	2.9	7.2	14.5	15.0	9.7	9.2	4.3
Cycle Q Clear(g_c), s	14.2	19.8	6.0	13.0	24.7	2.9	7.2	14.5	15.0	9.7	9.2	4.3
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	195	1763	784	181	1734	761	215	232	224	139	521	228
V/C Ratio(X)	0.88	0.31	0.10	0.87	0.52	0.08	0.79	0.77	0.80	0.85	0.46	0.23
Avail Cap(c_a), veh/h	244	1763	784	237	1734	761	275	468	451	190	1031	451
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97	0.92	0.92	0.92	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	66.3	35.7	30.0	61.6	22.3	17.1	64.4	58.2	58.5	63.3	53.8	51.8
Incr Delay (d2), s/veh	21.8	0.4	0.2	20.0	1.0	0.2	8.6	5.2	6.2	17.3	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(95%),veh/ln	12.1	13.9	4.1	10.5	14.8	1.9	5.8	10.6	10.7	8.4	7.1	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	88.1	36.1	30.2	81.6	23.3	17.3	73.1	63.4	64.7	80.7	54.5	52.3
LnGrp LOS	F	D	C	F	C	B	E	E	E	F	D	D
Approach Vol, veh/h		790			1115			529			412	
Approach Delay, s/veh		46.8			31.3			66.9			61.7	
Approach LOS		D			C			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.7	79.3	13.4	27.5	20.9	78.1	15.8	25.2
Change Period (Y+Rc), s	4.7	5.8	4.2	5.8	4.7	5.8	4.2	5.8
Max Green Setting (Gmax), s	15.0	45.0	11.8	43.0	20.3	44.4	15.8	39.0
Max Q Clear Time (g_c+I1), s	16.2	21.8	9.2	11.2	16.2	26.7	11.7	17.0
Green Ext Time (p_c), s	0.1	5.3	0.0	1.7	0.1	7.9	0.0	1.9

Intersection Summary	
HCM 7th Control Delay, s/veh	46.6
HCM 7th LOS	D

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	560	80	158	985	57	107
Future Volume (veh/h)	560	80	158	985	57	107
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)		0.98	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	1752	1752	1752	1752	1752	1752
Adj Flow Rate, veh/h	659	62	186	1159	67	11
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	10	10	10	10	10	10
Cap, veh/h	855	372	992	2969	111	51
Arrive On Green	0.08	0.08	0.59	0.89	0.03	0.03
Sat Flow, veh/h	3416	1450	1668	3416	3237	1485
Grp Volume(v), veh/h	659	62	186	1159	67	11
Grp Sat Flow(s),veh/h/ln	1664	1450	1668	1664	1618	1485
Q Serve(g_s), s	27.1	5.6	7.1	8.1	2.9	1.0
Cycle Q Clear(g_c), s	27.1	5.6	7.1	8.1	2.9	1.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	855	372	992	2969	111	51
V/C Ratio(X)	0.77	0.17	0.19	0.39	0.60	0.22
Avail Cap(c_a), veh/h	1277	556	992	2969	694	318
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.0	50.2	13.0	1.3	66.6	65.8
Incr Delay (d2), s/veh	6.1	0.9	0.1	0.1	5.1	2.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	18.5	3.9	4.8	1.9	2.2	0.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	66.1	51.0	13.0	1.4	71.8	67.8
LnGrp LOS	E	D	B	A	E	E
Approach Vol, veh/h	721			1345	78	
Approach Delay, s/veh	64.8			3.0	71.2	
Approach LOS	E			A	E	

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	38.9	41.6			130.6	9.4
Change Period (Y+Rc), s	5.7	* 5.7			5.7	4.6
Max Green Setting (Gmax), s	42.6	* 54			99.7	30.0
Max Q Clear Time (g_c+I1), s	29.1	29.1			10.1	4.9
Green Ext Time (p_c), s	0.5	6.8			18.6	0.2

Intersection Summary	
HCM 7th Control Delay, s/veh	26.3
HCM 7th LOS	C

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	14.2
Intersection LOS	B

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	54	25	221	239	9
Future Vol, veh/h	17	54	25	221	239	9
Peak Hour Factor	0.55	0.55	0.55	0.55	0.55	0.55
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	31	98	45	402	435	16
Number of Lanes	1	0	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay, s/veh	10	14.8	14.7
HCM LOS	A	B	B

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	10%	24%	0%
Vol Thru, %	90%	0%	96%
Vol Right, %	0%	76%	4%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	246	71	248
LT Vol	25	17	0
Through Vol	221	0	239
RT Vol	0	54	9
Lane Flow Rate	447	129	451
Geometry Grp	1	1	1
Degree of Util (X)	0.596	0.2	0.596
Departure Headway (Hd)	4.797	5.587	4.756
Convergence, Y/N	Yes	Yes	Yes
Cap	742	647	753
Service Time	2.879	3.587	2.837
HCM Lane V/C Ratio	0.602	0.199	0.599
HCM Control Delay, s/veh	14.8	10	14.7
HCM Lane LOS	B	A	B
HCM 95th-tile Q	4	0.7	4

Intersection	
Intersection Delay, s/veh	12.4
Intersection LOS	B

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	78	43	128	97	75	105
Future Vol, veh/h	78	43	128	97	75	105
Peak Hour Factor	0.51	0.51	0.51	0.51	0.51	0.51
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	153	84	251	190	147	206
Number of Lanes	1	0	1	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	2	0	1
HCM Control Delay, s/veh	12.2	12.3	12.8
HCM LOS	B	B	B

Lane	NBLn1	NBLn2	EBLn1	SBLn1
Vol Left, %	100%	0%	64%	0%
Vol Thru, %	0%	100%	0%	42%
Vol Right, %	0%	0%	36%	58%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	128	97	121	180
LT Vol	128	0	78	0
Through Vol	0	97	0	75
RT Vol	0	0	43	105
Lane Flow Rate	251	190	237	353
Geometry Grp	5	5	2	4a
Degree of Util (X)	0.43	0.299	0.378	0.49
Departure Headway (Hd)	6.161	5.655	5.732	4.997
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	585	637	629	720
Service Time	3.889	3.383	3.766	3.025
HCM Lane V/C Ratio	0.429	0.298	0.377	0.49
HCM Control Delay, s/veh	13.5	10.8	12.2	12.8
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	2.2	1.3	1.8	2.7

Intersection	
Int Delay, s/veh	18.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	125	127	349	80	68	352
Future Vol, veh/h	125	127	349	80	68	352
Conflicting Peds, #/hr	0	45	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	190	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	151	153	420	96	82	424

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1059	516	0	0	519	0
Stage 1	471	-	-	-	-	-
Stage 2	588	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.16	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.254	-
Pot Cap-1 Maneuver	244	551	-	-	1027	-
Stage 1	620	-	-	-	-	-
Stage 2	547	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	224	527	-	-	1025	-
Mov Cap-2 Maneuver	224	-	-	-	-	-
Stage 1	619	-	-	-	-	-
Stage 2	504	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	78.58	0	1.43
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	316	1025	-
HCM Lane V/C Ratio	-	-	0.962	0.08	-
HCM Ctrl Dly (s/v)	-	-	78.6	8.8	-
HCM Lane LOS	-	-	F	A	-
HCM 95th %tile Q(veh)	-	-	9.9	0.3	-

Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	129	228	261	107	51	112
Future Vol, veh/h	129	228	261	107	51	112
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	220	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	69	69	69	69	69	69
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	187	330	378	155	74	162

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	533	0	-	0	1083	378
Stage 1	-	-	-	-	378	-
Stage 2	-	-	-	-	704	-
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	1034	-	-	-	241	668
Stage 1	-	-	-	-	693	-
Stage 2	-	-	-	-	490	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1034	-	-	-	197	668
Mov Cap-2 Maneuver	-	-	-	-	197	-
Stage 1	-	-	-	-	567	-
Stage 2	-	-	-	-	490	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	3.34	0	28.49
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1034	-	-	-	382
HCM Lane V/C Ratio	0.181	-	-	-	0.618
HCM Ctrl Dly (s/v)	9.2	-	-	-	28.5
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0.7	-	-	-	4

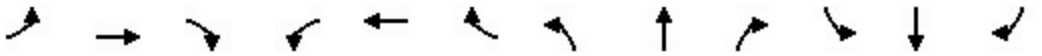
Intersection	
Int Delay, s/veh	10.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	237	34	52	126	124	327
Future Vol, veh/h	237	34	52	126	124	327
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	8	8	8	8	8	8
Mvmt Flow	279	40	61	148	146	385

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	609	338	531	0	-	0
Stage 1	338	-	-	-	-	-
Stage 2	271	-	-	-	-	-
Critical Hdwy	6.48	6.28	4.18	-	-	-
Critical Hdwy Stg 1	5.48	-	-	-	-	-
Critical Hdwy Stg 2	5.48	-	-	-	-	-
Follow-up Hdwy	3.572	3.372	2.272	-	-	-
Pot Cap-1 Maneuver	449	690	1007	-	-	-
Stage 1	709	-	-	-	-	-
Stage 2	761	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	419	690	1007	-	-	-
Mov Cap-2 Maneuver	419	-	-	-	-	-
Stage 1	662	-	-	-	-	-
Stage 2	761	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	31.74	2.57	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	526	-	441	-	-
HCM Lane V/C Ratio	0.061	-	0.723	-	-
HCM Ctrl Dly (s/v)	8.8	0	31.7	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0.2	-	5.7	-	-



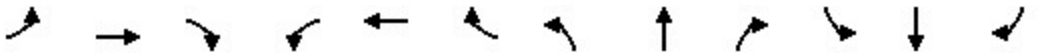
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	97	187	93	137	212	129	55	400	61	98	479	110
Future Volume (veh/h)	97	187	93	137	212	129	55	400	61	98	479	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	113	217	94	159	247	0	64	465	68	114	557	123
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	144	261	113	194	448		84	599	88	145	605	134
Arrive On Green	0.08	0.21	0.21	0.11	0.24	0.00	0.05	0.38	0.38	0.08	0.41	0.41
Sat Flow, veh/h	1781	1234	534	1781	1870	1585	1781	1594	233	1781	1477	326
Grp Volume(v), veh/h	113	0	311	159	247	0	64	0	533	114	0	680
Grp Sat Flow(s),veh/h/ln	1781	0	1768	1781	1870	1585	1781	0	1828	1781	0	1803
Q Serve(g_s), s	5.7	0.0	15.4	8.0	10.6	0.0	3.2	0.0	23.4	5.7	0.0	32.6
Cycle Q Clear(g_c), s	5.7	0.0	15.4	8.0	10.6	0.0	3.2	0.0	23.4	5.7	0.0	32.6
Prop In Lane	1.00		0.30	1.00		1.00	1.00		0.13	1.00		0.18
Lane Grp Cap(c), veh/h	144	0	374	194	448		84	0	686	145	0	739
V/C Ratio(X)	0.78	0.00	0.83	0.82	0.55		0.76	0.00	0.78	0.79	0.00	0.92
Avail Cap(c_a), veh/h	293	0	582	293	820		430	0	802	293	0	791
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	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.1	0.0	34.4	39.7	30.4	0.0	43.0	0.0	25.1	41.1	0.0	25.5
Incr Delay (d2), s/veh	9.0	0.0	6.2	10.4	1.1	0.0	13.4	0.0	4.9	9.0	0.0	15.9
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(95%),veh/ln	5.1	0.0	11.6	7.3	8.5	0.0	3.1	0.0	15.8	5.1	0.0	22.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	50.1	0.0	40.6	50.2	31.5	0.0	56.3	0.0	30.0	50.1	0.0	41.3
LnGrp LOS	D		D	D	C		E		C	D		D
Approach Vol, veh/h		424			406			597			794	
Approach Delay, s/veh		43.2			38.8			32.8			42.6	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.1	40.1	14.7	24.4	9.0	43.2	12.1	27.0
Change Period (Y+Rc), s	4.7	5.8	4.7	5.1	4.7	5.8	4.7	5.1
Max Green Setting (Gmax), s	15.0	40.0	15.0	30.0	22.0	40.0	15.0	40.0
Max Q Clear Time (g_c+I1), s	7.7	25.4	10.0	17.4	5.2	34.6	7.7	12.6
Green Ext Time (p_c), s	0.1	4.3	0.2	1.6	0.1	2.8	0.1	1.6

Intersection Summary	
HCM 7th Control Delay, s/veh	39.4
HCM 7th LOS	D

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	992	26	11	769	22	25	34	10	63	32	68
Future Volume (veh/h)	75	992	26	11	769	22	25	34	10	63	32	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		0.98	1.00		1.00	1.00		1.00	1.00		0.99
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	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781
Adj Flow Rate, veh/h	79	1044	26	12	809	22	26	36	0	66	34	8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	8	8	8	8	8	8	8	8	8	8	8	8
Cap, veh/h	98	2339	58	23	2185	59	49	68	101	95	49	124
Arrive On Green	0.06	0.69	0.69	0.03	1.00	1.00	0.07	0.07	0.00	0.08	0.08	0.08
Sat Flow, veh/h	1697	3372	84	1697	3365	92	732	1013	1510	1138	586	1488
Grp Volume(v), veh/h	79	524	546	12	407	424	62	0	0	100	0	8
Grp Sat Flow(s),veh/h/ln	1697	1692	1764	1697	1692	1765	1745	0	1510	1725	0	1488
Q Serve(g_s), s	6.4	19.2	19.2	1.0	0.0	0.0	4.8	0.0	0.0	7.9	0.0	0.7
Cycle Q Clear(g_c), s	6.4	19.2	19.2	1.0	0.0	0.0	4.8	0.0	0.0	7.9	0.0	0.7
Prop In Lane	1.00		0.05	1.00		0.05	0.42		1.00	0.66		1.00
Lane Grp Cap(c), veh/h	98	1174	1224	23	1099	1146	116	0	101	144	0	124
V/C Ratio(X)	0.81	0.45	0.45	0.53	0.37	0.37	0.53	0.00	0.00	0.69	0.00	0.06
Avail Cap(c_a), veh/h	133	1174	1224	133	1099	1146	436	0	377	394	0	340
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.96	0.96	0.96	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	65.2	9.5	9.5	67.7	0.0	0.0	63.2	0.0	0.0	62.4	0.0	59.1
Incr Delay (d2), s/veh	22.1	1.2	1.2	17.3	0.9	0.9	3.8	0.0	0.0	5.9	0.0	0.2
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(95%),veh/ln	6.1	11.4	11.8	1.0	0.5	0.5	4.1	0.0	0.0	6.7	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	87.3	10.7	10.7	85.0	0.9	0.9	67.0	0.0	0.0	68.3	0.0	59.3
LnGrp LOS	F	B	B	F	A	A	E			E		E
Approach Vol, veh/h		1149			843			62			108	
Approach Delay, s/veh		16.0			2.1			67.0			67.6	
Approach LOS		B			A			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.5	102.5		16.7	12.7	96.3		14.3				
Change Period (Y+Rc), s	4.6	5.4		5.0	4.6	5.4		5.0				
Max Green Setting (Gmax), s	11.0	42.0		32.0	11.0	42.0		35.0				
Max Q Clear Time (g_c+I1), s	3.0	21.2		9.9	8.4	2.0		6.8				
Green Ext Time (p_c), s	0.0	14.1		0.5	0.0	16.0		0.3				

Intersection Summary												
HCM 7th Control Delay, s/veh			14.6									
HCM 7th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	1013	23	30	721	14	12	75	24	21	72	49
Future Volume (veh/h)	89	1013	23	30	721	14	12	75	24	21	72	49
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		1.00	1.00		1.00	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	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796
Adj Flow Rate, veh/h	92	1044	23	31	743	13	12	77	17	22	74	6
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	7	7	7	7	7	7	7	7	7	7	7	7
Cap, veh/h	119	2645	58	43	2506	44	36	110	23	56	133	145
Arrive On Green	0.14	1.00	1.00	0.05	1.00	1.00	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	1711	3414	75	1711	3432	60	81	1158	237	253	1398	1517
Grp Volume(v), veh/h	92	522	545	31	369	387	106	0	0	96	0	6
Grp Sat Flow(s),veh/h/ln	1711	1706	1783	1711	1706	1785	1475	0	0	1650	0	1517
Q Serve(g_s), s	7.3	0.0	0.0	2.5	0.0	0.0	2.6	0.0	0.0	0.0	0.0	0.5
Cycle Q Clear(g_c), s	7.3	0.0	0.0	2.5	0.0	0.0	10.2	0.0	0.0	7.6	0.0	0.5
Prop In Lane	1.00		0.04	1.00		0.03	0.11		0.16	0.23		1.00
Lane Grp Cap(c), veh/h	119	1322	1381	43	1246	1304	169	0	0	189	0	145
V/C Ratio(X)	0.77	0.39	0.39	0.72	0.30	0.30	0.63	0.00	0.00	0.51	0.00	0.04
Avail Cap(c_a), veh/h	147	1322	1381	147	1246	1304	403	0	0	418	0	358
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.87	0.87	0.87	0.95	0.95	0.95	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	59.2	0.0	0.0	66.0	0.0	0.0	61.5	0.0	0.0	60.6	0.0	57.5
Incr Delay (d2), s/veh	22.3	0.8	0.7	19.6	0.6	0.6	3.8	0.0	0.0	2.1	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(95%),veh/ln	6.6	0.5	0.5	2.3	0.4	0.4	7.0	0.0	0.0	6.2	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	81.5	0.8	0.7	85.6	0.6	0.6	65.3	0.0	0.0	62.7	0.0	57.6
LnGrp LOS	F	A	A	F	A	A	E			E		E
Approach Vol, veh/h		1159			787			106			102	
Approach Delay, s/veh		7.2			3.9			65.3			62.4	
Approach LOS		A			A			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.1	114.0		17.9	14.3	107.7		17.9				
Change Period (Y+Rc), s	4.6	5.5		4.6	4.6	5.5		4.6				
Max Green Setting (Gmax), s	12.6	80.3		33.0	12.0	80.3		33.0				
Max Q Clear Time (g_c+I1), s	4.5	2.0		9.6	9.3	2.0		12.2				
Green Ext Time (p_c), s	0.0	29.4		0.5	0.1	16.7		0.5				

Intersection Summary	
HCM 7th Control Delay, s/veh	11.5
HCM 7th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	957	8	64	808	1	35	6	69	25	8	20
Future Volume (veh/h)	7	957	8	64	808	1	35	6	69	25	8	20
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		1.00	1.00		1.00	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	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781
Adj Flow Rate, veh/h	7	987	8	66	833	1	36	6	27	26	8	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	8	8	8	8	8	8	8	8	8	8	8	8
Cap, veh/h	14	2356	19	82	2514	3	45	7	34	61	19	69
Arrive On Green	0.01	0.91	0.91	0.10	1.00	1.00	0.05	0.05	0.05	0.05	0.05	0.05
Sat Flow, veh/h	1697	3441	28	1697	3469	4	842	140	631	1312	404	1483
Grp Volume(v), veh/h	7	485	510	66	406	428	69	0	0	34	0	2
Grp Sat Flow(s),veh/h/ln	1697	1692	1776	1697	1692	1781	1613	0	0	1716	0	1483
Q Serve(g_s), s	0.6	5.8	5.8	5.3	0.0	0.0	5.9	0.0	0.0	2.7	0.0	0.2
Cycle Q Clear(g_c), s	0.6	5.8	5.8	5.3	0.0	0.0	5.9	0.0	0.0	2.7	0.0	0.2
Prop In Lane	1.00		0.02	1.00		0.00	0.52		0.39	0.76		1.00
Lane Grp Cap(c), veh/h	14	1159	1216	82	1227	1291	86	0	0	79	0	69
V/C Ratio(X)	0.48	0.42	0.42	0.80	0.33	0.33	0.80	0.00	0.00	0.43	0.00	0.03
Avail Cap(c_a), veh/h	121	1159	1216	121	1227	1291	150	0	0	380	0	328
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	68.9	2.2	2.2	62.5	0.0	0.0	65.5	0.0	0.0	65.0	0.0	63.8
Incr Delay (d2), s/veh	21.1	1.0	1.0	20.6	0.7	0.7	15.5	0.0	0.0	3.3	0.0	0.2
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(95%),veh/ln	0.6	3.1	3.2	4.8	0.4	0.4	5.1	0.0	0.0	2.3	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	90.0	3.2	3.2	83.1	0.7	0.7	81.1	0.0	0.0	68.3	0.0	63.9
LnGrp LOS	F	A	A	F	A	A	F			E		E
Approach Vol, veh/h		1002			900			69			36	
Approach Delay, s/veh		3.8			6.7			81.1			68.0	
Approach LOS		A			A			F			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.5	102.3		12.1	6.9	107.9		13.2				
Change Period (Y+Rc), s	5.7	6.4		5.6	5.7	6.4		5.7				
Max Green Setting (Gmax), s	10.0	62.6		31.0	10.0	62.6		13.0				
Max Q Clear Time (g_c+I1), s	7.3	7.8		4.7	2.6	2.0		7.9				
Green Ext Time (p_c), s	0.0	8.6		0.1	0.0	6.7		0.1				

Intersection Summary	
HCM 7th Control Delay, s/veh	8.9
HCM 7th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	1108	0	0	936	93	0	0	0	147	0	9
Future Volume (veh/h)	4	1108	0	0	936	93	0	0	0	147	0	9
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		1.00	1.00		1.00	1.00		1.00	0.99		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	1796	1796	0	0	1796	1796	1796	1796	1796	1796	1796	1796
Adj Flow Rate, veh/h	4	1179	0	0	996	97	0	0	0	156	0	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	7	7	0	0	7	7	7	7	7	7	7	7
Cap, veh/h	9	2795	0	0	2453	239	0	1	0	183	0	0
Arrive On Green	0.01	1.00	0.00	0.00	0.78	0.78	0.00	0.00	0.00	0.11	0.00	0.00
Sat Flow, veh/h	1711	3503	0	0	3231	306	0	1796	0	1696	0	0
Grp Volume(v), veh/h	4	1179	0	0	541	552	0	0	0	156	0	0
Grp Sat Flow(s),veh/h/ln	1711	1706	0	0	1706	1741	0	1796	0	1696	0	0
Q Serve(g_s), s	0.3	0.0	0.0	0.0	14.2	14.2	0.0	0.0	0.0	12.6	0.0	0.0
Cycle Q Clear(g_c), s	0.3	0.0	0.0	0.0	14.2	14.2	0.0	0.0	0.0	12.6	0.0	0.0
Prop In Lane	1.00		0.00	0.00		0.18	0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	9	2795	0	0	1333	1359	0	1	0	183	0	0
V/C Ratio(X)	0.45	0.42	0.00	0.00	0.41	0.41	0.00	0.00	0.00	0.85	0.00	0.00
Avail Cap(c_a), veh/h	134	2795	0	0	1333	1359	0	526	0	315	0	0
HCM Platoon Ratio	2.00	2.00	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	0.00	0.00	0.87	0.87	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	69.1	0.0	0.0	0.0	4.9	4.9	0.0	0.0	0.0	61.3	0.0	0.0
Incr Delay (d2), s/veh	32.5	0.5	0.0	0.0	0.8	0.8	0.0	0.0	0.0	10.0	0.0	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(95%),veh/ln	0.4	0.3	0.0	0.0	7.9	8.0	0.0	0.0	0.0	9.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	101.6	0.5	0.0	0.0	5.7	5.7	0.0	0.0	0.0	71.3	0.0	0.0
LnGrp LOS	F	A			A	A				E		
Approach Vol, veh/h		1183			1093			0			156	
Approach Delay, s/veh		0.8			5.7			0.0			71.3	
Approach LOS		A			A						E	

Timer - Assigned Phs	2	4	5	6	8
Phs Duration (G+Y+Rc), s	119.8	20.2	5.3	114.4	0.0
Change Period (Y+Rc), s	5.1	5.1	4.6	5.1	5.6
Max Green Setting (Gmax), s	57.2	26.0	11.0	41.6	41.0
Max Q Clear Time (g_c+I1), s	2.0	14.6	2.3	16.2	0.0
Green Ext Time (p_c), s	11.1	0.5	0.0	9.5	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	7.5
HCM 7th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	801	143	144	626	132	137	318	162	144	279	202
Future Volume (veh/h)	160	801	143	144	626	132	137	318	162	144	279	202
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		0.99	1.00		0.99	1.00		1.00	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	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796
Adj Flow Rate, veh/h	172	861	84	155	673	60	147	342	123	155	300	51
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	7	7	7	7	7	7	7	7	7	7	7	7
Cap, veh/h	196	1618	711	178	1582	696	193	425	150	177	742	326
Arrive On Green	0.08	0.32	0.32	0.10	0.46	0.46	0.06	0.17	0.17	0.10	0.22	0.22
Sat Flow, veh/h	1711	3413	1500	1711	3413	1501	3319	2469	873	1711	3413	1498
Grp Volume(v), veh/h	172	861	84	155	673	60	147	235	230	155	300	51
Grp Sat Flow(s),veh/h/ln	1711	1706	1500	1711	1706	1501	1659	1706	1636	1711	1706	1498
Q Serve(g_s), s	13.9	29.0	5.6	12.5	18.4	3.1	6.1	18.5	19.0	12.5	10.6	3.9
Cycle Q Clear(g_c), s	13.9	29.0	5.6	12.5	18.4	3.1	6.1	18.5	19.0	12.5	10.6	3.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.53	1.00		1.00
Lane Grp Cap(c), veh/h	196	1618	711	178	1582	696	193	293	281	177	742	326
V/C Ratio(X)	0.88	0.53	0.12	0.87	0.43	0.09	0.76	0.80	0.82	0.87	0.40	0.16
Avail Cap(c_a), veh/h	236	1618	711	224	1582	696	273	475	456	218	1104	485
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	0.89	0.97	0.97	0.97	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.7	35.0	27.0	61.8	25.1	21.0	65.0	55.6	55.9	61.9	47.0	44.4
Incr Delay (d2), s/veh	22.4	1.1	0.3	22.5	0.8	0.2	4.4	4.8	5.8	23.5	0.3	0.2
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(95%),veh/ln	11.7	18.5	3.8	10.6	12.1	2.1	4.8	13.0	13.0	10.8	8.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	86.1	36.1	27.3	84.3	25.9	21.2	69.4	60.4	61.7	85.4	47.3	44.6
LnGrp LOS	F	D	C	F	C	C	E	E	E	F	D	D
Approach Vol, veh/h		1117			888			612			506	
Approach Delay, s/veh		43.2			35.8			63.1			58.7	
Approach LOS		D			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.2	72.2	12.3	36.2	20.7	70.7	18.7	29.9
Change Period (Y+Rc), s	4.7	5.8	4.2	5.8	4.7	5.8	4.2	5.8
Max Green Setting (Gmax), s	18.3	44.4	11.5	45.3	19.3	43.4	17.8	39.0
Max Q Clear Time (g_c+I1), s	14.5	31.0	8.1	12.6	15.9	20.4	14.5	21.0
Green Ext Time (p_c), s	0.1	6.5	0.0	2.1	0.1	6.6	0.0	2.5

Intersection Summary	
HCM 7th Control Delay, s/veh	47.5
HCM 7th LOS	D

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	978	132	70	716	115	105
Future Volume (veh/h)	978	132	70	716	115	105
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)		0.98	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	1781	1781	1781	1781	1781	1781
Adj Flow Rate, veh/h	1040	102	74	762	122	11
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	8	8	8	8	8	8
Cap, veh/h	2673	1167	93	2955	175	80
Arrive On Green	1.00	1.00	0.05	0.87	0.05	0.05
Sat Flow, veh/h	3474	1478	1697	3474	3291	1510
Grp Volume(v), veh/h	1040	102	74	762	122	11
Grp Sat Flow(s),veh/h/ln	1692	1478	1697	1692	1646	1510
Q Serve(g_s), s	0.0	0.0	6.0	5.2	5.1	1.0
Cycle Q Clear(g_c), s	0.0	0.0	6.0	5.2	5.1	1.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2673	1167	93	2955	175	80
V/C Ratio(X)	0.39	0.09	0.80	0.26	0.70	0.14
Avail Cap(c_a), veh/h	2673	1167	206	2955	785	360
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.74	0.74	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	65.4	1.5	65.2	63.2
Incr Delay (d2), s/veh	0.3	0.1	14.2	0.1	4.9	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.2	0.1	5.3	1.7	4.0	0.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	0.3	0.1	79.6	1.5	70.1	64.0
LnGrp LOS	A	A	E	A	E	E
Approach Vol, veh/h	1142			836	133	
Approach Delay, s/veh	0.3			8.4	69.5	
Approach LOS	A			A	E	

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	11.7	116.3			127.9	12.1
Change Period (Y+Rc), s	4.0	5.7			5.7	4.6
Max Green Setting (Gmax), s	7.0	75.3			96.3	33.4
Max Q Clear Time (g_c+I1), s	8.0	2.0			7.2	7.1
Green Ext Time (p_c), s	0.1	16.3			9.4	0.4

Intersection Summary		
HCM 7th Control Delay, s/veh	7.9	
HCM 7th LOS	A	

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	7	13	69	52	13
Future Vol, veh/h	13	7	13	69	52	13
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	20	11	20	105	79	20
Number of Lanes	1	0	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay, s/veh	7.5	7.8	7.5
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	16%	65%	0%
Vol Thru, %	84%	0%	80%
Vol Right, %	0%	35%	20%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	82	20	65
LT Vol	13	13	0
Through Vol	69	0	52
RT Vol	0	7	13
Lane Flow Rate	124	30	98
Geometry Grp	1	1	1
Degree of Util (X)	0.141	0.035	0.108
Departure Headway (Hd)	4.076	4.217	3.943
Convergence, Y/N	Yes	Yes	Yes
Cap	878	835	905
Service Time	2.109	2.313	1.985
HCM Lane V/C Ratio	0.141	0.036	0.108
HCM Control Delay, s/veh	7.8	7.5	7.5
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.5	0.1	0.4

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	18	27	32	50	26
Future Vol, veh/h	30	18	27	32	50	26
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	34	20	31	36	57	30
Number of Lanes	1	0	1	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	2	0	1
HCM Control Delay, s/veh	7.4	7.8	7.4
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	EBLn1	SBLn1
Vol Left, %	100%	0%	63%	0%
Vol Thru, %	0%	100%	0%	66%
Vol Right, %	0%	0%	38%	34%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	27	32	48	76
LT Vol	27	0	30	0
Through Vol	0	32	0	50
RT Vol	0	0	18	26
Lane Flow Rate	31	36	55	86
Geometry Grp	5	5	2	4a
Degree of Util (X)	0.044	0.047	0.062	0.095
Departure Headway (Hd)	5.157	4.656	4.075	3.956
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	693	767	865	899
Service Time	2.896	2.395	2.166	2.01
HCM Lane V/C Ratio	0.045	0.047	0.064	0.096
HCM Control Delay, s/veh	8.1	7.6	7.4	7.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.1	0.2	0.3

Intersection	
Int Delay, s/veh	9.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	96	114	282	187	160	319
Future Vol, veh/h	96	114	282	187	160	319
Conflicting Peds, #/hr	0	4	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	190	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	104	124	307	203	174	347

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1103	412	0	0	510	0
Stage 1	408	-	-	-	-	-
Stage 2	695	-	-	-	-	-
Critical Hdwy	6.44	6.24	-	-	4.14	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	-	-	2.236	-
Pot Cap-1 Maneuver	232	636	-	-	1045	-
Stage 1	667	-	-	-	-	-
Stage 2	492	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	193	633	-	-	1045	-
Mov Cap-2 Maneuver	193	-	-	-	-	-
Stage 1	667	-	-	-	-	-
Stage 2	410	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	43.01	0	3.05
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	310	1045	-
HCM Lane V/C Ratio	-	-	0.736	0.166	-
HCM Ctrl Dly (s/v)	-	-	43	9.1	-
HCM Lane LOS	-	-	E	A	-
HCM 95th %tile Q(veh)	-	-	5.4	0.6	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	37	370	304	40	44	48
Future Vol, veh/h	37	370	304	40	44	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	220	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	39	385	317	42	46	50

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	358	0	-	0	779	317
Stage 1	-	-	-	-	317	-
Stage 2	-	-	-	-	463	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1195	-	-	-	363	722
Stage 1	-	-	-	-	736	-
Stage 2	-	-	-	-	632	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1195	-	-	-	351	722
Mov Cap-2 Maneuver	-	-	-	-	351	-
Stage 1	-	-	-	-	713	-
Stage 2	-	-	-	-	632	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.74	0	14.37
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1195	-	-	-	480
HCM Lane V/C Ratio	0.032	-	-	-	0.2
HCM Ctrl Dly (s/v)	8.1	-	-	-	14.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7

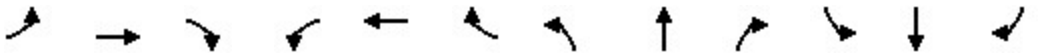
Intersection	
Int Delay, s/veh	9.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	354	21	15	114	77	299
Future Vol, veh/h	354	21	15	114	77	299
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	377	22	16	121	82	318

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	394	241	400	0	-	0
Stage 1	241	-	-	-	-	-
Stage 2	153	-	-	-	-	-
Critical Hdwy	6.46	6.26	4.16	-	-	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	2.254	-	-	-
Pot Cap-1 Maneuver	603	788	1137	-	-	-
Stage 1	790	-	-	-	-	-
Stage 2	865	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	594	788	1137	-	-	-
Mov Cap-2 Maneuver	594	-	-	-	-	-
Stage 1	778	-	-	-	-	-
Stage 2	865	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	21.93	0.95	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	209	-	602	-	-
HCM Lane V/C Ratio	0.014	-	0.663	-	-
HCM Ctrl Dly (s/v)	8.2	0	21.9	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	4.9	-	-



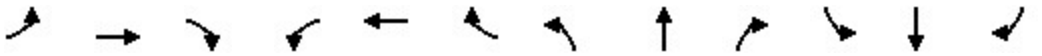
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	136	206	51	89	124	106	24	500	52	61	447	59
Future Volume (veh/h)	136	206	51	89	124	106	24	500	52	61	447	59
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	142	215	45	93	129	0	25	521	51	64	466	58
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	183	291	61	122	300		49	648	63	92	667	83
Arrive On Green	0.10	0.19	0.19	0.07	0.16	0.00	0.03	0.39	0.39	0.05	0.41	0.41
Sat Flow, veh/h	1781	1496	313	1781	1870	1585	1781	1676	164	1781	1625	202
Grp Volume(v), veh/h	142	0	260	93	129	0	25	0	572	64	0	524
Grp Sat Flow(s),veh/h/ln	1781	0	1809	1781	1870	1585	1781	0	1840	1781	0	1828
Q Serve(g_s), s	5.3	0.0	9.2	3.5	4.2	0.0	0.9	0.0	18.8	2.4	0.0	16.1
Cycle Q Clear(g_c), s	5.3	0.0	9.2	3.5	4.2	0.0	0.9	0.0	18.8	2.4	0.0	16.1
Prop In Lane	1.00		0.17	1.00		1.00	1.00		0.09	1.00		0.11
Lane Grp Cap(c), veh/h	183	0	352	122	300		49	0	711	92	0	750
V/C Ratio(X)	0.78	0.00	0.74	0.76	0.43		0.51	0.00	0.80	0.70	0.00	0.70
Avail Cap(c_a), veh/h	393	0	799	393	826		393	0	1084	393	0	1077
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	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.7	0.0	25.7	31.1	25.7	0.0	32.6	0.0	18.5	31.7	0.0	16.5
Incr Delay (d2), s/veh	6.9	0.0	3.2	9.5	1.0	0.0	7.8	0.0	3.8	9.1	0.0	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(95%),veh/ln	4.6	0.0	7.4	3.2	3.4	0.0	0.9	0.0	12.3	2.2	0.0	10.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	36.6	0.0	28.9	40.6	26.7	0.0	40.4	0.0	22.3	40.8	0.0	18.4
LnGrp LOS	D		C	D	C		D		C	D		B
Approach Vol, veh/h		402			222			597			588	
Approach Delay, s/veh		31.6			32.5			23.1			20.9	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.2	32.1	9.3	18.3	6.6	33.7	11.7	16.0
Change Period (Y+Rc), s	4.7	5.8	4.7	5.1	4.7	5.8	4.7	5.1
Max Green Setting (Gmax), s	15.0	40.0	15.0	30.0	15.0	40.0	15.0	30.0
Max Q Clear Time (g_c+I1), s	4.4	20.8	5.5	11.2	2.9	18.1	7.3	6.2
Green Ext Time (p_c), s	0.1	5.5	0.1	1.5	0.0	5.2	0.2	0.7

Intersection Summary	
HCM 7th Control Delay, s/veh	25.4
HCM 7th LOS	C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	582	22	12	897	57	51	80	15	91	52	56
Future Volume (veh/h)	79	582	22	12	897	57	51	80	15	91	52	56
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		1.00	1.00		1.00	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	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767
Adj Flow Rate, veh/h	85	626	23	13	965	59	55	86	2	98	56	8
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	9	9	9	9	9	9	9	9	9	9	9	9
Cap, veh/h	104	2100	77	24	1890	116	67	105	148	118	67	162
Arrive On Green	0.06	0.64	0.64	0.03	1.00	1.00	0.10	0.10	0.10	0.11	0.11	0.11
Sat Flow, veh/h	1682	3302	121	1682	3213	196	676	1057	1497	1090	623	1497
Grp Volume(v), veh/h	85	318	331	13	504	520	141	0	2	154	0	8
Grp Sat Flow(s),veh/h/ln	1682	1678	1745	1682	1678	1731	1733	0	1497	1712	0	1497
Q Serve(g_s), s	7.0	11.9	11.9	1.1	0.0	0.0	11.2	0.0	0.2	12.3	0.0	0.7
Cycle Q Clear(g_c), s	7.0	11.9	11.9	1.1	0.0	0.0	11.2	0.0	0.2	12.3	0.0	0.7
Prop In Lane	1.00		0.07	1.00		0.11	0.39		1.00	0.64		1.00
Lane Grp Cap(c), veh/h	104	1067	1110	24	987	1018	172	0	148	185	0	162
V/C Ratio(X)	0.82	0.30	0.30	0.55	0.51	0.51	0.82	0.00	0.01	0.83	0.00	0.05
Avail Cap(c_a), veh/h	120	1067	1110	120	987	1018	433	0	374	391	0	342
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.92	0.92	0.92	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	64.9	11.4	11.4	67.6	0.0	0.0	61.8	0.0	56.9	61.2	0.0	56.0
Incr Delay (d2), s/veh	30.3	0.7	0.7	16.6	1.7	1.7	9.3	0.0	0.0	9.4	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(95%),veh/ln	7.0	8.0	8.3	1.0	0.9	0.9	9.2	0.0	0.1	9.9	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	95.1	12.2	12.1	84.2	1.7	1.7	71.2	0.0	56.9	70.6	0.0	56.1
LnGrp LOS	F	B	B	F	A	A	E		E	E		E
Approach Vol, veh/h		734			1037			143			162	
Approach Delay, s/veh		21.8			2.7			71.0			69.9	
Approach LOS		C			A			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.6	94.4		20.1	13.3	87.8		18.9				
Change Period (Y+Rc), s	4.6	5.4		5.0	4.6	5.4		5.0				
Max Green Setting (Gmax), s	10.0	43.0		32.0	10.0	43.0		35.0				
Max Q Clear Time (g_c+I1), s	3.1	13.9		14.3	9.0	2.0		13.2				
Green Ext Time (p_c), s	0.0	10.3		0.8	0.0	21.1		0.8				

Intersection Summary												
HCM 7th Control Delay, s/veh			19.4									
HCM 7th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	602	41	32	878	90	26	101	53	41	105	54
Future Volume (veh/h)	33	602	41	32	878	90	26	101	53	41	105	54
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		1.00	1.00		1.00	1.00		0.99	1.00		0.99
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	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767
Adj Flow Rate, veh/h	33	608	39	32	887	87	26	102	42	41	106	8
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	9	9	9	9	9	9	9	9	9	9	9	9
Cap, veh/h	87	2234	143	43	2073	203	46	137	50	76	176	256
Arrive On Green	0.10	1.00	1.00	0.02	0.45	0.45	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	1682	3203	205	1682	3088	303	94	796	292	253	1022	1487
Grp Volume(v), veh/h	33	318	329	32	482	492	170	0	0	147	0	8
Grp Sat Flow(s),veh/h/ln	1682	1678	1730	1682	1678	1712	1182	0	0	1275	0	1487
Q Serve(g_s), s	2.6	0.0	0.0	2.7	27.4	27.4	6.0	0.0	0.0	0.0	0.0	0.6
Cycle Q Clear(g_c), s	2.6	0.0	0.0	2.7	27.4	27.4	20.8	0.0	0.0	14.8	0.0	0.6
Prop In Lane	1.00		0.12	1.00		0.18	0.15		0.25	0.28		1.00
Lane Grp Cap(c), veh/h	87	1171	1206	43	1127	1149	233	0	0	252	0	256
V/C Ratio(X)	0.38	0.27	0.27	0.75	0.43	0.43	0.73	0.00	0.00	0.58	0.00	0.03
Avail Cap(c_a), veh/h	144	1171	1206	144	1127	1149	333	0	0	351	0	350
HCM Platoon Ratio	2.00	2.00	2.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96	0.90	0.90	0.90	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	60.7	0.0	0.0	68.4	20.2	20.2	55.9	0.0	0.0	53.3	0.0	48.2
Incr Delay (d2), s/veh	5.5	0.6	0.5	20.6	1.1	1.1	4.6	0.0	0.0	2.1	0.0	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(95%),veh/ln	2.2	0.3	0.3	2.5	17.2	17.5	10.4	0.0	0.0	8.7	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	66.2	0.6	0.5	88.9	21.3	21.3	60.5	0.0	0.0	55.4	0.0	48.3
LnGrp LOS	E	A	A	F	C	C	E			E		D
Approach Vol, veh/h		680			1006			170			155	
Approach Delay, s/veh		3.7			23.4			60.5			55.0	
Approach LOS		A			C			E			E	

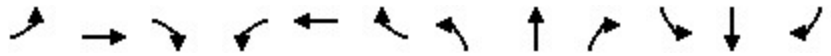
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.2	103.1		28.7	11.8	99.5		28.7				
Change Period (Y+Rc), s	4.6	5.5		4.6	4.6	5.5		4.6				
Max Green Setting (Gmax), s	12.6	80.3		33.0	12.0	80.3		33.0				
Max Q Clear Time (g_c+I1), s	4.7	2.0		16.8	4.6	29.4		22.8				
Green Ext Time (p_c), s	0.0	13.3		0.7	0.0	22.0		0.6				

Intersection Summary	
HCM 7th Control Delay, s/veh	22.3
HCM 7th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	597	38	164	961	0	79	14	178	10	51	25
Future Volume (veh/h)	4	597	38	164	961	0	79	14	178	10	51	25
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		1.00	1.00		1.00	1.00		1.00	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	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781
Adj Flow Rate, veh/h	4	622	37	171	1001	0	82	15	136	10	53	2
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	8	8	8	8	8	8	8	8	8	8	8	8
Cap, veh/h	9	1742	103	191	2181	0	64	12	106	19	103	100
Arrive On Green	0.00	0.18	0.18	0.23	1.00	0.00	0.11	0.11	0.11	0.07	0.07	0.07
Sat Flow, veh/h	1697	3246	193	1697	3474	0	558	102	926	281	1487	1451
Grp Volume(v), veh/h	4	324	335	171	1001	0	233	0	0	63	0	2
Grp Sat Flow(s),veh/h/ln	1697	1692	1746	1697	1692	0	1587	0	0	1767	0	1451
Q Serve(g_s), s	0.3	23.5	23.6	13.7	0.0	0.0	16.0	0.0	0.0	4.8	0.0	0.2
Cycle Q Clear(g_c), s	0.3	23.5	23.6	13.7	0.0	0.0	16.0	0.0	0.0	4.8	0.0	0.2
Prop In Lane	1.00		0.11	1.00		0.00	0.35		0.58	0.16		1.00
Lane Grp Cap(c), veh/h	9	908	937	191	2181	0	181	0	0	122	0	100
V/C Ratio(X)	0.46	0.36	0.36	0.89	0.46	0.00	1.28	0.00	0.00	0.52	0.00	0.02
Avail Cap(c_a), veh/h	109	908	937	230	2181	0	181	0	0	379	0	311
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97	1.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	69.7	36.4	36.4	53.4	0.0	0.0	62.0	0.0	0.0	62.9	0.0	60.7
Incr Delay (d2), s/veh	32.3	1.1	1.0	29.2	0.7	0.0	163.3	0.0	0.0	3.0	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(95%),veh/ln	0.4	16.3	16.8	10.9	0.4	0.0	23.1	0.0	0.0	4.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	102.0	37.4	37.4	82.6	0.7	0.0	225.3	0.0	0.0	65.9	0.0	60.8
LnGrp LOS	F	D	D	F	A		F			E		E
Approach Vol, veh/h		663			1172			233			65	
Approach Delay, s/veh		37.8			12.6			225.3			65.8	
Approach LOS		D			B			F			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	21.5	81.5		15.3	6.4	96.6		21.7				
Change Period (Y+Rc), s	5.7	6.4		5.6	5.7	6.4		5.7				
Max Green Setting (Gmax), s	15.8	51.6		30.0	9.0	61.6		16.0				
Max Q Clear Time (g_c+I1), s	15.7	25.6		6.8	2.3	2.0		18.0				
Green Ext Time (p_c), s	0.1	4.5		0.2	0.0	10.0		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	45.3
HCM 7th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	777	0	0	1275	109	0	0	0	117	0	20
Future Volume (veh/h)	28	777	0	0	1275	109	0	0	0	117	0	20
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		1.00	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	1781	1781	0	0	1781	1781	1781	1781	1781	1781	1781	1781
Adj Flow Rate, veh/h	29	801	0	0	1314	110	0	0	0	121	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	8	8	0	0	8	8	8	8	8	8	8	8
Cap, veh/h	36	2847	0	0	2484	207	0	1	0	146	0	0
Arrive On Green	0.04	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.09	0.00	0.00
Sat Flow, veh/h	1697	3474	0	0	3245	263	0	1781	0	1691	0	0
Grp Volume(v), veh/h	29	801	0	0	702	722	0	0	0	121	0	0
Grp Sat Flow(s),veh/h/ln	1697	1692	0	0	1692	1727	0	1781	0	1691	0	0
Q Serve(g_s), s	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.9	0.0	0.0
Cycle Q Clear(g_c), s	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.9	0.0	0.0
Prop In Lane	1.00		0.00	0.00		0.15	0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	36	2847	0	0	1332	1359	0	1	0	146	0	0
V/C Ratio(X)	0.81	0.28	0.00	0.00	0.53	0.53	0.00	0.00	0.00	0.83	0.00	0.00
Avail Cap(c_a), veh/h	121	2847	0	0	1332	1359	0	522	0	242	0	0
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.74	0.74	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	66.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	63.0	0.0	0.0
Incr Delay (d2), s/veh	32.8	0.2	0.0	0.0	1.1	1.1	0.0	0.0	0.0	11.1	0.0	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(95%),veh/ln	2.4	0.2	0.0	0.0	0.7	0.7	0.0	0.0	0.0	8.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	99.6	0.2	0.0	0.0	1.1	1.1	0.0	0.0	0.0	74.0	0.0	0.0
LnGrp LOS	F	A			A	A				E		
Approach Vol, veh/h		830			1424			0			121	
Approach Delay, s/veh		3.7			1.1			0.0			74.0	
Approach LOS		A			A						E	

Timer - Assigned Phs	2	4	5	6	8
Phs Duration (G+Y+Rc), s	122.9	17.1	7.6	115.3	0.0
Change Period (Y+Rc), s	5.1	5.1	4.6	5.1	5.6
Max Green Setting (Gmax), s	63.2	20.0	10.0	48.6	41.0
Max Q Clear Time (g_c+I1), s	2.0	11.9	4.4	2.0	0.0
Green Ext Time (p_c), s	6.3	0.3	0.0	17.8	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	5.7
HCM 7th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	171	503	141	155	818	119	194	283	137	107	237	258
Future Volume (veh/h)	171	503	141	155	818	119	194	283	137	107	237	258
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		1.00	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	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767
Adj Flow Rate, veh/h	188	553	87	170	899	58	213	311	103	118	260	55
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	9	9	9	9	9	9	9	9	9	9	9	9
Cap, veh/h	212	1678	747	192	1639	719	257	388	126	139	539	236
Arrive On Green	0.04	0.16	0.16	0.11	0.49	0.49	0.08	0.16	0.16	0.08	0.16	0.16
Sat Flow, veh/h	1682	3357	1494	1682	3357	1473	3264	2479	804	1682	3357	1470
Grp Volume(v), veh/h	188	553	87	170	899	58	213	208	206	118	260	55
Grp Sat Flow(s),veh/h/ln	1682	1678	1494	1682	1678	1473	1632	1678	1606	1682	1678	1470
Q Serve(g_s), s	15.6	20.4	6.9	13.9	26.2	2.9	9.0	16.7	17.3	9.7	9.9	4.6
Cycle Q Clear(g_c), s	15.6	20.4	6.9	13.9	26.2	2.9	9.0	16.7	17.3	9.7	9.9	4.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.50	1.00		1.00
Lane Grp Cap(c), veh/h	212	1678	747	192	1639	719	257	263	251	139	539	236
V/C Ratio(X)	0.89	0.33	0.12	0.88	0.55	0.08	0.83	0.79	0.82	0.85	0.48	0.23
Avail Cap(c_a), veh/h	244	1678	747	237	1639	719	275	468	447	190	1031	451
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	66.1	37.7	32.1	61.1	25.0	19.1	63.6	56.9	57.1	63.3	53.5	51.2
Incr Delay (d2), s/veh	25.6	0.5	0.3	22.9	1.2	0.2	16.3	5.2	6.2	17.3	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(95%),veh/ln	8.3	14.2	4.8	11.3	15.7	1.9	7.7	11.9	11.9	8.4	7.6	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	91.7	38.2	32.4	84.0	26.2	19.3	79.9	62.0	63.3	80.7	54.1	51.7
LnGrp LOS	F	D	C	F	C	B	E	E	E	F	D	D
Approach Vol, veh/h		828			1127			627			433	
Approach Delay, s/veh		49.8			34.6			68.5			61.0	
Approach LOS		D			C			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.7	75.8	15.2	28.3	22.3	74.2	15.8	27.7
Change Period (Y+Rc), s	4.7	5.8	4.2	5.8	4.7	5.8	4.2	5.8
Max Green Setting (Gmax), s	19.7	45.0	11.8	43.0	20.3	44.4	15.8	39.0
Max Q Clear Time (g_c+I1), s	15.9	22.4	11.0	11.9	17.6	28.2	11.7	19.3
Green Ext Time (p_c), s	0.1	5.4	0.0	1.8	0.1	7.5	0.0	2.2

Intersection Summary	
HCM 7th Control Delay, s/veh	49.6
HCM 7th LOS	D

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	595	80	164	999	57	117
Future Volume (veh/h)	595	80	164	999	57	117
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)		0.98	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	1752	1752	1752	1752	1752	1752
Adj Flow Rate, veh/h	700	62	193	1175	67	12
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	10	10	10	10	10	10
Cap, veh/h	901	392	969	2969	112	51
Arrive On Green	0.09	0.09	0.58	0.89	0.03	0.03
Sat Flow, veh/h	3416	1450	1668	3416	3237	1485
Grp Volume(v), veh/h	700	62	193	1175	67	12
Grp Sat Flow(s),veh/h/ln	1664	1450	1668	1664	1618	1485
Q Serve(g_s), s	28.8	5.5	7.7	8.3	2.9	1.1
Cycle Q Clear(g_c), s	28.8	5.5	7.7	8.3	2.9	1.1
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	901	392	969	2969	112	51
V/C Ratio(X)	0.78	0.16	0.20	0.40	0.60	0.23
Avail Cap(c_a), veh/h	1277	556	969	2969	694	318
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.6	49.0	13.9	1.3	66.6	65.8
Incr Delay (d2), s/veh	5.9	0.8	0.1	0.1	5.1	2.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	19.4	3.9	5.2	1.9	2.2	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	65.5	49.8	14.0	1.4	71.7	68.1
LnGrp LOS	E	D	B	A	E	E
Approach Vol, veh/h	762			1368	79	
Approach Delay, s/veh	64.3			3.2	71.2	
Approach LOS	E			A	E	

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	37.0	43.6			130.6	9.4
Change Period (Y+Rc), s	5.7	* 5.7			5.7	4.6
Max Green Setting (Gmax), s	42.3	* 54			99.7	30.0
Max Q Clear Time (g_c+I1), s	19.3	30.8			10.3	4.9
Green Ext Time (p_c), s	0.6	7.1			19.1	0.2

Intersection Summary	
HCM 7th Control Delay, s/veh	26.7
HCM 7th LOS	C

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	20.2
Intersection LOS	C

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	59	33	279	258	9
Future Vol, veh/h	17	59	33	279	258	9
Peak Hour Factor	0.55	0.55	0.55	0.55	0.55	0.55
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	31	107	60	507	469	16
Number of Lanes	1	0	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay, s/veh	10.8	24.2	18.2
HCM LOS	B	C	C

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	11%	22%	0%
Vol Thru, %	89%	0%	97%
Vol Right, %	0%	78%	3%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	312	76	267
LT Vol	33	17	0
Through Vol	279	0	258
RT Vol	0	59	9
Lane Flow Rate	567	138	485
Geometry Grp	1	1	1
Degree of Util (X)	0.791	0.228	0.681
Departure Headway (Hd)	5.021	5.944	5.049
Convergence, Y/N	Yes	Yes	Yes
Cap	726	602	714
Service Time	3.021	3.993	3.082
HCM Lane V/C Ratio	0.781	0.229	0.679
HCM Control Delay, s/veh	24.2	10.8	18.2
HCM Lane LOS	C	B	C
HCM 95th-tile Q	8	0.9	5.4

Intersection	
Intersection Delay, s/veh	14.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	78	10	43	5	13	25	131	108	3	13	79	105
Future Vol, veh/h	78	10	43	5	13	25	131	108	3	13	79	105
Peak Hour Factor	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	153	20	84	10	25	49	257	212	6	25	155	206
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	14.3	10.8	14.2	16.6
HCM LOS	B	B	B	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	60%	12%	7%
Vol Thru, %	0%	97%	8%	30%	40%
Vol Right, %	0%	3%	33%	58%	53%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	131	111	131	43	197
LT Vol	131	0	78	5	13
Through Vol	0	108	10	13	79
RT Vol	0	3	43	25	105
Lane Flow Rate	257	218	257	84	386
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.477	0.372	0.445	0.154	0.596
Departure Headway (Hd)	6.683	6.155	6.237	6.59	5.553
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	537	581	573	547	645
Service Time	4.467	3.939	4.325	4.59	3.634
HCM Lane V/C Ratio	0.479	0.375	0.449	0.154	0.598
HCM Control Delay, s/veh	15.5	12.6	14.3	10.8	16.6
HCM Lane LOS	C	B	B	B	C
HCM 95th-tile Q	2.5	1.7	2.3	0.5	3.9

MOVEMENT SUMMARY

Site: 1 [SR 165 Scripps Roundabout Existing Plus Project AM (Site Folder: Mercey Springs Rd (SR 165)/Scripps Dr)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

SR 165/Scripps Dr
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: SR 165															
3	L2	All MCs	19	6.0	19	6.0	0.469	11.8	LOS B	2.7	71.9	0.42	0.52	0.42	31.7
8	T1	All MCs	412	6.0	412	6.0	0.469	6.1	LOS A	2.7	71.9	0.42	0.52	0.42	37.1
18	R2	All MCs	96	6.0	96	6.0	0.469	5.9	LOS A	2.7	71.9	0.42	0.52	0.42	29.2
Approach			528	6.0	528	6.0	0.469	6.3	LOS A	2.7	71.9	0.42	0.52	0.42	35.2
East: Scripps Dr															
1	L2	All MCs	151	6.0	151	6.0	0.345	7.9	LOS A	1.8	46.3	0.58	0.61	0.58	27.7
6	T1	All MCs	10	6.0	10	6.0	0.345	2.9	LOS A	1.8	46.3	0.58	0.61	0.58	25.3
16	R2	All MCs	154	6.0	154	6.0	0.345	3.8	LOS A	1.8	46.3	0.58	0.61	0.58	28.0
Approach			314	6.0	314	6.0	0.345	5.8	LOS A	1.8	46.3	0.58	0.61	0.58	27.7
North: SR 165															
7	L2	All MCs	84	6.0	84	6.0	0.502	11.7	LOS B	3.0	78.6	0.44	0.54	0.44	28.8
4	T1	All MCs	423	6.0	423	6.0	0.502	6.0	LOS A	3.0	78.6	0.44	0.54	0.44	36.8
14	R2	All MCs	54	6.0	54	6.0	0.502	5.9	LOS A	3.0	78.6	0.44	0.54	0.44	31.8
Approach			561	6.0	561	6.0	0.502	6.9	LOS A	3.0	78.6	0.44	0.54	0.44	34.8
West: Page Ave															
5	L2	All MCs	75	6.0	75	6.0	0.148	10.5	LOS B	0.7	19.4	0.62	0.68	0.62	29.4
2	T1	All MCs	16	6.0	16	6.0	0.148	5.2	LOS A	0.7	19.4	0.62	0.68	0.62	24.8
12	R2	All MCs	25	6.0	25	6.0	0.148	5.7	LOS A	0.7	19.4	0.62	0.68	0.62	29.8
Approach			116	6.0	116	6.0	0.148	8.7	LOS A	0.7	19.4	0.62	0.68	0.62	28.8
All Vehicles			1519	6.0	1519	6.0	0.502	6.6	LOS A	3.0	78.6	0.47	0.56	0.47	32.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Intersection	
Int Delay, s/veh	7.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	132	235	279	121	55	117
Future Vol, veh/h	132	235	279	121	55	117
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	220	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	69	69	69	69	69	69
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	191	341	404	175	80	170

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	580	0	-	0	1128	404
Stage 1	-	-	-	-	404	-
Stage 2	-	-	-	-	723	-
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	994	-	-	-	226	646
Stage 1	-	-	-	-	674	-
Stage 2	-	-	-	-	480	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	994	-	-	-	183	646
Mov Cap-2 Maneuver	-	-	-	-	183	-
Stage 1	-	-	-	-	544	-
Stage 2	-	-	-	-	480	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	3.41	0	35.47
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	994	-	-	-	357
HCM Lane V/C Ratio	0.192	-	-	-	0.699
HCM Ctrl Dly (s/v)	9.5	-	-	-	35.5
HCM Lane LOS	A	-	-	-	E
HCM 95th %tile Q(veh)	0.7	-	-	-	5.1

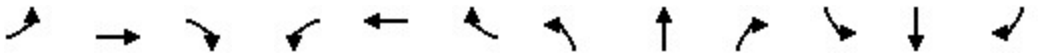
Intersection	
Int Delay, s/veh	11.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	244	38	53	128	130	341
Future Vol, veh/h	244	38	53	128	130	341
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	8	8	8	8	8	8
Mvmt Flow	287	45	62	151	153	401

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	629	354	554	0	-	0
Stage 1	354	-	-	-	-	-
Stage 2	275	-	-	-	-	-
Critical Hdwy	6.48	6.28	4.18	-	-	-
Critical Hdwy Stg 1	5.48	-	-	-	-	-
Critical Hdwy Stg 2	5.48	-	-	-	-	-
Follow-up Hdwy	3.572	3.372	2.272	-	-	-
Pot Cap-1 Maneuver	437	677	987	-	-	-
Stage 1	698	-	-	-	-	-
Stage 2	757	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	407	677	987	-	-	-
Mov Cap-2 Maneuver	407	-	-	-	-	-
Stage 1	650	-	-	-	-	-
Stage 2	757	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	36.51	2.6	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	527	-	430	-	-
HCM Lane V/C Ratio	0.063	-	0.772	-	-
HCM Ctrl Dly (s/v)	8.9	0	36.5	-	-
HCM Lane LOS	A	A	E	-	-
HCM 95th %tile Q(veh)	0.2	-	6.6	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	187	96	140	212	133	55	413	61	98	488	110
Future Volume (veh/h)	101	187	96	140	212	133	55	413	61	98	488	110
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		0.99	1.00		1.00	1.00		1.00	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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	117	217	97	163	247	0	64	480	68	114	567	123
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	148	259	116	198	449		84	603	85	145	609	132
Arrive On Green	0.08	0.21	0.21	0.11	0.24	0.00	0.05	0.38	0.38	0.08	0.41	0.41
Sat Flow, veh/h	1781	1220	546	1781	1870	1585	1781	1602	227	1781	1482	322
Grp Volume(v), veh/h	117	0	314	163	247	0	64	0	548	114	0	690
Grp Sat Flow(s),veh/h/ln	1781	0	1766	1781	1870	1585	1781	0	1829	1781	0	1804
Q Serve(g_s), s	6.0	0.0	15.8	8.3	10.7	0.0	3.3	0.0	24.8	5.8	0.0	33.9
Cycle Q Clear(g_c), s	6.0	0.0	15.8	8.3	10.7	0.0	3.3	0.0	24.8	5.8	0.0	33.9
Prop In Lane	1.00		0.31	1.00		1.00	1.00		0.12	1.00		0.18
Lane Grp Cap(c), veh/h	148	0	375	198	449		84	0	689	145	0	741
V/C Ratio(X)	0.79	0.00	0.84	0.82	0.55		0.76	0.00	0.80	0.79	0.00	0.93
Avail Cap(c_a), veh/h	288	0	571	288	806		422	0	788	288	0	777
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	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.7	0.0	35.0	40.3	30.9	0.0	43.7	0.0	25.8	41.8	0.0	26.1
Incr Delay (d2), s/veh	9.0	0.0	6.9	11.8	1.1	0.0	13.4	0.0	5.7	9.1	0.0	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(95%),veh/ln	5.4	0.0	11.9	7.7	8.6	0.0	3.1	0.0	16.7	5.2	0.0	23.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	50.7	0.0	41.9	52.1	32.0	0.0	57.1	0.0	31.5	50.9	0.0	43.9
LnGrp LOS	D		D	D	C		E		C	D		D
Approach Vol, veh/h		431			410			612			804	
Approach Delay, s/veh		44.3			40.0			34.2			44.9	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.2	40.7	15.0	24.8	9.1	43.9	12.4	27.4
Change Period (Y+Rc), s	4.7	5.8	4.7	5.1	4.7	5.8	4.7	5.1
Max Green Setting (Gmax), s	15.0	40.0	15.0	30.0	22.0	40.0	15.0	40.0
Max Q Clear Time (g_c+I1), s	7.8	26.8	10.3	17.8	5.3	35.9	8.0	12.7
Green Ext Time (p_c), s	0.1	4.2	0.2	1.6	0.1	2.3	0.1	1.6

Intersection Summary	
HCM 7th Control Delay, s/veh	41.0
HCM 7th LOS	D

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

MOVEMENT SUMMARY

Site: 1 [SR 165 Madison Roundabout Existing Plus Project AM (Site Folder: Mercey Springs Rd (SR 165)/Madison Ave)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

SR 165/Madison Ave
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: SR 165															
3	L2	All MCs	3	8.0	3	8.0	0.473	8.8	LOS A	3.1	82.4	0.23	0.34	0.23	27.5
8	T1	All MCs	575	8.0	575	8.0	0.473	3.3	LOS A	3.1	82.4	0.23	0.34	0.23	32.4
Approach			578	8.0	578	8.0	0.473	3.4	LOS A	3.1	82.4	0.23	0.34	0.23	32.4
North: SR 165															
4	T1	All MCs	495	8.0	495	8.0	0.400	5.0	LOS A	2.0	53.0	0.04	0.43	0.04	38.3
14	R2	All MCs	14	8.0	14	8.0	0.400	4.9	LOS A	2.0	53.0	0.04	0.43	0.04	30.2
Approach			509	8.0	509	8.0	0.400	5.0	LOS A	2.0	53.0	0.04	0.43	0.04	38.0
West: Madison Ave															
5	L2	All MCs	46	8.0	46	8.0	0.064	7.7	LOS A	0.3	6.8	0.47	0.60	0.47	26.0
12	R2	All MCs	12	8.0	12	8.0	0.064	3.5	LOS A	0.3	6.8	0.47	0.60	0.47	27.4
Approach			58	8.0	58	8.0	0.064	6.8	LOS A	0.3	6.8	0.47	0.60	0.47	26.3
All Vehicles			1145	8.0	1145	8.0	0.473	4.3	LOS A	3.1	82.4	0.16	0.39	0.16	34.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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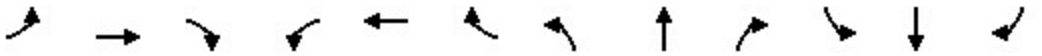


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	1015	27	11	786	34	26	41	10	82	42	68
Future Volume (veh/h)	75	1015	27	11	786	34	26	41	10	82	42	68
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.99
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	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781
Adj Flow Rate, veh/h	79	1068	27	12	827	35	27	43	0	86	44	9
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	8	8	8	8	8	8	8	8	8	8	8	8
Cap, veh/h	98	2263	57	23	2074	88	48	77	108	115	59	150
Arrive On Green	0.06	0.67	0.67	0.03	1.00	1.00	0.07	0.07	0.00	0.10	0.10	0.10
Sat Flow, veh/h	1697	3371	85	1697	3308	140	674	1074	1510	1141	584	1492
Grp Volume(v), veh/h	79	536	559	12	423	439	70	0	0	130	0	9
Grp Sat Flow(s),veh/h/ln	1697	1692	1764	1697	1692	1756	1748	0	1510	1724	0	1492
Q Serve(g_s), s	6.4	21.3	21.3	1.0	0.0	0.0	5.4	0.0	0.0	10.3	0.0	0.8
Cycle Q Clear(g_c), s	6.4	21.3	21.3	1.0	0.0	0.0	5.4	0.0	0.0	10.3	0.0	0.8
Prop In Lane	1.00		0.05	1.00		0.08	0.39		1.00	0.66		1.00
Lane Grp Cap(c), veh/h	98	1136	1184	23	1061	1101	125	0	108	174	0	150
V/C Ratio(X)	0.81	0.47	0.47	0.53	0.40	0.40	0.56	0.00	0.00	0.75	0.00	0.06
Avail Cap(c_a), veh/h	133	1136	1184	133	1061	1101	437	0	377	394	0	341
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	65.2	11.1	11.1	67.7	0.0	0.0	62.8	0.0	0.0	61.2	0.0	56.9
Incr Delay (d2), s/veh	22.1	1.4	1.4	17.1	1.1	1.0	3.9	0.0	0.0	6.3	0.0	0.2
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(95%),veh/ln	6.1	12.7	13.1	0.9	0.6	0.6	4.6	0.0	0.0	8.5	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	87.3	12.5	12.4	84.8	1.1	1.0	66.7	0.0	0.0	67.5	0.0	57.1
LnGrp LOS	F	B	B	F	A	A	E			E		E
Approach Vol, veh/h		1174			874			70			139	
Approach Delay, s/veh		17.5			2.2			66.7			66.8	
Approach LOS		B			A			E			E	

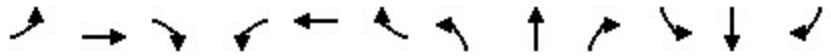
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.5	99.4		19.1	12.7	93.2		15.0				
Change Period (Y+Rc), s	4.6	5.4		5.0	4.6	5.4		5.0				
Max Green Setting (Gmax), s	11.0	42.0		32.0	11.0	42.0		35.0				
Max Q Clear Time (g_c+I1), s	3.0	23.3		12.3	8.4	2.0		7.4				
Green Ext Time (p_c), s	0.0	13.3		0.7	0.0	16.7		0.3				

Intersection Summary			
HCM 7th Control Delay, s/veh		16.1	
HCM 7th LOS		B	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	1054	24	30	749	26	13	82	24	40	81	49
Future Volume (veh/h)	89	1054	24	30	749	26	13	82	24	40	81	49
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		1.00	1.00		1.00	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	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796
Adj Flow Rate, veh/h	92	1087	24	31	772	26	13	85	17	41	84	6
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	7	7	7	7	7	7	7	7	7	7	7	7
Cap, veh/h	119	2548	56	43	2365	80	34	120	22	75	123	188
Arrive On Green	0.14	1.00	1.00	0.05	1.00	1.00	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	1711	3414	75	1711	3369	113	45	972	176	330	993	1519
Grp Volume(v), veh/h	92	543	568	31	391	407	115	0	0	125	0	6
Grp Sat Flow(s),veh/h/ln	1711	1706	1783	1711	1706	1776	1193	0	0	1323	0	1519
Q Serve(g_s), s	7.3	0.0	0.0	2.5	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.5
Cycle Q Clear(g_c), s	7.3	0.0	0.0	2.5	0.0	0.0	14.4	0.0	0.0	13.2	0.0	0.5
Prop In Lane	1.00		0.04	1.00		0.06	0.11		0.15	0.33		1.00
Lane Grp Cap(c), veh/h	119	1274	1330	43	1198	1246	176	0	0	198	0	188
V/C Ratio(X)	0.77	0.43	0.43	0.72	0.33	0.33	0.65	0.00	0.00	0.63	0.00	0.03
Avail Cap(c_a), veh/h	147	1274	1330	147	1198	1246	363	0	0	373	0	358
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.85	0.85	0.85	0.94	0.94	0.94	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	59.2	0.0	0.0	66.0	0.0	0.0	58.1	0.0	0.0	59.0	0.0	54.0
Incr Delay (d2), s/veh	21.8	0.9	0.9	19.4	0.7	0.7	4.0	0.0	0.0	3.3	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(95%),veh/ln	6.6	0.6	0.6	2.3	0.4	0.4	7.6	0.0	0.0	8.0	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	81.1	0.9	0.9	85.4	0.7	0.7	62.1	0.0	0.0	62.3	0.0	54.0
LnGrp LOS	F	A	A	F	A	A	E			E		D
Approach Vol, veh/h		1203			829			115			131	
Approach Delay, s/veh		7.0			3.8			62.1			61.9	
Approach LOS		A			A			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.1	110.0		21.9	14.3	103.8		21.9				
Change Period (Y+Rc), s	4.6	5.5		4.6	4.6	5.5		4.6				
Max Green Setting (Gmax), s	12.6	80.3		33.0	12.0	80.3		33.0				
Max Q Clear Time (g_c+I1), s	4.5	2.0		15.2	9.3	2.0		16.4				
Green Ext Time (p_c), s	0.0	31.6		0.6	0.1	18.2		0.5				

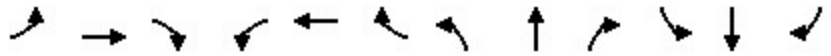
Intersection Summary	
HCM 7th Control Delay, s/veh	11.8
HCM 7th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	994	31	101	832	1	51	6	95	25	8	20
Future Volume (veh/h)	7	994	31	101	832	1	51	6	95	25	8	20
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		1.00	1.00		1.00	1.00		0.99	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	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781
Adj Flow Rate, veh/h	7	1025	31	104	858	1	53	6	55	26	8	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	8	8	8	8	8	8	8	8	8	8	8	8
Cap, veh/h	14	2116	64	121	2407	3	62	7	65	61	19	69
Arrive On Green	0.01	0.63	0.63	0.14	1.00	1.00	0.08	0.08	0.08	0.05	0.05	0.05
Sat Flow, veh/h	1697	3354	101	1697	3469	4	740	84	768	1312	404	1483
Grp Volume(v), veh/h	7	517	539	104	419	440	114	0	0	34	0	2
Grp Sat Flow(s),veh/h/ln	1697	1692	1763	1697	1692	1781	1593	0	0	1716	0	1483
Q Serve(g_s), s	0.6	22.7	22.7	8.4	0.0	0.0	9.9	0.0	0.0	2.7	0.0	0.2
Cycle Q Clear(g_c), s	0.6	22.7	22.7	8.4	0.0	0.0	9.9	0.0	0.0	2.7	0.0	0.2
Prop In Lane	1.00		0.06	1.00		0.00	0.46		0.48	0.76		1.00
Lane Grp Cap(c), veh/h	14	1068	1112	121	1174	1236	134	0	0	79	0	69
V/C Ratio(X)	0.48	0.48	0.48	0.86	0.36	0.36	0.85	0.00	0.00	0.43	0.00	0.03
Avail Cap(c_a), veh/h	121	1068	1112	121	1174	1236	148	0	0	380	0	328
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.90	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	69.1	13.7	13.7	59.3	0.0	0.0	63.2	0.0	0.0	65.0	0.0	63.8
Incr Delay (d2), s/veh	20.9	1.4	1.4	42.1	0.8	0.8	32.7	0.0	0.0	3.3	0.0	0.2
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(95%),veh/ln	0.6	13.4	13.9	8.4	0.5	0.5	9.0	0.0	0.0	2.3	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	90.0	15.1	15.1	101.4	0.8	0.8	96.0	0.0	0.0	68.3	0.0	63.9
LnGrp LOS	F	B	B	F	A	A	F			E		E
Approach Vol, veh/h		1063			963			114			36	
Approach Delay, s/veh		15.6			11.7			96.0			68.0	
Approach LOS		B			B			F			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.7	94.7		12.1	6.9	103.5		17.5				
Change Period (Y+Rc), s	5.7	6.4		5.6	5.7	6.4		5.7				
Max Green Setting (Gmax), s	10.0	62.6		31.0	10.0	62.6		13.0				
Max Q Clear Time (g_c+I1), s	10.4	24.7		4.7	2.6	2.0		11.9				
Green Ext Time (p_c), s	0.0	9.0		0.1	0.0	7.0		0.1				

Intersection Summary		
HCM 7th Control Delay, s/veh	19.0	
HCM 7th LOS	B	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	1164	0	0	988	106	0	0	0	172	0	18
Future Volume (veh/h)	11	1164	0	0	988	106	0	0	0	172	0	18
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		1.00	1.00		1.00	1.00		1.00	0.99		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	1796	1796	0	0	1796	1796	1796	1796	1796	1796	1796	1796
Adj Flow Rate, veh/h	12	1238	0	0	1051	110	0	0	0	183	0	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	7	7	0	0	7	7	7	7	7	7	7	7
Cap, veh/h	23	2741	0	0	2359	247	0	1	0	211	0	0
Arrive On Green	0.03	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.12	0.00	0.00
Sat Flow, veh/h	1711	3503	0	0	3207	326	0	1796	0	1698	0	0
Grp Volume(v), veh/h	12	1238	0	0	575	586	0	0	0	183	0	0
Grp Sat Flow(s),veh/h/ln	1711	1706	0	0	1706	1737	0	1796	0	1698	0	0
Q Serve(g_s), s	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.8	0.0	0.0
Cycle Q Clear(g_c), s	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.8	0.0	0.0
Prop In Lane	1.00		0.00	0.00		0.19	0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	23	2741	0	0	1292	1315	0	1	0	211	0	0
V/C Ratio(X)	0.53	0.45	0.00	0.00	0.45	0.45	0.00	0.00	0.00	0.87	0.00	0.00
Avail Cap(c_a), veh/h	134	2741	0	0	1292	1315	0	526	0	315	0	0
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.84	0.84	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	67.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	60.2	0.0	0.0
Incr Delay (d2), s/veh	17.5	0.5	0.0	0.0	0.9	0.9	0.0	0.0	0.0	15.0	0.0	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(95%),veh/ln	1.0	0.4	0.0	0.0	0.6	0.6	0.0	0.0	0.0	11.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	85.2	0.5	0.0	0.0	0.9	0.9	0.0	0.0	0.0	75.2	0.0	0.0
LnGrp LOS	F	A			A	A				E		
Approach Vol, veh/h		1250			1161			0			183	
Approach Delay, s/veh		1.4			0.9			0.0			75.2	
Approach LOS		A			A						E	

Timer - Assigned Phs	2	4	5	6	8
Phs Duration (G+Y+Rc), s	117.5	22.5	6.5	111.1	0.0
Change Period (Y+Rc), s	5.1	5.1	4.6	5.1	5.6
Max Green Setting (Gmax), s	57.2	26.0	11.0	41.6	41.0
Max Q Clear Time (g_c+I1), s	2.0	16.8	3.0	2.0	0.0
Green Ext Time (p_c), s	12.1	0.6	0.0	12.1	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	6.4
HCM 7th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	172	808	205	177	636	132	174	352	185	144	323	220
Future Volume (veh/h)	172	808	205	177	636	132	174	352	185	144	323	220
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		0.99	1.00		0.99	1.00		1.00	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	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796
Adj Flow Rate, veh/h	185	869	147	190	684	58	187	378	145	155	347	57
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	7	7	7	7	7	7	7	7	7	7	7	7
Cap, veh/h	208	1490	655	212	1497	658	232	459	173	177	762	334
Arrive On Green	0.08	0.29	0.29	0.12	0.44	0.44	0.07	0.19	0.19	0.10	0.22	0.22
Sat Flow, veh/h	1711	3413	1500	1711	3413	1501	3319	2420	915	1711	3413	1498
Grp Volume(v), veh/h	185	869	147	190	684	58	187	265	258	155	347	57
Grp Sat Flow(s),veh/h/ln	1711	1706	1500	1711	1706	1501	1659	1706	1628	1711	1706	1498
Q Serve(g_s), s	15.0	30.4	10.4	15.3	19.7	3.2	7.8	20.9	21.4	12.5	12.3	4.3
Cycle Q Clear(g_c), s	15.0	30.4	10.4	15.3	19.7	3.2	7.8	20.9	21.4	12.5	12.3	4.3
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	208	1490	655	212	1497	658	232	324	309	177	762	334
V/C Ratio(X)	0.89	0.58	0.22	0.90	0.46	0.09	0.80	0.82	0.84	0.87	0.46	0.17
Avail Cap(c_a), veh/h	236	1490	655	224	1497	658	273	475	454	218	1104	485
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.87	0.87	0.87	0.96	0.96	0.96	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.3	38.7	31.6	60.4	27.6	23.0	64.2	54.4	54.6	61.9	47.0	43.9
Incr Delay (d2), s/veh	24.9	1.5	0.7	31.2	1.0	0.3	11.9	6.9	8.4	23.5	0.4	0.2
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(95%),veh/ln	12.5	19.3	7.2	13.1	12.8	2.1	6.6	14.6	14.5	10.8	9.0	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	88.3	40.1	32.3	91.6	28.6	23.2	76.0	61.3	63.0	85.4	47.4	44.1
LnGrp LOS	F	D	C	F	C	C	E	E	E	F	D	D
Approach Vol, veh/h		1201			932			710			559	
Approach Delay, s/veh		46.6			41.1			65.8			57.6	
Approach LOS		D			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.0	66.9	14.0	37.0	21.8	67.2	18.7	32.3
Change Period (Y+Rc), s	4.7	5.8	4.2	5.8	4.7	5.8	4.2	5.8
Max Green Setting (Gmax), s	18.3	44.4	11.5	45.3	19.3	43.4	17.8	39.0
Max Q Clear Time (g_c+I1), s	17.3	32.4	9.8	14.3	17.0	21.7	14.5	23.4
Green Ext Time (p_c), s	0.0	6.3	0.0	2.4	0.1	6.5	0.0	2.7

Intersection Summary	
HCM 7th Control Delay, s/veh	50.9
HCM 7th LOS	D

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1008	132	85	759	115	117
Future Volume (veh/h)	1008	132	85	759	115	117
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)		0.98	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	1781	1781	1781	1781	1781	1781
Adj Flow Rate, veh/h	1072	99	90	807	122	12
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	8	8	8	8	8	8
Cap, veh/h	2637	1152	111	2955	175	80
Arrive On Green	1.00	1.00	0.07	0.87	0.05	0.05
Sat Flow, veh/h	3474	1478	1697	3474	3291	1510
Grp Volume(v), veh/h	1072	99	90	807	122	12
Grp Sat Flow(s),veh/h/ln	1692	1478	1697	1692	1646	1510
Q Serve(g_s), s	0.0	0.0	7.3	5.6	5.1	1.1
Cycle Q Clear(g_c), s	0.0	0.0	7.3	5.6	5.1	1.1
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2637	1152	111	2955	175	80
V/C Ratio(X)	0.41	0.09	0.81	0.27	0.70	0.15
Avail Cap(c_a), veh/h	2637	1152	206	2955	785	360
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.70	0.70	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	64.6	1.5	65.2	63.2
Incr Delay (d2), s/veh	0.3	0.1	13.1	0.1	4.9	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.2	0.1	6.4	1.8	4.0	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	0.3	0.1	77.7	1.6	70.0	64.1
LnGrp LOS	A	A	E	A	E	E
Approach Vol, veh/h	1171			897	134	
Approach Delay, s/veh	0.3			9.2	69.5	
Approach LOS	A			A	E	

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	13.1	114.8			127.9	12.1
Change Period (Y+Rc), s	4.0	5.7			5.7	4.6
Max Green Setting (Gmax), s	7.0	75.3			96.3	33.4
Max Q Clear Time (g_c+I1), s	9.3	2.0			7.6	7.1
Green Ext Time (p_c), s	0.1	17.1			10.3	0.4

Intersection Summary	
HCM 7th Control Delay, s/veh	8.1
HCM 7th LOS	A

Intersection	
Intersection Delay, s/veh	8.4
Intersection LOS	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	23	21	111	112	13
Future Vol, veh/h	13	23	21	111	112	13
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	20	35	32	168	170	20
Number of Lanes	1	0	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay, s/veh	7.8	8.6	8.3
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	16%	36%	0%
Vol Thru, %	84%	0%	90%
Vol Right, %	0%	64%	10%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	132	36	125
LT Vol	21	13	0
Through Vol	111	0	112
RT Vol	0	23	13
Lane Flow Rate	200	55	189
Geometry Grp	1	1	1
Degree of Util (X)	0.233	0.067	0.216
Departure Headway (Hd)	4.187	4.446	4.101
Convergence, Y/N	Yes	Yes	Yes
Cap	846	811	862
Service Time	2.267	2.446	2.187
HCM Lane V/C Ratio	0.236	0.068	0.219
HCM Control Delay, s/veh	8.6	7.8	8.3
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.9	0.2	0.8

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	27	18	5	20	25	29	45	9	36	52	26
Future Vol, veh/h	30	27	18	5	20	25	29	45	9	36	52	26
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	34	31	20	6	23	28	33	51	10	41	59	30
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	8	7.6	8.1	8.2
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	40%	10%	32%
Vol Thru, %	0%	83%	36%	40%	46%
Vol Right, %	0%	17%	24%	50%	23%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	29	54	75	50	114
LT Vol	29	0	30	5	36
Through Vol	0	45	27	20	52
RT Vol	0	9	18	25	26
Lane Flow Rate	33	61	85	57	130
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.05	0.082	0.105	0.067	0.158
Departure Headway (Hd)	5.441	4.822	4.441	4.26	4.377
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	660	745	809	842	821
Service Time	3.159	2.539	2.459	2.279	2.394
HCM Lane V/C Ratio	0.05	0.082	0.105	0.068	0.158
HCM Control Delay, s/veh	8.4	8	8	7.6	8.2
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	0.3	0.4	0.2	0.6

MOVEMENT SUMMARY

Site: 1 [SR 165 Scripps Roundabout Existing Plus Project PM (Site Folder: Mercey Springs Rd (SR 165)/Scripps Dr)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

SR 165/Scripps Dr
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: SR 165															
3	L2	All MCs	50	4.0	50	4.0	0.507	12.5	LOS B	3.0	77.8	0.53	0.60	0.53	31.4
8	T1	All MCs	287	4.0	287	4.0	0.507	6.8	LOS A	3.0	77.8	0.53	0.60	0.53	37.0
18	R2	All MCs	203	4.0	203	4.0	0.507	6.6	LOS A	3.0	77.8	0.53	0.60	0.53	28.9
Approach			540	4.0	540	4.0	0.507	7.2	LOS A	3.0	77.8	0.53	0.60	0.53	33.0
East: Scripps Dr															
1	L2	All MCs	104	4.0	104	4.0	0.258	7.3	LOS A	1.2	32.0	0.51	0.54	0.51	28.1
6	T1	All MCs	24	4.0	24	4.0	0.258	2.3	LOS A	1.2	32.0	0.51	0.54	0.51	25.6
16	R2	All MCs	126	4.0	126	4.0	0.258	3.1	LOS A	1.2	32.0	0.51	0.54	0.51	28.4
Approach			254	4.0	254	4.0	0.258	4.8	LOS A	1.2	32.0	0.51	0.54	0.51	28.0
North: SR 165															
7	L2	All MCs	175	4.0	175	4.0	0.538	11.7	LOS B	3.3	84.9	0.43	0.57	0.43	28.7
4	T1	All MCs	320	4.0	320	4.0	0.538	6.0	LOS A	3.3	84.9	0.43	0.57	0.43	36.8
14	R2	All MCs	133	4.0	133	4.0	0.538	5.8	LOS A	3.3	84.9	0.43	0.57	0.43	31.6
Approach			627	4.0	627	4.0	0.538	7.5	LOS A	3.3	84.9	0.43	0.57	0.43	33.0
West: Page Ave															
5	L2	All MCs	107	4.0	107	4.0	0.196	10.0	LOS A	1.0	25.9	0.60	0.67	0.60	29.9
2	T1	All MCs	17	4.0	17	4.0	0.196	4.7	LOS A	1.0	25.9	0.60	0.67	0.60	24.9
12	R2	All MCs	45	4.0	45	4.0	0.196	5.2	LOS A	1.0	25.9	0.60	0.67	0.60	30.2
Approach			168	4.0	168	4.0	0.196	8.2	LOS A	1.0	25.9	0.60	0.67	0.60	29.3
All Vehicles			1590	4.0	1590	4.0	0.538	7.1	LOS A	3.3	84.9	0.50	0.59	0.50	31.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	49	391	320	52	47	52
Future Vol, veh/h	49	391	320	52	47	52
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	220	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	51	407	333	54	49	54

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	388	0	-	0	843	333
Stage 1	-	-	-	-	333	-
Stage 2	-	-	-	-	509	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1166	-	-	-	333	706
Stage 1	-	-	-	-	724	-
Stage 2	-	-	-	-	601	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1166	-	-	-	318	706
Mov Cap-2 Maneuver	-	-	-	-	318	-
Stage 1	-	-	-	-	692	-
Stage 2	-	-	-	-	601	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.92	0	15.44
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1166	-	-	-	447
HCM Lane V/C Ratio	0.044	-	-	-	0.231
HCM Ctrl Dly (s/v)	8.2	-	-	-	15.4
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.9

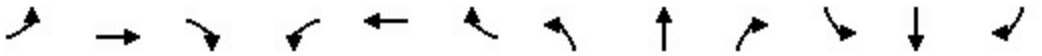
Intersection	
Int Delay, s/veh	11.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	375	24	21	121	81	311
Future Vol, veh/h	375	24	21	121	81	311
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	399	26	22	129	86	331

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	425	252	417	0	-	0
Stage 1	252	-	-	-	-	-
Stage 2	173	-	-	-	-	-
Critical Hdwy	6.46	6.26	4.16	-	-	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	2.254	-	-	-
Pot Cap-1 Maneuver	578	777	1121	-	-	-
Stage 1	781	-	-	-	-	-
Stage 2	847	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	566	777	1121	-	-	-
Mov Cap-2 Maneuver	566	-	-	-	-	-
Stage 1	764	-	-	-	-	-
Stage 2	847	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	26.79	1.22	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	266	-	575	-	-
HCM Lane V/C Ratio	0.02	-	0.738	-	-
HCM Ctrl Dly (s/v)	8.3	0	26.8	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0.1	-	6.3	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	141	206	57	95	124	111	24	522	52	61	473	59
Future Volume (veh/h)	141	206	57	95	124	111	24	522	52	61	473	59
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		0.99	1.00		1.00	1.00		0.99	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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	147	215	51	99	129	0	25	544	52	64	493	58
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	188	286	68	129	306		49	663	63	90	684	81
Arrive On Green	0.11	0.20	0.20	0.07	0.16	0.00	0.03	0.39	0.39	0.05	0.42	0.42
Sat Flow, veh/h	1781	1457	346	1781	1870	1585	1781	1680	161	1781	1637	193
Grp Volume(v), veh/h	147	0	266	99	129	0	25	0	596	64	0	551
Grp Sat Flow(s),veh/h/ln	1781	0	1803	1781	1870	1585	1781	0	1840	1781	0	1830
Q Serve(g_s), s	5.7	0.0	9.9	3.9	4.4	0.0	1.0	0.0	20.6	2.5	0.0	17.8
Cycle Q Clear(g_c), s	5.7	0.0	9.9	3.9	4.4	0.0	1.0	0.0	20.6	2.5	0.0	17.8
Prop In Lane	1.00		0.19	1.00		1.00	1.00		0.09	1.00		0.11
Lane Grp Cap(c), veh/h	188	0	354	129	306		49	0	727	90	0	765
V/C Ratio(X)	0.78	0.00	0.75	0.76	0.42		0.51	0.00	0.82	0.71	0.00	0.72
Avail Cap(c_a), veh/h	376	0	761	376	790		376	0	1036	376	0	1030
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	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.0	0.0	26.9	32.4	26.7	0.0	34.1	0.0	19.2	33.2	0.0	17.2
Incr Delay (d2), s/veh	7.0	0.0	3.4	9.0	1.0	0.0	8.1	0.0	4.7	9.9	0.0	2.3
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(95%),veh/ln	5.0	0.0	7.9	3.5	3.6	0.0	0.9	0.0	13.6	2.3	0.0	11.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	38.0	0.0	30.3	41.4	27.7	0.0	42.2	0.0	24.0	43.2	0.0	19.5
LnGrp LOS	D		C	D	C		D		C	D		B
Approach Vol, veh/h		413			228			621			615	
Approach Delay, s/veh		33.0			33.6			24.7			22.0	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	33.9	9.9	19.1	6.6	35.5	12.2	16.7
Change Period (Y+Rc), s	4.7	5.8	4.7	5.1	4.7	5.8	4.7	5.1
Max Green Setting (Gmax), s	15.0	40.0	15.0	30.0	15.0	40.0	15.0	30.0
Max Q Clear Time (g_c+I1), s	4.5	22.6	5.9	11.9	3.0	19.8	7.7	6.4
Green Ext Time (p_c), s	0.1	5.5	0.1	1.6	0.0	5.3	0.2	0.7

Intersection Summary	
HCM 7th Control Delay, s/veh	26.7
HCM 7th LOS	C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

MOVEMENT SUMMARY

Site: 1 [SR 165 Madison Roundabout Existing Plus Project PM (Site Folder: Mercey Springs Rd (SR 165)/Madison Ave)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

SR 165/Madison Ave
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: SR 165															
3	L2	All MCs	14	8.0	14	8.0	0.419	8.7	LOS A	2.6	69.9	0.16	0.33	0.16	27.6
8	T1	All MCs	505	8.0	505	8.0	0.419	3.2	LOS A	2.6	69.9	0.16	0.33	0.16	32.5
Approach			520	8.0	520	8.0	0.419	3.3	LOS A	2.6	69.9	0.16	0.33	0.16	32.4
North: SR 165															
4	T1	All MCs	620	8.0	620	8.0	0.533	5.1	LOS A	3.2	86.3	0.11	0.43	0.11	38.0
14	R2	All MCs	52	8.0	52	8.0	0.533	4.9	LOS A	3.2	86.3	0.11	0.43	0.11	30.0
Approach			672	8.0	672	8.0	0.533	5.1	LOS A	3.2	86.3	0.11	0.43	0.11	37.2
West: Madison Ave															
5	L2	All MCs	27	8.0	27	8.0	0.043	8.4	LOS A	0.2	4.9	0.54	0.63	0.54	25.8
12	R2	All MCs	8	8.0	8	8.0	0.043	4.3	LOS A	0.2	4.9	0.54	0.63	0.54	27.2
Approach			35	8.0	35	8.0	0.043	7.5	LOS A	0.2	4.9	0.54	0.63	0.54	26.1
All Vehicles			1226	8.0	1226	8.0	0.533	4.4	LOS A	3.2	86.3	0.14	0.39	0.14	34.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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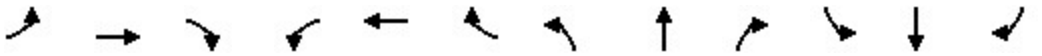


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	1002	29	20	1474	72	60	84	20	104	58	90
Future Volume (veh/h)	220	1002	29	20	1474	72	60	84	20	104	58	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	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	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767
Adj Flow Rate, veh/h	237	1077	30	22	1585	74	65	90	3	112	62	14
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	9	9	9	9	9	9	9	9	9	9	9	9
Cap, veh/h	137	2033	57	35	1792	83	78	108	161	132	73	179
Arrive On Green	0.08	0.61	0.61	0.03	0.73	0.73	0.11	0.11	0.11	0.12	0.12	0.12
Sat Flow, veh/h	1682	3335	93	1682	3266	152	726	1005	1497	1102	610	1497
Grp Volume(v), veh/h	237	542	565	22	811	848	155	0	3	174	0	14
Grp Sat Flow(s),veh/h/ln	1682	1678	1750	1682	1678	1739	1730	0	1497	1712	0	1497
Q Serve(g_s), s	11.4	26.1	26.1	1.8	51.2	52.4	12.3	0.0	0.3	13.9	0.0	1.2
Cycle Q Clear(g_c), s	11.4	26.1	26.1	1.8	51.2	52.4	12.3	0.0	0.3	13.9	0.0	1.2
Prop In Lane	1.00		0.05	1.00		0.09	0.42		1.00	0.64		1.00
Lane Grp Cap(c), veh/h	137	1023	1067	35	921	954	186	0	161	205	0	179
V/C Ratio(X)	1.73	0.53	0.53	0.64	0.88	0.89	0.83	0.00	0.02	0.85	0.00	0.08
Avail Cap(c_a), veh/h	137	1023	1067	61	921	954	396	0	342	355	0	310
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.69	0.69	0.69	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	64.3	15.8	15.8	67.6	15.5	15.6	61.3	0.0	55.9	60.4	0.0	54.8
Incr Delay (d2), s/veh	357.1	2.0	1.9	12.6	8.6	8.8	9.4	0.0	0.0	9.5	0.0	0.2
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(95%),veh/ln	29.7	15.5	16.0	1.6	22.2	23.4	9.9	0.0	0.2	10.9	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	421.4	17.7	17.6	80.2	24.1	24.4	70.6	0.0	55.9	69.9	0.0	55.0
LnGrp LOS	F	B	B	F	C	C	E		E	E		D
Approach Vol, veh/h		1344			1681			158			188	
Approach Delay, s/veh		88.9			25.0			70.3			68.8	
Approach LOS		F			C			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.5	90.8		21.7	16.0	82.2		20.0				
Change Period (Y+Rc), s	4.6	5.4		5.0	4.6	5.4		5.0				
Max Green Setting (Gmax), s	5.1	53.9		29.0	11.4	47.6		32.0				
Max Q Clear Time (g_c+I1), s	3.8	28.1		15.9	13.4	54.4		14.3				
Green Ext Time (p_c), s	0.0	17.1		0.8	0.0	0.0		0.8				

Intersection Summary		
HCM 7th Control Delay, s/veh		55.0
HCM 7th LOS		E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	1037	49	40	1436	82	40	104	60	44	108	90
Future Volume (veh/h)	50	1037	49	40	1436	82	40	104	60	44	108	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		1.00	1.00		1.00	1.00		0.99	1.00		0.99
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	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767
Adj Flow Rate, veh/h	51	1047	47	40	1451	81	40	105	49	44	109	35
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	9	9	9	9	9	9	9	9	9	9	9	9
Cap, veh/h	104	2180	98	50	2052	114	59	135	55	84	187	295
Arrive On Green	0.12	1.00	1.00	0.03	0.63	0.63	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	1682	3272	147	1682	3233	180	139	679	276	254	942	1488
Grp Volume(v), veh/h	51	537	557	40	751	781	194	0	0	153	0	35
Grp Sat Flow(s),veh/h/ln	1682	1678	1740	1682	1678	1734	1094	0	0	1196	0	1488
Q Serve(g_s), s	4.0	0.0	0.0	3.3	41.4	41.9	9.8	0.0	0.0	0.0	0.0	2.7
Cycle Q Clear(g_c), s	4.0	0.0	0.0	3.3	41.4	41.9	25.4	0.0	0.0	15.6	0.0	2.7
Prop In Lane	1.00		0.08	1.00		0.10	0.21		0.25	0.29		1.00
Lane Grp Cap(c), veh/h	104	1119	1160	50	1066	1101	248	0	0	270	0	295
V/C Ratio(X)	0.49	0.48	0.48	0.79	0.70	0.71	0.78	0.00	0.00	0.57	0.00	0.12
Avail Cap(c_a), veh/h	127	1119	1160	115	1066	1101	288	0	0	310	0	334
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.78	0.78	0.78	0.62	0.62	0.62	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	59.3	0.0	0.0	67.5	16.9	17.0	55.5	0.0	0.0	50.3	0.0	46.1
Incr Delay (d2), s/veh	5.9	1.2	1.1	15.6	2.5	2.4	11.4	0.0	0.0	1.9	0.0	0.2
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(95%),veh/ln	3.3	0.6	0.6	2.9	21.0	21.8	12.1	0.0	0.0	8.8	0.0	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	65.2	1.2	1.1	83.1	19.3	19.4	66.9	0.0	0.0	52.2	0.0	46.2
LnGrp LOS	E	A	A	F	B	B	E			D		D
Approach Vol, veh/h		1145			1572			194			188	
Approach Delay, s/veh		4.0			21.0			66.9			51.1	
Approach LOS		A			C			E			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.8	98.8		32.4	13.2	94.4		32.4				
Change Period (Y+Rc), s	4.6	5.5		4.6	4.6	5.5		4.6				
Max Green Setting (Gmax), s	9.6	84.3		31.4	10.6	83.3		31.4				
Max Q Clear Time (g_c+I1), s	5.3	2.0		17.6	6.0	43.9		27.4				
Green Ext Time (p_c), s	0.0	31.3		0.8	0.1	31.9		0.4				

Intersection Summary		
HCM 7th Control Delay, s/veh	19.4	
HCM 7th LOS	B	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	1008	93	158	1422	0	146	20	146	10	60	40
Future Volume (veh/h)	10	1008	93	158	1422	0	146	20	146	10	60	40
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		1.00	1.00		1.00	1.00		1.00	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	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781
Adj Flow Rate, veh/h	10	1050	92	165	1481	0	152	21	129	10	63	5
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	8	8	8	8	8	8	8	8	8	8	8	8
Cap, veh/h	20	1479	130	184	1920	0	146	20	124	18	114	109
Arrive On Green	0.00	0.16	0.16	0.22	1.00	0.00	0.18	0.18	0.18	0.07	0.07	0.07
Sat Flow, veh/h	1697	3148	276	1697	3474	0	814	112	690	242	1527	1455
Grp Volume(v), veh/h	10	564	578	165	1481	0	302	0	0	73	0	5
Grp Sat Flow(s),veh/h/ln	1697	1692	1731	1697	1692	0	1616	0	0	1769	0	1455
Q Serve(g_s), s	0.8	44.3	44.4	13.2	0.0	0.0	25.1	0.0	0.0	5.6	0.0	0.4
Cycle Q Clear(g_c), s	0.8	44.3	44.4	13.2	0.0	0.0	25.1	0.0	0.0	5.6	0.0	0.4
Prop In Lane	1.00		0.16	1.00		0.00	0.50		0.43	0.14		1.00
Lane Grp Cap(c), veh/h	20	795	814	184	1920	0	290	0	0	133	0	109
V/C Ratio(X)	0.51	0.71	0.71	0.90	0.77	0.00	1.04	0.00	0.00	0.55	0.00	0.05
Avail Cap(c_a), veh/h	61	795	814	185	1920	0	290	0	0	329	0	270
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.87	0.87	0.87	1.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	69.3	50.1	50.1	54.0	0.0	0.0	57.5	0.0	0.0	62.5	0.0	60.1
Incr Delay (d2), s/veh	16.9	4.6	4.6	38.2	3.1	0.0	64.3	0.0	0.0	3.2	0.0	0.2
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(95%),veh/ln	0.8	28.3	28.8	11.3	1.5	0.0	22.3	0.0	0.0	4.7	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	86.2	54.7	54.6	92.2	3.1	0.0	121.7	0.0	0.0	65.7	0.0	60.3
LnGrp LOS	F	D	D	F	A		F			E		E
Approach Vol, veh/h		1152			1646			302			78	
Approach Delay, s/veh		54.9			12.0			121.7			65.3	
Approach LOS		D			B			F			E	

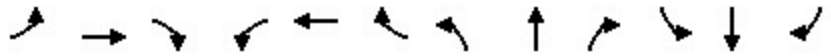
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	30.9	72.2		16.1	7.3	85.8		30.8				
Change Period (Y+Rc), s	5.7	6.4		5.6	5.7	6.4		5.7				
Max Green Setting (Gmax), s	15.3	50.2		26.0	5.0	60.5		25.1				
Max Q Clear Time (g_c+I1), s	15.2	46.4		7.6	2.8	2.0		27.1				
Green Ext Time (p_c), s	0.0	2.5		0.3	0.0	19.2		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	39.3
HCM 7th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	1104	0	0	1683	119	0	0	0	152	0	37
Future Volume (veh/h)	60	1104	0	0	1683	119	0	0	0	152	0	37
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		1.00	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	1781	1781	0	0	1781	1781	1781	1781	1781	1781	1781	1781
Adj Flow Rate, veh/h	62	1138	0	0	1735	121	0	0	0	157	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	8	8	0	0	8	8	8	8	8	8	8	8
Cap, veh/h	65	2923	0	0	2540	175	0	1	0	107	0	0
Arrive On Green	0.08	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.06	0.00	0.00
Sat Flow, veh/h	1697	3474	0	0	3296	221	0	1781	0	1689	0	0
Grp Volume(v), veh/h	62	1138	0	0	906	950	0	0	0	157	0	0
Grp Sat Flow(s),veh/h/ln	1697	1692	0	0	1692	1736	0	1781	0	1689	0	0
Q Serve(g_s), s	5.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.9	0.0	0.0
Cycle Q Clear(g_c), s	5.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.9	0.0	0.0
Prop In Lane	1.00		0.00	0.00		0.13	0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	65	2923	0	0	1341	1375	0	1	0	107	0	0
V/C Ratio(X)	0.95	0.39	0.00	0.00	0.68	0.69	0.00	0.00	0.00	1.46	0.00	0.00
Avail Cap(c_a), veh/h	65	2923	0	0	1341	1375	0	496	0	107	0	0
HCM Platoon Ratio	2.00	2.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.35	0.35	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	64.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	65.6	0.0	0.0
Incr Delay (d2), s/veh	92.6	0.4	0.0	0.0	1.0	1.0	0.0	0.0	0.0	251.9	0.0	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(95%),veh/ln	6.8	0.3	0.0	0.0	0.7	0.7	0.0	0.0	0.0	18.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	157.0	0.4	0.0	0.0	1.0	1.0	0.0	0.0	0.0	317.5	0.0	0.0
LnGrp LOS	F	A			A	A				F		
Approach Vol, veh/h		1200			1856			0			157	
Approach Delay, s/veh		8.5			1.0			0.0			317.5	
Approach LOS		A			A						F	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		126.0		14.0	10.0	116.0		0.0				
Change Period (Y+Rc), s		5.1		5.1	4.6	5.1		4.6				
Max Green Setting (Gmax), s		77.3		8.9	5.4	67.3		39.0				
Max Q Clear Time (g_c+I1), s		2.0		10.9	7.1	2.0		0.0				
Green Ext Time (p_c), s		10.7		0.0	0.0	33.8		0.0				

Intersection Summary												
HCM 7th Control Delay, s/veh			19.3									
HCM 7th LOS			B									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	265	861	130	119	1157	170	141	190	84	230	233	504
Future Volume (veh/h)	265	861	130	119	1157	170	141	190	84	230	233	504
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		1.00	1.00		0.98	1.00		0.99	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	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767
Adj Flow Rate, veh/h	291	946	98	131	1271	90	155	209	49	253	256	516
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	9	9	9	9	9	9	9	9	9	9	9	9
Cap, veh/h	208	1356	603	152	1245	546	200	685	157	178	1000	624
Arrive On Green	0.16	0.54	0.54	0.12	0.49	0.49	0.06	0.25	0.25	0.11	0.30	0.30
Sat Flow, veh/h	1682	3357	1493	1682	3357	1471	3264	2703	619	1682	3357	1474
Grp Volume(v), veh/h	291	946	98	131	1271	90	155	128	130	253	256	516
Grp Sat Flow(s),veh/h/ln	1682	1678	1493	1682	1678	1471	1632	1678	1644	1682	1678	1474
Q Serve(g_s), s	17.3	29.2	4.7	10.7	51.9	4.7	6.6	8.6	9.0	14.8	8.1	41.7
Cycle Q Clear(g_c), s	17.3	29.2	4.7	10.7	51.9	4.7	6.6	8.6	9.0	14.8	8.1	41.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.38	1.00		1.00
Lane Grp Cap(c), veh/h	208	1356	603	152	1245	546	200	425	417	178	1000	624
V/C Ratio(X)	1.40	0.70	0.16	0.86	1.02	0.16	0.77	0.30	0.31	1.42	0.26	0.83
Avail Cap(c_a), veh/h	208	1356	603	179	1245	546	282	468	458	178	1000	624
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	0.74	0.74	0.74	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.5	26.1	20.4	60.7	35.5	23.5	64.8	42.2	42.4	62.6	37.4	36.1
Incr Delay (d2), s/veh	204.2	2.7	0.5	21.5	27.4	0.5	5.0	0.4	0.4	219.6	0.1	9.0
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(95%),veh/ln	29.1	16.2	3.0	8.6	31.2	3.1	5.1	6.5	6.7	27.1	6.1	23.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	262.6	28.8	20.9	82.3	62.9	24.0	69.8	42.6	42.8	282.2	37.5	45.0
LnGrp LOS	F	C	C	F	F	C	E	D	D	F	D	D
Approach Vol, veh/h		1335			1492			413			1025	
Approach Delay, s/veh		79.2			62.3			52.9			101.7	
Approach LOS		E			E			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.4	62.4	12.8	47.5	22.0	57.7	19.0	41.3
Change Period (Y+Rc), s	4.7	5.8	4.2	5.8	4.7	5.8	4.2	5.8
Max Green Setting (Gmax), s	14.9	50.8	12.1	41.7	17.3	48.4	14.8	39.0
Max Q Clear Time (g_c+I1), s	12.7	31.2	8.6	43.7	19.3	53.9	16.8	11.0
Green Ext Time (p_c), s	0.0	9.0	0.1	0.0	0.0	0.0	0.0	1.4

Intersection Summary	
HCM 7th Control Delay, s/veh	76.1
HCM 7th LOS	E

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1175	90	174	1496	70	140
Future Volume (veh/h)	1175	90	174	1496	70	140
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)		0.98	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	1752	1752	1752	1752	1752	1752
Adj Flow Rate, veh/h	1382	72	205	1760	82	14
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	10	10	10	10	10	10
Cap, veh/h	1568	684	625	2950	130	60
Arrive On Green	0.47	0.47	0.37	0.89	0.04	0.04
Sat Flow, veh/h	3416	1452	1668	3416	3237	1485
Grp Volume(v), veh/h	1382	72	205	1760	82	14
Grp Sat Flow(s),veh/h/ln	1664	1452	1668	1664	1618	1485
Q Serve(g_s), s	52.6	3.9	12.3	17.9	3.5	1.3
Cycle Q Clear(g_c), s	52.6	3.9	12.3	17.9	3.5	1.3
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1568	684	625	2950	130	60
V/C Ratio(X)	0.88	0.11	0.33	0.60	0.63	0.24
Avail Cap(c_a), veh/h	1681	733	625	2950	694	318
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.58	0.58	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.5	20.6	31.2	1.9	66.2	65.1
Incr Delay (d2), s/veh	4.6	0.2	0.3	0.9	5.0	2.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	27.4	2.4	8.7	5.1	2.7	0.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	38.0	20.8	31.5	2.8	71.2	67.1
LnGrp LOS	D	C	C	A	E	E
Approach Vol, veh/h	1454			1965	96	
Approach Delay, s/veh	37.2			5.8	70.6	
Approach LOS	D			A	E	

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	58.1	71.7			129.8	10.2
Change Period (Y+Rc), s	5.7	* 5.7			5.7	4.6
Max Green Setting (Gmax), s	25.0	* 71			99.7	30.0
Max Q Clear Time (g_c+I1), s	14.3	54.6			19.9	5.5
Green Ext Time (p_c), s	0.4	11.4			40.9	0.3

Intersection Summary		
HCM 7th Control Delay, s/veh	20.6	
HCM 7th LOS	C	

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	15.5
Intersection LOS	C

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	55	32	222	241	10
Future Vol, veh/h	30	55	32	222	241	10
Peak Hour Factor	0.55	0.55	0.55	0.55	0.55	0.55
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	55	100	58	404	438	18
Number of Lanes	1	0	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay, s/veh	10.7	16.6	16.1
HCM LOS	B	C	C

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	13%	35%	0%
Vol Thru, %	87%	0%	96%
Vol Right, %	0%	65%	4%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	254	85	251
LT Vol	32	30	0
Through Vol	222	0	241
RT Vol	0	55	10
Lane Flow Rate	462	155	456
Geometry Grp	1	1	1
Degree of Util (X)	0.642	0.247	0.63
Departure Headway (Hd)	5.008	5.762	4.97
Convergence, Y/N	Yes	Yes	Yes
Cap	725	623	730
Service Time	3.021	3.801	2.982
HCM Lane V/C Ratio	0.637	0.249	0.625
HCM Control Delay, s/veh	16.6	10.7	16.1
HCM Lane LOS	C	B	C
HCM 95th-tile Q	4.7	1	4.5

Intersection	
Intersection Delay, s/veh	16.9
Intersection LOS	C

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	80	50	137	149	136	110
Future Vol, veh/h	80	50	137	149	136	110
Peak Hour Factor	0.51	0.51	0.51	0.51	0.51	0.51
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	157	98	269	292	267	216
Number of Lanes	1	0	1	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	2	0	1
HCM Control Delay, s/veh	14.2	14.7	20.8
HCM LOS	B	B	C

Lane	NBLn1	NBLn2	EBLn1	SBLn1
Vol Left, %	100%	0%	62%	0%
Vol Thru, %	0%	100%	0%	55%
Vol Right, %	0%	0%	38%	45%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	137	149	130	246
LT Vol	137	0	80	0
Through Vol	0	149	0	136
RT Vol	0	0	50	110
Lane Flow Rate	269	292	255	482
Geometry Grp	5	5	2	4a
Degree of Util (X)	0.484	0.485	0.442	0.716
Departure Headway (Hd)	6.485	5.977	6.236	5.342
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	556	602	576	675
Service Time	4.235	3.727	4.289	3.388
HCM Lane V/C Ratio	0.484	0.485	0.443	0.714
HCM Control Delay, s/veh	15.2	14.3	14.2	20.8
HCM Lane LOS	C	B	B	C
HCM 95th-tile Q	2.6	2.6	2.2	6

Intersection	
Int Delay, s/veh	38.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	130	129	357	80	108	411
Future Vol, veh/h	130	129	357	80	108	411
Conflicting Peds, #/hr	0	45	0	0	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	190	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	157	155	430	96	130	495

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1236	525	0	0	529	0
Stage 1	480	-	-	-	-	-
Stage 2	755	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.16	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.254	-
Pot Cap-1 Maneuver	191	544	-	-	1019	-
Stage 1	614	-	-	-	-	-
Stage 2	457	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	166	520	-	-	1017	-
Mov Cap-2 Maneuver	166	-	-	-	-	-
Stage 1	613	-	-	-	-	-
Stage 2	399	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	178.27	0	1.89
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	251	1017	-
HCM Lane V/C Ratio	-	-	1.241	0.128	-
HCM Ctrl Dly (s/v)	-	-	178.3	9.1	-
HCM Lane LOS	-	-	F	A	-
HCM 95th %tile Q(veh)	-	-	15.3	0.4	-

Intersection	
Int Delay, s/veh	65.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	137	503	739	96	56	115
Future Vol, veh/h	137	503	739	96	56	115
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	220	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	69	69	69	69	69	69
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	199	729	1071	139	81	167

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1210	0	-	0	1833	536
Stage 1	-	-	-	-	1071	-
Stage 2	-	-	-	-	762	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	572	-	-	-	~ 68	489
Stage 1	-	-	-	-	290	-
Stage 2	-	-	-	-	422	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	572	-	-	-	~ 44	489
Mov Cap-2 Maneuver	-	-	-	-	~ 44	-
Stage 1	-	-	-	-	190	-
Stage 2	-	-	-	-	422	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	3.12	0	$ 620.2
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	572	-	-	-	114
HCM Lane V/C Ratio	0.347	-	-	-	2.179
HCM Ctrl Dly (s/v)	14.6	-	-	-	$ 620.2
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	1.5	-	-	-	21.2

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon

MOVEMENT SUMMARY

Site: 13 [SR 165 Pioneer Roundabout Cumulative No Project AM (Site Folder: SR 165_Pioneer_Cumulative Year 2046)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

SR 165/Pioneer Rd
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: SR 165															
3	L2	All MCs	93	8.0	93	8.0	0.171	14.9	LOS B	0.8	20.1	0.56	0.73	0.56	34.7
8	T1	All MCs	162	8.0	162	8.0	0.171	8.3	LOS A	0.8	20.6	0.56	0.66	0.56	38.3
18	R2	All MCs	24	8.0	24	8.0	0.171	7.8	LOS A	0.8	20.6	0.55	0.64	0.55	37.2
Approach			279	8.0	279	8.0	0.171	10.5	LOS B	0.8	20.6	0.56	0.68	0.56	36.9
East: Pioneer Road															
1	L2	All MCs	129	8.0	129	8.0	0.335	15.0	LOS B	1.6	43.0	0.65	0.75	0.65	34.7
6	T1	All MCs	353	8.0	353	8.0	0.335	8.4	LOS A	1.7	44.4	0.64	0.69	0.64	35.6
16	R2	All MCs	35	8.0	35	8.0	0.335	8.0	LOS A	1.7	44.4	0.64	0.67	0.64	36.9
Approach			518	8.0	518	8.0	0.335	10.0	LOS A	1.7	44.4	0.64	0.71	0.64	35.5
North: SR 165															
7	L2	All MCs	12	8.0	12	8.0	0.246	17.2	LOS B	1.1	29.5	0.65	0.76	0.65	35.5
4	T1	All MCs	111	8.0	111	8.0	0.246	10.8	LOS B	1.1	29.5	0.65	0.76	0.65	37.7
14	R2	All MCs	536	8.0	536	8.0	0.658	11.3	LOS B	5.3	139.8	0.80	0.86	1.04	35.8
Approach			659	8.0	659	8.0	0.658	11.3	LOS B	5.3	139.8	0.77	0.84	0.97	36.1
West: Pioneer Road															
5	L2	All MCs	345	8.0	345	8.0	0.332	12.9	LOS B	1.9	50.7	0.49	0.66	0.49	34.1
2	T1	All MCs	153	8.0	153	8.0	0.319	6.7	LOS A	1.8	47.7	0.49	0.55	0.49	36.9
12	R2	All MCs	160	8.0	160	8.0	0.319	6.5	LOS A	1.8	47.7	0.49	0.55	0.49	37.7
Approach			658	8.0	658	8.0	0.332	9.9	LOS A	1.9	50.7	0.49	0.60	0.49	35.5
All Vehicles			2113	8.0	2113	8.0	0.658	10.4	LOS B	5.3	139.8	0.63	0.71	0.69	35.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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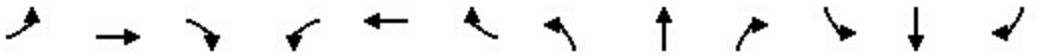
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	200	117	197	240	146	70	457	80	120	641	120
Future Volume (veh/h)	96	200	117	197	240	146	70	457	80	120	641	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		1.00	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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	112	233	26	229	279	44	81	531	26	140	745	55
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	146	321	270	283	465	386	105	1020	453	181	1170	510
Arrive On Green	0.08	0.17	0.17	0.16	0.25	0.25	0.06	0.29	0.29	0.10	0.33	0.33
Sat Flow, veh/h	1781	1870	1574	1781	1870	1553	1781	3554	1580	1781	3554	1549
Grp Volume(v), veh/h	112	233	26	229	279	44	81	531	26	140	745	55
Grp Sat Flow(s),veh/h/ln	1781	1870	1574	1781	1870	1553	1781	1777	1580	1781	1777	1549
Q Serve(g_s), s	4.4	8.5	1.0	9.0	9.5	1.6	3.2	9.0	0.9	5.5	12.9	1.8
Cycle Q Clear(g_c), s	4.4	8.5	1.0	9.0	9.5	1.6	3.2	9.0	0.9	5.5	12.9	1.8
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	146	321	270	283	465	386	105	1020	453	181	1170	510
V/C Ratio(X)	0.77	0.73	0.10	0.81	0.60	0.11	0.77	0.52	0.06	0.77	0.64	0.11
Avail Cap(c_a), veh/h	427	774	652	747	1111	923	328	1796	798	501	2140	933
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	28.3	25.2	29.3	24.0	21.0	33.5	21.6	18.7	31.6	20.6	16.9
Incr Delay (d2), s/veh	8.1	3.3	0.2	5.5	1.3	0.1	11.0	0.7	0.1	6.9	0.9	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(95%),veh/ln	4.0	7.2	0.7	7.5	7.6	1.0	3.0	6.5	0.6	4.7	8.7	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.5	31.6	25.4	34.8	25.3	21.1	44.5	22.2	18.8	38.6	21.5	17.0
LnGrp LOS	D	C	C	C	C	C	D	C	B	D	C	B
Approach Vol, veh/h		371			552			638			940	
Approach Delay, s/veh		33.8			28.9			24.9			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	12.0	26.5	16.2	17.5	9.0	29.6	10.6	23.0
Change Period (Y+Rc), s	4.7	5.8	4.7	5.1	4.7	5.8	4.7	5.1
Max Green Setting (Gmax), s	20.3	36.5	30.3	29.9	13.3	43.5	17.3	42.9
Max Q Clear Time (g_c+I1), s	7.5	11.0	11.0	10.5	5.2	14.9	6.4	11.5
Green Ext Time (p_c), s	0.3	5.7	0.6	1.4	0.1	8.9	0.2	2.1

Intersection Summary	
HCM 7th Control Delay, s/veh	26.7
HCM 7th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	1297	39	20	1153	28	49	43	10	71	40	140
Future Volume (veh/h)	110	1297	39	20	1153	28	49	43	10	71	40	140
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		1.00	1.00		1.00	1.00		0.99
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	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781
Adj Flow Rate, veh/h	116	1365	40	21	1214	28	52	45	0	75	42	16
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	8	8	8	8	8	8	8	8	8	8	8	8
Cap, veh/h	124	2201	64	34	2040	47	82	71	133	103	58	139
Arrive On Green	0.07	0.66	0.66	0.04	1.00	1.00	0.09	0.09	0.00	0.09	0.09	0.09
Sat Flow, veh/h	1697	3355	98	1697	3381	78	930	805	1510	1106	620	1490
Grp Volume(v), veh/h	116	688	717	21	607	635	97	0	0	117	0	16
Grp Sat Flow(s),veh/h/ln	1697	1692	1761	1697	1692	1767	1735	0	1510	1726	0	1490
Q Serve(g_s), s	9.5	33.0	33.1	1.7	0.0	0.0	7.6	0.0	0.0	9.2	0.0	1.4
Cycle Q Clear(g_c), s	9.5	33.0	33.1	1.7	0.0	0.0	7.6	0.0	0.0	9.2	0.0	1.4
Prop In Lane	1.00		0.06	1.00		0.04	0.54		1.00	0.64		1.00
Lane Grp Cap(c), veh/h	124	1110	1155	34	1021	1066	152	0	133	161	0	139
V/C Ratio(X)	0.94	0.62	0.62	0.62	0.60	0.60	0.64	0.00	0.00	0.73	0.00	0.12
Avail Cap(c_a), veh/h	124	1110	1155	61	1021	1066	397	0	345	358	0	309
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.83	0.83	0.83	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	64.6	13.9	14.0	66.7	0.0	0.0	61.7	0.0	0.0	61.7	0.0	58.2
Incr Delay (d2), s/veh	62.0	2.6	2.5	14.4	2.1	2.0	4.4	0.0	0.0	6.1	0.0	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(95%),veh/ln	10.3	18.5	19.2	1.6	1.1	1.1	6.4	0.0	0.0	7.8	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	126.5	16.5	16.5	81.1	2.1	2.0	66.1	0.0	0.0	67.8	0.0	58.5
LnGrp LOS	F	B	B	F	A	A	E			E		E
Approach Vol, veh/h		1521			1263			97			133	
Approach Delay, s/veh		24.9			3.4			66.1			66.7	
Approach LOS		C			A			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	97.2		18.1	14.8	89.8		17.3				
Change Period (Y+Rc), s	4.6	5.4		5.0	4.6	5.4		5.0				
Max Green Setting (Gmax), s	5.0	54.0		29.0	10.2	48.8		32.0				
Max Q Clear Time (g_c+I1), s	3.7	35.1		11.2	11.5	2.0		9.6				
Green Ext Time (p_c), s	0.0	16.0		0.6	0.0	29.0		0.5				

Intersection Summary												
HCM 7th Control Delay, s/veh			19.1									
HCM 7th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	1249	29	50	1132	38	19	83	30	21	81	50
Future Volume (veh/h)	100	1249	29	50	1132	38	19	83	30	21	81	50
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		1.00	1.00		1.00	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	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796
Adj Flow Rate, veh/h	103	1288	29	52	1167	37	20	86	23	22	84	12
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	7	7	7	7	7	7	7	7	7	7	7	7
Cap, veh/h	126	2529	57	67	2385	76	44	119	29	56	162	174
Arrive On Green	0.15	1.00	1.00	0.01	0.23	0.23	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	1711	3412	77	1711	3376	107	123	1035	251	214	1410	1518
Grp Volume(v), veh/h	103	644	673	52	590	614	129	0	0	106	0	12
Grp Sat Flow(s),veh/h/ln	1711	1706	1782	1711	1706	1777	1409	0	0	1624	0	1518
Q Serve(g_s), s	8.2	0.0	0.0	4.2	41.9	41.9	4.7	0.0	0.0	0.0	0.0	1.0
Cycle Q Clear(g_c), s	8.2	0.0	0.0	4.2	41.9	41.9	13.0	0.0	0.0	8.3	0.0	1.0
Prop In Lane	1.00		0.04	1.00		0.06	0.16		0.18	0.21		1.00
Lane Grp Cap(c), veh/h	126	1265	1321	67	1206	1255	192	0	0	218	0	174
V/C Ratio(X)	0.82	0.51	0.51	0.78	0.49	0.49	0.67	0.00	0.00	0.49	0.00	0.07
Avail Cap(c_a), veh/h	237	1265	1321	139	1206	1255	370	0	0	397	0	341
HCM Platoon Ratio	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.66	0.66	0.66	0.82	0.82	0.82	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	58.8	0.0	0.0	68.5	31.8	31.8	60.4	0.0	0.0	58.3	0.0	55.3
Incr Delay (d2), s/veh	16.4	1.0	0.9	14.9	1.2	1.1	4.1	0.0	0.0	1.7	0.0	0.2
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(95%),veh/ln	6.5	0.6	0.6	3.9	26.1	27.1	8.3	0.0	0.0	6.6	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	75.1	1.0	0.9	83.4	33.0	32.9	64.4	0.0	0.0	60.0	0.0	55.4
LnGrp LOS	E	A	A	F	C	C	E			E		E
Approach Vol, veh/h		1420			1256			129			118	
Approach Delay, s/veh		6.3			35.0			64.4			59.6	
Approach LOS		A			D			E			E	

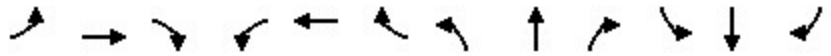
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.0	109.3		20.7	14.9	104.4		20.7				
Change Period (Y+Rc), s	4.6	5.5		4.6	4.6	5.5		4.6				
Max Green Setting (Gmax), s	11.4	82.5		31.4	19.4	74.5		31.4				
Max Q Clear Time (g_c+I1), s	6.2	2.0		10.3	10.2	43.9		15.0				
Green Ext Time (p_c), s	0.0	42.8		0.6	0.3	21.0		0.6				

Intersection Summary		
HCM 7th Control Delay, s/veh	23.4	
HCM 7th LOS	C	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	1313	57	73	1146	10	154	10	74	30	20	40
Future Volume (veh/h)	10	1313	57	73	1146	10	154	10	74	30	20	40
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		1.00	1.00		1.00	1.00		0.99	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	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781
Adj Flow Rate, veh/h	10	1354	57	75	1181	10	159	10	64	31	21	3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	8	8	8	8	8	8	8	8	8	8	8	8
Cap, veh/h	20	1899	80	93	2122	18	170	11	68	54	37	78
Arrive On Green	0.02	0.76	0.76	0.07	0.82	0.82	0.15	0.15	0.15	0.05	0.05	0.05
Sat Flow, veh/h	1697	3310	139	1697	3439	29	1117	70	450	1031	699	1484
Grp Volume(v), veh/h	10	691	720	75	581	610	233	0	0	52	0	3
Grp Sat Flow(s),veh/h/ln	1697	1692	1756	1697	1692	1776	1637	0	0	1730	0	1484
Q Serve(g_s), s	0.8	29.7	29.9	6.1	15.9	15.9	19.7	0.0	0.0	4.1	0.0	0.3
Cycle Q Clear(g_c), s	0.8	29.7	29.9	6.1	15.9	15.9	19.7	0.0	0.0	4.1	0.0	0.3
Prop In Lane	1.00		0.08	1.00		0.02	0.68		0.27	0.60		1.00
Lane Grp Cap(c), veh/h	20	971	1008	93	1044	1096	249	0	0	90	0	78
V/C Ratio(X)	0.51	0.71	0.71	0.81	0.56	0.56	0.94	0.00	0.00	0.57	0.00	0.04
Avail Cap(c_a), veh/h	62	971	1008	96	1044	1096	249	0	0	322	0	277
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.82	0.82	0.82	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	68.5	10.6	10.6	64.2	6.2	6.2	58.7	0.0	0.0	64.8	0.0	63.0
Incr Delay (d2), s/veh	16.0	3.7	3.6	37.6	2.1	2.0	39.7	0.0	0.0	5.1	0.0	0.2
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(95%),veh/ln	0.8	13.0	13.5	6.4	7.9	8.2	16.3	0.0	0.0	3.5	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	84.5	14.2	14.2	101.8	8.4	8.3	98.4	0.0	0.0	70.0	0.0	63.2
LnGrp LOS	F	B	B	F	A	A	F			E		E
Approach Vol, veh/h		1421			1266			233			55	
Approach Delay, s/veh		14.7			13.9			98.4			69.6	
Approach LOS		B			B			F			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.4	86.7		12.9	7.3	92.8		27.0				
Change Period (Y+Rc), s	5.7	6.4		5.6	5.7	6.4		5.7				
Max Green Setting (Gmax), s	7.9	61.3		26.1	5.1	64.1		21.3				
Max Q Clear Time (g_c+I1), s	8.1	31.9		6.1	2.8	17.9		21.7				
Green Ext Time (p_c), s	0.0	12.9		0.2	0.0	11.3		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	21.9
HCM 7th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	1384	0	0	1278	147	0	0	0	155	0	21
Future Volume (veh/h)	33	1384	0	0	1278	147	0	0	0	155	0	21
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		1.00	1.00		1.00	1.00		1.00	0.99		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	1796	1796	0	0	1796	1796	1796	1796	1796	1796	1796	1796
Adj Flow Rate, veh/h	35	1472	0	0	1360	150	0	0	0	165	0	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	7	7	0	0	7	7	7	7	7	7	7	7
Cap, veh/h	44	2894	0	0	2447	268	0	1	0	134	0	0
Arrive On Green	0.03	0.85	0.00	0.00	0.79	0.79	0.00	0.00	0.00	0.08	0.00	0.00
Sat Flow, veh/h	1711	3503	0	0	3191	340	0	1796	0	1691	0	0
Grp Volume(v), veh/h	35	1472	0	0	745	765	0	0	0	165	0	0
Grp Sat Flow(s),veh/h/ln	1711	1706	0	0	1706	1734	0	1796	0	1691	0	0
Q Serve(g_s), s	2.8	16.2	0.0	0.0	22.9	23.3	0.0	0.0	0.0	11.1	0.0	0.0
Cycle Q Clear(g_c), s	2.8	16.2	0.0	0.0	22.9	23.3	0.0	0.0	0.0	11.1	0.0	0.0
Prop In Lane	1.00		0.00	0.00		0.20	0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	44	2894	0	0	1347	1369	0	1	0	134	0	0
V/C Ratio(X)	0.79	0.51	0.00	0.00	0.55	0.56	0.00	0.00	0.00	1.23	0.00	0.00
Avail Cap(c_a), veh/h	51	2894	0	0	1347	1369	0	500	0	134	0	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	1.00	0.00	0.00	0.62	0.62	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	67.8	2.8	0.0	0.0	5.5	5.6	0.0	0.0	0.0	64.5	0.0	0.0
Incr Delay (d2), s/veh	51.0	0.6	0.0	0.0	1.0	1.0	0.0	0.0	0.0	152.5	0.0	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(95%),veh/ln	3.4	7.0	0.0	0.0	10.6	10.9	0.0	0.0	0.0	16.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	118.8	3.5	0.0	0.0	6.5	6.6	0.0	0.0	0.0	216.9	0.0	0.0
LnGrp LOS	F	A			A	A				F		
Approach Vol, veh/h		1507			1510			0			165	
Approach Delay, s/veh		6.2			6.6			0.0			216.9	
Approach LOS		A			A						F	

Timer - Assigned Phs	2	4	5	6	8
Phs Duration (G+Y+Rc), s	123.8	16.2	8.2	115.6	0.0
Change Period (Y+Rc), s	5.1	5.1	4.6	5.1	4.6
Max Green Setting (Gmax), s	75.1	11.1	4.2	66.3	39.0
Max Q Clear Time (g_c+I1), s	18.2	13.1	4.8	25.3	0.0
Green Ext Time (p_c), s	16.4	0.0	0.0	18.7	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	17.3
HCM 7th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	318	1133	88	117	930	240	103	346	147	250	296	392
Future Volume (veh/h)	318	1133	88	117	930	240	103	346	147	250	296	392
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		0.99	1.00		0.99	1.00		1.00	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	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796
Adj Flow Rate, veh/h	342	1218	43	126	1000	99	111	372	120	269	318	390
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	7	7	7	7	7	7	7	7	7	7	7	7
Cap, veh/h	260	1626	715	133	1372	603	155	456	145	205	862	610
Arrive On Green	0.05	0.16	0.16	0.05	0.27	0.27	0.05	0.18	0.18	0.12	0.25	0.25
Sat Flow, veh/h	1711	3413	1500	1711	3413	1500	3319	2544	810	1711	3413	1499
Grp Volume(v), veh/h	342	1218	43	126	1000	99	111	248	244	269	318	390
Grp Sat Flow(s),veh/h/ln	1711	1706	1500	1711	1706	1500	1659	1706	1647	1711	1706	1499
Q Serve(g_s), s	21.3	47.7	3.4	10.3	37.3	7.1	4.6	19.5	20.0	16.8	10.8	29.3
Cycle Q Clear(g_c), s	21.3	47.7	3.4	10.3	37.3	7.1	4.6	19.5	20.0	16.8	10.8	29.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.49	1.00		1.00
Lane Grp Cap(c), veh/h	260	1626	715	133	1372	603	155	306	296	205	862	610
V/C Ratio(X)	1.31	0.75	0.06	0.95	0.73	0.16	0.71	0.81	0.83	1.31	0.37	0.64
Avail Cap(c_a), veh/h	260	1626	715	133	1372	603	220	475	459	205	1134	730
HCM Platoon Ratio	0.33	0.33	0.33	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.81	0.81	0.81	0.89	0.89	0.89	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	66.5	51.0	32.3	66.1	44.2	33.2	65.8	55.1	55.3	61.6	43.1	33.5
Incr Delay (d2), s/veh	161.8	2.6	0.1	57.0	3.1	0.5	2.5	5.6	6.8	170.1	0.3	1.4
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(95%),veh/ln	32.0	29.5	2.3	10.7	23.3	4.9	3.6	13.7	13.7	26.3	8.1	16.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	228.3	53.6	32.5	123.1	47.3	33.7	68.3	60.8	62.2	231.7	43.4	34.9
LnGrp LOS	F	D	C	F	D	C	E	E	E	F	D	C
Approach Vol, veh/h		1603			1225			603			977	
Approach Delay, s/veh		90.3			54.0			62.7			91.8	
Approach LOS		F			D			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.6	72.5	10.8	41.2	26.0	62.1	21.0	30.9
Change Period (Y+Rc), s	4.7	5.8	4.2	5.8	4.7	5.8	4.2	5.8
Max Green Setting (Gmax), s	10.9	52.8	9.3	46.5	21.3	42.4	16.8	39.0
Max Q Clear Time (g_c+I1), s	12.3	49.7	6.6	31.3	23.3	39.3	18.8	22.0
Green Ext Time (p_c), s	0.0	2.4	0.0	3.0	0.0	2.2	0.0	2.6

Intersection Summary	
HCM 7th Control Delay, s/veh	76.8
HCM 7th LOS	E

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1570	140	105	1197	140	128
Future Volume (veh/h)	1570	140	105	1197	140	128
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)		0.98	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	1781	1781	1781	1781	1781	1781
Adj Flow Rate, veh/h	1670	109	112	1273	149	14
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	8	8	8	8	8	8
Cap, veh/h	2562	1118	134	2926	204	94
Arrive On Green	1.00	1.00	0.08	0.86	0.06	0.06
Sat Flow, veh/h	3474	1477	1697	3474	3291	1510
Grp Volume(v), veh/h	1670	109	112	1273	149	14
Grp Sat Flow(s),veh/h/ln	1692	1477	1697	1692	1646	1510
Q Serve(g_s), s	0.0	0.0	9.1	11.4	6.2	1.2
Cycle Q Clear(g_c), s	0.0	0.0	9.1	11.4	6.2	1.2
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2562	1118	134	2926	204	94
V/C Ratio(X)	0.65	0.10	0.84	0.44	0.73	0.15
Avail Cap(c_a), veh/h	2562	1118	182	2926	705	324
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.34	0.34	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	63.6	2.1	64.5	62.2
Incr Delay (d2), s/veh	0.4	0.1	21.2	0.5	4.9	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	0.0	8.3	4.3	4.9	0.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	0.4	0.1	84.8	2.5	69.4	62.9
LnGrp LOS	A	A	F	A	E	E
Approach Vol, veh/h	1779			1385	163	
Approach Delay, s/veh	0.4			9.2	68.9	
Approach LOS	A			A	E	

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	15.1	111.7			126.7	13.3
Change Period (Y+Rc), s	4.0	5.7			5.7	4.6
Max Green Setting (Gmax), s	15.0	80.7			99.7	30.0
Max Q Clear Time (g_c+I1), s	11.1	2.0			13.4	8.2
Green Ext Time (p_c), s	0.1	38.7			22.0	0.5

Intersection Summary		
HCM 7th Control Delay, s/veh	7.4	
HCM 7th LOS	A	

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	60	44	22	98	60	20
Future Vol, veh/h	60	44	22	98	60	20
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	91	67	33	148	91	30
Number of Lanes	1	0	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay, s/veh	8.6	8.8	8.1
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	18%	58%	0%
Vol Thru, %	82%	0%	75%
Vol Right, %	0%	42%	25%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	120	104	80
LT Vol	22	60	0
Through Vol	98	0	60
RT Vol	0	44	20
Lane Flow Rate	182	158	121
Geometry Grp	1	1	1
Degree of Util (X)	0.225	0.195	0.146
Departure Headway (Hd)	4.453	4.458	4.336
Convergence, Y/N	Yes	Yes	Yes
Cap	807	805	828
Service Time	2.472	2.48	2.357
HCM Lane V/C Ratio	0.226	0.196	0.146
HCM Control Delay, s/veh	8.8	8.6	8.1
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.9	0.7	0.5

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	20	28	37	58	30
Future Vol, veh/h	40	20	28	37	58	30
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	45	23	32	42	66	34
Number of Lanes	1	0	1	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	2	0	1
HCM Control Delay, s/veh	7.6	7.9	7.6
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	EBLn1	SBLn1
Vol Left, %	100%	0%	67%	0%
Vol Thru, %	0%	100%	0%	66%
Vol Right, %	0%	0%	33%	34%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	28	37	60	88
LT Vol	28	0	40	0
Through Vol	0	37	0	58
RT Vol	0	0	20	30
Lane Flow Rate	32	42	68	100
Geometry Grp	5	5	2	4a
Degree of Util (X)	0.046	0.055	0.08	0.111
Departure Headway (Hd)	5.191	4.69	4.247	3.988
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	687	760	849	889
Service Time	2.943	2.442	2.247	2.055
HCM Lane V/C Ratio	0.047	0.055	0.08	0.112
HCM Control Delay, s/veh	8.2	7.7	7.6	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.2	0.3	0.4

Intersection	
Int Delay, s/veh	98.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	150	218	439	190	169	420
Future Vol, veh/h	150	218	439	190	169	420
Conflicting Peds, #/hr	0	4	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	190	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	163	237	477	207	184	457

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1404	584	0	0	684	0
Stage 1	580	-	-	-	-	-
Stage 2	824	-	-	-	-	-
Critical Hdwy	6.44	6.24	-	-	4.14	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	-	-	2.236	-
Pot Cap-1 Maneuver	~ 152	507	-	-	900	-
Stage 1	556	-	-	-	-	-
Stage 2	428	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 121	506	-	-	900	-
Mov Cap-2 Maneuver	~ 121	-	-	-	-	-
Stage 1	556	-	-	-	-	-
Stage 2	340	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	$ 421.3	0	2.88
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	220	900	-
HCM Lane V/C Ratio	-	-	1.815	0.204	-
HCM Ctrl Dly (s/v)	-	-	$ 421.3	10	-
HCM Lane LOS	-	-	F	B	-
HCM 95th %tile Q(veh)	-	-	27.8	0.8	-

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	38	869	714	38	47	56
Future Vol, veh/h	38	869	714	38	47	56
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	220	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	40	905	744	40	49	58

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	783	0	-	0	1276	372
Stage 1	-	-	-	-	744	-
Stage 2	-	-	-	-	532	-
Critical Hdwy	4.16	-	-	-	6.86	6.96
Critical Hdwy Stg 1	-	-	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	2.23	-	-	-	3.53	3.33
Pot Cap-1 Maneuver	824	-	-	-	157	623
Stage 1	-	-	-	-	428	-
Stage 2	-	-	-	-	551	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	824	-	-	-	150	623
Mov Cap-2 Maneuver	-	-	-	-	150	-
Stage 1	-	-	-	-	408	-
Stage 2	-	-	-	-	551	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.4	0	29
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	824	-	-	-	255
HCM Lane V/C Ratio	0.048	-	-	-	0.421
HCM Ctrl Dly (s/v)	9.6	-	-	-	29
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0.2	-	-	-	2

MOVEMENT SUMMARY

Site: 13 [SR 165 Pioneer Roundabout Cumulative No Project PM (Site Folder: SR 165_Pioneer_Cumulative Year 2046)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

SR 165/Pioneer Rd
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: SR 165															
3	L2	All MCs	153	6.0	153	6.0	0.284	16.9	LOS B	1.2	32.6	0.71	0.85	0.71	33.5
8	T1	All MCs	141	6.0	141	6.0	0.284	9.6	LOS A	1.3	34.5	0.70	0.77	0.70	38.4
18	R2	All MCs	64	6.0	64	6.0	0.284	9.1	LOS A	1.3	34.5	0.70	0.76	0.70	37.0
Approach			359	6.0	359	6.0	0.284	12.6	LOS B	1.3	34.5	0.70	0.80	0.70	35.9
East: Pioneer Road															
1	L2	All MCs	32	6.0	32	6.0	0.201	15.6	LOS B	0.9	24.5	0.67	0.75	0.67	35.6
6	T1	All MCs	234	6.0	234	6.0	0.201	8.9	LOS A	1.0	25.7	0.67	0.72	0.67	35.9
16	R2	All MCs	11	6.0	11	6.0	0.201	8.4	LOS A	1.0	25.7	0.67	0.70	0.67	37.0
Approach			277	6.0	277	6.0	0.201	9.7	LOS A	1.0	25.7	0.67	0.72	0.67	35.9
North: SR 165															
7	L2	All MCs	21	6.0	21	6.0	0.242	15.0	LOS B	1.1	29.8	0.56	0.66	0.56	36.4
4	T1	All MCs	155	6.0	155	6.0	0.242	8.6	LOS A	1.1	29.8	0.56	0.66	0.56	38.6
14	R2	All MCs	413	6.0	413	6.0	0.436	7.9	LOS A	2.4	64.1	0.61	0.67	0.62	37.8
Approach			589	6.0	589	6.0	0.436	8.3	LOS A	2.4	64.1	0.60	0.66	0.60	38.0
West: Pioneer Road															
5	L2	All MCs	499	6.0	499	6.0	0.455	12.7	LOS B	3.1	80.9	0.52	0.64	0.52	34.3
2	T1	All MCs	426	6.0	426	6.0	0.452	6.5	LOS A	3.0	79.7	0.52	0.52	0.52	36.9
12	R2	All MCs	50	6.0	50	6.0	0.452	6.3	LOS A	3.0	79.7	0.52	0.52	0.52	37.6
Approach			974	6.0	974	6.0	0.455	9.7	LOS A	3.1	80.9	0.52	0.58	0.52	35.5
All Vehicles			2199	6.0	2199	6.0	0.455	9.8	LOS A	3.1	80.9	0.59	0.66	0.59	36.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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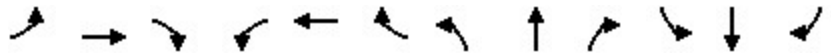
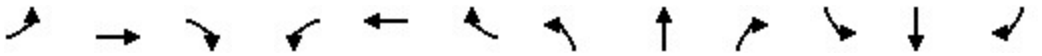


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	240	54	124	150	115	40	618	90	80	524	70
Future Volume (veh/h)	135	240	54	124	150	115	40	618	90	80	524	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	141	250	14	129	156	26	42	644	29	83	546	25
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	186	358	301	170	342	283	75	1103	488	112	1176	511
Arrive On Green	0.10	0.19	0.19	0.10	0.18	0.18	0.04	0.31	0.31	0.06	0.33	0.33
Sat Flow, veh/h	1781	1870	1573	1781	1870	1549	1781	3554	1572	1781	3554	1543
Grp Volume(v), veh/h	141	250	14	129	156	26	42	644	29	83	546	25
Grp Sat Flow(s),veh/h/ln	1781	1870	1573	1781	1870	1549	1781	1777	1572	1781	1777	1543
Q Serve(g_s), s	4.6	7.4	0.4	4.2	4.4	0.8	1.4	9.1	0.8	2.7	7.2	0.7
Cycle Q Clear(g_c), s	4.6	7.4	0.4	4.2	4.4	0.8	1.4	9.1	0.8	2.7	7.2	0.7
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	186	358	301	170	342	283	75	1103	488	112	1176	511
V/C Ratio(X)	0.76	0.70	0.05	0.76	0.46	0.09	0.56	0.58	0.06	0.74	0.46	0.05
Avail Cap(c_a), veh/h	606	937	788	546	874	724	248	2233	988	427	2590	1125
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	22.5	19.7	26.3	21.8	20.3	28.1	17.3	14.5	27.5	15.8	13.6
Incr Delay (d2), s/veh	6.2	2.6	0.1	6.8	1.0	0.1	6.4	0.8	0.1	9.4	0.5	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(95%),veh/ln	3.9	6.0	0.3	3.7	3.5	0.5	1.2	6.1	0.5	2.5	4.8	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.2	25.1	19.7	33.1	22.7	20.4	34.5	18.1	14.5	36.9	16.2	13.6
LnGrp LOS	C	C	B	C	C	C	C	B	B	D	B	B
Approach Vol, veh/h		405			311			715			654	
Approach Delay, s/veh		27.4			26.8			18.9			18.8	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.4	24.3	10.4	16.5	7.2	25.6	10.9	16.0
Change Period (Y+Rc), s	4.7	5.8	4.7	5.1	4.7	5.8	4.7	5.1
Max Green Setting (Gmax), s	14.3	37.5	18.3	29.9	8.3	43.5	20.3	27.9
Max Q Clear Time (g_c+I1), s	4.7	11.1	6.2	9.4	3.4	9.2	6.6	6.4
Green Ext Time (p_c), s	0.1	7.1	0.2	1.5	0.0	6.3	0.3	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	21.7
HCM 7th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	1010	30	20	1490	90	60	90	20	110	60	90
Future Volume (veh/h)	220	1010	30	20	1490	90	60	90	20	110	60	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		1.00	1.00		1.00	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	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767
Adj Flow Rate, veh/h	237	1086	31	22	1602	94	65	97	3	118	65	14
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	9	9	9	9	9	9	9	9	9	9	9	9
Cap, veh/h	137	2000	57	35	1738	101	77	116	167	138	76	187
Arrive On Green	0.08	0.60	0.60	0.03	0.72	0.72	0.11	0.11	0.11	0.12	0.12	0.12
Sat Flow, veh/h	1682	3333	95	1682	3223	188	695	1037	1497	1104	608	1497
Grp Volume(v), veh/h	237	547	570	22	830	866	162	0	3	183	0	14
Grp Sat Flow(s),veh/h/ln	1682	1678	1749	1682	1678	1733	1732	0	1497	1711	0	1497
Q Serve(g_s), s	11.4	27.1	27.1	1.8	57.2	59.0	12.8	0.0	0.2	14.7	0.0	1.2
Cycle Q Clear(g_c), s	11.4	27.1	27.1	1.8	57.2	59.0	12.8	0.0	0.2	14.7	0.0	1.2
Prop In Lane	1.00		0.05	1.00		0.11	0.40		1.00	0.64		1.00
Lane Grp Cap(c), veh/h	137	1007	1050	35	905	934	193	0	167	214	0	187
V/C Ratio(X)	1.73	0.54	0.54	0.64	0.92	0.93	0.84	0.00	0.02	0.86	0.00	0.07
Avail Cap(c_a), veh/h	137	1007	1050	61	905	934	396	0	342	355	0	310
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.65	0.65	0.65	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	64.3	16.6	16.6	67.6	17.2	17.5	61.0	0.0	55.4	60.0	0.0	54.1
Incr Delay (d2), s/veh	357.1	2.1	2.0	12.0	11.0	11.7	9.3	0.0	0.0	10.4	0.0	0.2
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(95%),veh/ln	29.7	16.0	16.6	1.6	25.2	26.8	10.3	0.0	0.2	11.4	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	421.4	18.7	18.6	79.5	28.2	29.2	70.2	0.0	55.4	70.4	0.0	54.3
LnGrp LOS	F	B	B	E	C	C	E		E	E		D
Approach Vol, veh/h		1354			1718			165			197	
Approach Delay, s/veh		89.1			29.4			70.0			69.3	
Approach LOS		F			C			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.5	89.4		22.5	16.0	80.9		20.6				
Change Period (Y+Rc), s	4.6	5.4		5.0	4.6	5.4		5.0				
Max Green Setting (Gmax), s	5.1	53.9		29.0	11.4	47.6		32.0				
Max Q Clear Time (g_c+I1), s	3.8	29.1		16.7	13.4	61.0		14.8				
Green Ext Time (p_c), s	0.0	16.8		0.8	0.0	0.0		0.8				

Intersection Summary												
HCM 7th Control Delay, s/veh			57.2									
HCM 7th LOS			E									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	1050	50	40	1470	100	40	110	60	50	110	90
Future Volume (veh/h)	50	1050	50	40	1470	100	40	110	60	50	110	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		1.00	1.00		1.00	1.00		0.99	1.00		0.99
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	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767
Adj Flow Rate, veh/h	51	1061	49	40	1485	98	40	111	50	51	111	39
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	9	9	9	9	9	9	9	9	9	9	9	9
Cap, veh/h	104	2122	98	50	1976	130	56	141	55	91	178	321
Arrive On Green	0.12	1.00	1.00	0.03	0.62	0.62	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1682	3267	151	1682	3197	210	119	653	256	264	828	1489
Grp Volume(v), veh/h	51	545	565	40	776	807	201	0	0	162	0	39
Grp Sat Flow(s),veh/h/ln	1682	1678	1739	1682	1678	1729	1028	0	0	1092	0	1489
Q Serve(g_s), s	4.0	0.0	0.0	3.3	46.1	46.8	9.6	0.0	0.0	0.0	0.0	3.0
Cycle Q Clear(g_c), s	4.0	0.0	0.0	3.3	46.1	46.8	28.0	0.0	0.0	18.4	0.0	3.0
Prop In Lane	1.00		0.09	1.00		0.12	0.20		0.25	0.31		1.00
Lane Grp Cap(c), veh/h	104	1090	1130	50	1037	1068	252	0	0	269	0	321
V/C Ratio(X)	0.49	0.50	0.50	0.79	0.75	0.76	0.80	0.00	0.00	0.60	0.00	0.12
Avail Cap(c_a), veh/h	127	1090	1130	115	1037	1068	266	0	0	282	0	334
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.77	0.77	0.77	0.60	0.60	0.60	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	59.3	0.0	0.0	67.5	19.0	19.2	54.2	0.0	0.0	49.2	0.0	44.2
Incr Delay (d2), s/veh	5.8	1.3	1.2	15.2	3.0	3.0	14.8	0.0	0.0	3.3	0.0	0.2
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(95%),veh/ln	3.3	0.7	0.7	2.9	23.2	24.1	12.8	0.0	0.0	9.3	0.0	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	65.2	1.3	1.2	82.6	22.0	22.2	69.0	0.0	0.0	52.5	0.0	44.4
LnGrp LOS	E	A	A	F	C	C	E			D		D
Approach Vol, veh/h		1161			1623			201			201	
Approach Delay, s/veh		4.1			23.6			69.0			50.9	
Approach LOS		A			C			E			D	

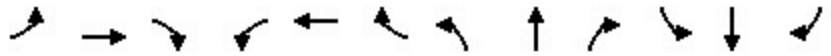
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.8	96.4		34.8	13.2	92.0		34.8				
Change Period (Y+Rc), s	4.6	5.5		4.6	4.6	5.5		4.6				
Max Green Setting (Gmax), s	9.6	84.3		31.4	10.6	83.3		31.4				
Max Q Clear Time (g_c+I1), s	5.3	2.0		20.4	6.0	48.8		30.0				
Green Ext Time (p_c), s	0.0	32.2		0.8	0.1	29.2		0.2				

Intersection Summary		
HCM 7th Control Delay, s/veh		21.1
HCM 7th LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	1020	100	170	1450	0	170	20	180	10	60	40
Future Volume (veh/h)	10	1020	100	170	1450	0	170	20	180	10	60	40
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		1.00	1.00		1.00	1.00		1.00	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	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781
Adj Flow Rate, veh/h	10	1062	99	177	1510	0	177	21	163	10	63	5
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	8	8	8	8	8	8	8	8	8	8	8	8
Cap, veh/h	20	1469	137	185	1920	0	142	17	130	18	114	109
Arrive On Green	0.00	0.15	0.15	0.22	1.00	0.00	0.18	0.18	0.18	0.07	0.07	0.07
Sat Flow, veh/h	1697	3129	292	1697	3474	0	790	94	727	242	1527	1455
Grp Volume(v), veh/h	10	574	587	177	1510	0	361	0	0	73	0	5
Grp Sat Flow(s),veh/h/ln	1697	1692	1728	1697	1692	0	1611	0	0	1769	0	1455
Q Serve(g_s), s	0.8	45.2	45.3	14.4	0.0	0.0	25.1	0.0	0.0	5.6	0.0	0.4
Cycle Q Clear(g_c), s	0.8	45.2	45.3	14.4	0.0	0.0	25.1	0.0	0.0	5.6	0.0	0.4
Prop In Lane	1.00		0.17	1.00		0.00	0.49		0.45	0.14		1.00
Lane Grp Cap(c), veh/h	20	794	811	185	1920	0	289	0	0	133	0	109
V/C Ratio(X)	0.51	0.72	0.72	0.95	0.79	0.00	1.25	0.00	0.00	0.55	0.00	0.05
Avail Cap(c_a), veh/h	61	794	811	185	1920	0	289	0	0	329	0	270
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.86	0.86	0.86	1.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	69.3	50.5	50.5	54.4	0.0	0.0	57.5	0.0	0.0	62.5	0.0	60.1
Incr Delay (d2), s/veh	16.7	4.9	4.8	52.9	3.3	0.0	137.9	0.0	0.0	3.2	0.0	0.2
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(95%),veh/ln	0.8	28.7	29.3	12.8	1.6	0.0	32.0	0.0	0.0	4.7	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	86.1	55.4	55.3	107.2	3.3	0.0	195.3	0.0	0.0	65.7	0.0	60.3
LnGrp LOS	F	E	E	F	A		F			E		E
Approach Vol, veh/h		1171			1687			361			78	
Approach Delay, s/veh		55.6			14.2			195.3			65.3	
Approach LOS		E			B			F			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	21.0	72.1		16.1	7.3	85.8		30.8
Change Period (Y+Rc), s	5.7	6.4		5.6	5.7	6.4		5.7
Max Green Setting (Gmax), s	15.3	50.2		26.0	5.0	60.5		25.1
Max Q Clear Time (g_c+I1), s	16.4	47.3		7.6	2.8	2.0		27.1
Green Ext Time (p_c), s	0.0	2.0		0.3	0.0	19.9		0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	50.0
HCM 7th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	1140	0	0	1720	130	0	0	0	160	0	40
Future Volume (veh/h)	70	1140	0	0	1720	130	0	0	0	160	0	40
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		1.00	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	1781	1781	0	0	1781	1781	1781	1781	1781	1781	1781	1781
Adj Flow Rate, veh/h	72	1175	0	0	1773	131	0	0	0	165	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	8	8	0	0	8	8	8	8	8	8	8	8
Cap, veh/h	65	2923	0	0	2529	184	0	1	0	107	0	0
Arrive On Green	0.08	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.06	0.00	0.00
Sat Flow, veh/h	1697	3474	0	0	3282	233	0	1781	0	1689	0	0
Grp Volume(v), veh/h	72	1175	0	0	929	975	0	0	0	165	0	0
Grp Sat Flow(s),veh/h/ln	1697	1692	0	0	1692	1733	0	1781	0	1689	0	0
Q Serve(g_s), s	5.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.9	0.0	0.0
Cycle Q Clear(g_c), s	5.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.9	0.0	0.0
Prop In Lane	1.00		0.00	0.00		0.13	0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	65	2923	0	0	1341	1373	0	1	0	107	0	0
V/C Ratio(X)	1.10	0.40	0.00	0.00	0.69	0.71	0.00	0.00	0.00	1.54	0.00	0.00
Avail Cap(c_a), veh/h	65	2923	0	0	1341	1373	0	496	0	107	0	0
HCM Platoon Ratio	2.00	2.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.31	0.31	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	64.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	65.6	0.0	0.0
Incr Delay (d2), s/veh	141.4	0.4	0.0	0.0	0.9	1.0	0.0	0.0	0.0	282.7	0.0	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(95%),veh/ln	8.6	0.3	0.0	0.0	0.6	0.7	0.0	0.0	0.0	20.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	206.0	0.4	0.0	0.0	0.9	1.0	0.0	0.0	0.0	348.3	0.0	0.0
LnGrp LOS	F	A			A	A				F		
Approach Vol, veh/h		1247			1904			0			165	
Approach Delay, s/veh		12.3			1.0			0.0			348.3	
Approach LOS		B			A						F	

Timer - Assigned Phs	2	4	5	6	8
Phs Duration (G+Y+Rc), s	126.0	14.0	10.0	116.0	0.0
Change Period (Y+Rc), s	5.1	5.1	4.6	5.1	4.6
Max Green Setting (Gmax), s	77.3	8.9	5.4	67.3	39.0
Max Q Clear Time (g_c+I1), s	2.0	10.9	7.4	2.0	0.0
Green Ext Time (p_c), s	11.3	0.0	0.0	35.6	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	22.5
HCM 7th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	280	870	150	130	1160	170	180	220	110	230	250	510
Future Volume (veh/h)	280	870	150	130	1160	170	180	220	110	230	250	510
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		1.00	1.00		0.98	1.00		0.99	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	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767
Adj Flow Rate, veh/h	308	956	119	143	1275	87	198	242	69	253	275	522
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	9	9	9	9	9	9	9	9	9	9	9	9
Cap, veh/h	208	1289	573	164	1201	526	243	689	192	178	1000	624
Arrive On Green	0.12	0.38	0.38	0.13	0.48	0.48	0.07	0.27	0.27	0.11	0.30	0.30
Sat Flow, veh/h	1682	3357	1492	1682	3357	1471	3264	2584	719	1682	3357	1474
Grp Volume(v), veh/h	308	956	119	143	1275	87	198	155	156	253	275	522
Grp Sat Flow(s),veh/h/ln	1682	1678	1492	1682	1678	1471	1632	1678	1625	1682	1678	1474
Q Serve(g_s), s	17.3	34.4	7.5	11.7	50.1	4.7	8.4	10.5	10.9	14.8	8.8	41.7
Cycle Q Clear(g_c), s	17.3	34.4	7.5	11.7	50.1	4.7	8.4	10.5	10.9	14.8	8.8	41.7
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	208	1289	573	164	1201	526	243	447	433	178	1000	624
V/C Ratio(X)	1.48	0.74	0.21	0.87	1.06	0.17	0.82	0.35	0.36	1.42	0.28	0.84
Avail Cap(c_a), veh/h	208	1289	573	179	1201	526	282	468	453	178	1000	624
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.90	0.73	0.73	0.73	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.3	37.2	28.9	60.1	36.7	24.8	63.9	41.5	41.7	62.6	37.6	36.3
Incr Delay (d2), s/veh	238.4	3.5	0.7	24.8	40.6	0.5	12.9	0.4	0.5	219.6	0.1	9.7
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(95%),veh/ln	32.7	20.5	5.1	9.3	33.9	3.1	7.0	7.8	7.9	27.1	6.6	24.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	299.8	40.7	29.6	84.8	77.3	25.3	76.7	41.9	42.1	282.2	37.7	45.9
LnGrp LOS	F	D	C	F	F	C	E	D	D	F	D	D
Approach Vol, veh/h		1383			1505			509			1050	
Approach Delay, s/veh		97.4			75.0			55.5			100.7	
Approach LOS		F			E			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.4	59.5	14.6	47.5	22.0	55.9	19.0	43.1
Change Period (Y+Rc), s	4.7	5.8	4.2	5.8	4.7	5.8	4.2	5.8
Max Green Setting (Gmax), s	14.3	50.8	12.1	41.7	17.3	48.4	14.8	39.0
Max Q Clear Time (g_c+I1), s	13.7	36.4	10.4	43.7	19.3	52.1	16.8	12.9
Green Ext Time (p_c), s	0.0	7.6	0.0	0.0	0.0	0.0	0.0	1.7

Intersection Summary	
HCM 7th Control Delay, s/veh	85.8
HCM 7th LOS	F

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1210	90	180	1510	70	150
Future Volume (veh/h)	1210	90	180	1510	70	150
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)		0.98	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	1752	1752	1752	1752	1752	1752
Adj Flow Rate, veh/h	1424	72	212	1776	82	16
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	10	10	10	10	10	10
Cap, veh/h	1594	695	612	2950	130	60
Arrive On Green	0.48	0.48	0.37	0.89	0.04	0.04
Sat Flow, veh/h	3416	1452	1668	3416	3237	1485
Grp Volume(v), veh/h	1424	72	212	1776	82	16
Grp Sat Flow(s),veh/h/ln	1664	1452	1668	1664	1618	1485
Q Serve(g_s), s	54.6	3.8	12.9	18.2	3.5	1.5
Cycle Q Clear(g_c), s	54.6	3.8	12.9	18.2	3.5	1.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1594	695	612	2950	130	60
V/C Ratio(X)	0.89	0.10	0.35	0.60	0.63	0.27
Avail Cap(c_a), veh/h	1681	733	612	2950	694	318
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.55	0.55	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.2	20.0	32.2	1.9	66.2	65.2
Incr Delay (d2), s/veh	4.7	0.2	0.3	0.9	4.9	2.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	28.2	2.4	9.0	5.2	2.7	1.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	38.0	20.2	32.5	2.9	71.1	67.5
LnGrp LOS	D	C	C	A	E	E
Approach Vol, veh/h	1496			1988	98	
Approach Delay, s/veh	37.1			6.0	70.5	
Approach LOS	D			A	E	

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	57.0	72.7			129.8	10.2
Change Period (Y+Rc), s	5.7	* 5.7			5.7	4.6
Max Green Setting (Gmax), s	25.3	* 71			99.7	30.0
Max Q Clear Time (g_c+I1), s	14.9	56.6			20.2	5.5
Green Ext Time (p_c), s	0.4	10.5			41.5	0.3

Intersection Summary	
HCM 7th Control Delay, s/veh	20.8
HCM 7th LOS	C

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	22.6
Intersection LOS	C

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	60	40	280	260	10
Future Vol, veh/h	30	60	40	280	260	10
Peak Hour Factor	0.55	0.55	0.55	0.55	0.55	0.55
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	55	109	73	509	473	18
Number of Lanes	1	0	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay, s/veh	11.5	28.1	19.9
HCM LOS	B	D	C

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	13%	33%	0%
Vol Thru, %	88%	0%	96%
Vol Right, %	0%	67%	4%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	320	90	270
LT Vol	40	30	0
Through Vol	280	0	260
RT Vol	0	60	10
Lane Flow Rate	582	164	491
Geometry Grp	1	1	1
Degree of Util (X)	0.829	0.278	0.708
Departure Headway (Hd)	5.13	6.124	5.194
Convergence, Y/N	Yes	Yes	Yes
Cap	704	586	697
Service Time	3.164	4.177	3.231
HCM Lane V/C Ratio	0.827	0.28	0.704
HCM Control Delay, s/veh	28.1	11.5	19.9
HCM Lane LOS	D	B	C
HCM 95th-tile Q	9	1.1	5.9

Intersection	
Intersection Delay, s/veh	24.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	80	10	50	5	13	25	140	160	3	13	140	110
Future Vol, veh/h	80	10	50	5	13	25	140	160	3	13	140	110
Peak Hour Factor	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	157	20	98	10	25	49	275	314	6	25	275	216
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	17.8	12.3	18.9	37.2
HCM LOS	C	B	C	E

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	57%	12%	5%
Vol Thru, %	0%	98%	7%	30%	53%
Vol Right, %	0%	2%	36%	58%	42%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	140	163	140	43	263
LT Vol	140	0	80	5	13
Through Vol	0	160	10	13	140
RT Vol	0	3	50	25	110
Lane Flow Rate	275	320	275	84	516
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.554	0.598	0.533	0.177	0.872
Departure Headway (Hd)	7.264	6.739	6.993	7.545	6.088
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	497	534	516	474	593
Service Time	5.02	4.495	5.05	5.624	4.136
HCM Lane V/C Ratio	0.553	0.599	0.533	0.177	0.87
HCM Control Delay, s/veh	18.7	19.1	17.8	12.3	37.2
HCM Lane LOS	C	C	C	B	E
HCM 95th-tile Q	3.3	3.9	3.1	0.6	9.9

MOVEMENT SUMMARY

Site: 1 [SR 165 Scripps Roundabout Cumulative Plus Project AM (Site Folder: Mercey Springs Rd (SR 165)/Scripps Dr)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

SR 165/Scripps Dr
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: SR 165															
3	L2	All MCs	19	6.0	19	6.0	0.467	11.9	LOS B	2.7	70.7	0.45	0.54	0.45	31.7
8	T1	All MCs	422	6.0	422	6.0	0.467	6.2	LOS A	2.7	70.7	0.45	0.54	0.45	37.0
18	R2	All MCs	96	6.0	96	6.0	0.467	6.1	LOS A	2.7	70.7	0.45	0.54	0.45	29.1
Approach			537	6.0	537	6.0	0.467	6.4	LOS A	2.7	70.7	0.45	0.54	0.45	35.1
East: Scripps Dr															
1	L2	All MCs	157	6.0	157	6.0	0.335	7.8	LOS A	1.8	46.4	0.59	0.60	0.59	27.7
6	T1	All MCs	10	6.0	10	6.0	0.335	2.8	LOS A	1.8	46.4	0.59	0.60	0.59	25.3
16	R2	All MCs	157	6.0	157	6.0	0.335	3.7	LOS A	1.8	46.4	0.59	0.60	0.59	28.0
Approach			323	6.0	323	6.0	0.335	5.7	LOS A	1.8	46.4	0.59	0.60	0.59	27.8
North: SR 165															
7	L2	All MCs	133	6.0	133	6.0	0.580	11.8	LOS B	3.9	102.3	0.48	0.56	0.48	28.7
4	T1	All MCs	494	6.0	494	6.0	0.580	6.1	LOS A	3.9	102.3	0.48	0.56	0.48	36.5
14	R2	All MCs	54	6.0	54	6.0	0.580	6.0	LOS A	3.9	102.3	0.48	0.56	0.48	31.6
Approach			681	6.0	681	6.0	0.580	7.2	LOS A	3.9	102.3	0.48	0.56	0.48	34.3
West: Page Ave															
5	L2	All MCs	75	6.0	75	6.0	0.157	11.4	LOS B	0.9	23.0	0.71	0.71	0.71	29.1
2	T1	All MCs	16	6.0	16	6.0	0.157	6.0	LOS A	0.9	23.0	0.71	0.71	0.71	24.6
12	R2	All MCs	25	6.0	25	6.0	0.157	6.6	LOS A	0.9	23.0	0.71	0.71	0.71	29.5
Approach			116	6.0	116	6.0	0.157	9.6	LOS A	0.9	23.0	0.71	0.71	0.71	28.5
All Vehicles			1657	6.0	1657	6.0	0.580	6.8	LOS A	3.9	102.3	0.51	0.57	0.51	32.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Int Delay, s/veh	84.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	140	510	757	110	60	120
Future Vol, veh/h	140	510	757	110	60	120
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	220	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	69	69	69	69	69	69
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	203	739	1097	159	87	174

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1257	0	-	0	1872	549
Stage 1	-	-	-	-	1097	-
Stage 2	-	-	-	-	775	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	549	-	-	-	~ 64	480
Stage 1	-	-	-	-	281	-
Stage 2	-	-	-	-	415	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	549	-	-	-	~ 40	480
Mov Cap-2 Maneuver	-	-	-	-	~ 40	-
Stage 1	-	-	-	-	177	-
Stage 2	-	-	-	-	415	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	3.3	0	$ 782.78
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	549	-	-	-	103
HCM Lane V/C Ratio	0.369	-	-	-	2.532
HCM Ctrl Dly (s/v)	15.3	-	-	-	$ 782.8
HCM Lane LOS	C	-	-	-	F
HCM 95th %tile Q(veh)	1.7	-	-	-	23.8

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon

MOVEMENT SUMMARY

Site: 13 [SR 165 Pioneer Roundabout Cumulative Plus Project AM (Site Folder: SR 165_Pioneer_Cumulative Year 2046)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

SR 165/Pioneer Rd
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: SR 165															
3	L2	All MCs	94	8.0	94	8.0	0.174	15.0	LOS B	0.8	20.6	0.57	0.74	0.57	34.7
8	T1	All MCs	165	8.0	165	8.0	0.174	8.4	LOS A	0.8	21.1	0.56	0.66	0.56	38.3
18	R2	All MCs	24	8.0	24	8.0	0.174	7.9	LOS A	0.8	21.1	0.56	0.64	0.56	37.1
Approach			282	8.0	282	8.0	0.174	10.5	LOS B	0.8	21.1	0.56	0.68	0.56	36.9
East: Pioneer Road															
1	L2	All MCs	129	8.0	129	8.0	0.338	15.1	LOS B	1.6	43.5	0.65	0.75	0.65	34.7
6	T1	All MCs	353	8.0	353	8.0	0.338	8.4	LOS A	1.7	45.0	0.65	0.70	0.65	35.6
16	R2	All MCs	35	8.0	35	8.0	0.338	8.0	LOS A	1.7	45.0	0.65	0.67	0.65	36.9
Approach			518	8.0	518	8.0	0.338	10.1	LOS B	1.7	45.0	0.65	0.71	0.65	35.4
North: SR 165															
7	L2	All MCs	12	8.0	12	8.0	0.260	17.2	LOS B	1.2	31.5	0.66	0.76	0.66	35.5
4	T1	All MCs	118	8.0	118	8.0	0.260	10.9	LOS B	1.2	31.5	0.66	0.76	0.66	37.7
14	R2	All MCs	553	8.0	553	8.0	0.679	11.6	LOS B	5.6	150.0	0.81	0.87	1.08	35.6
Approach			682	8.0	682	8.0	0.679	11.6	LOS B	5.6	150.0	0.78	0.85	1.00	36.0
West: Pioneer Road															
5	L2	All MCs	353	8.0	353	8.0	0.342	13.0	LOS B	2.0	52.6	0.50	0.66	0.50	34.1
2	T1	All MCs	153	8.0	153	8.0	0.326	6.8	LOS A	1.8	49.0	0.50	0.55	0.50	36.9
12	R2	All MCs	165	8.0	165	8.0	0.326	6.5	LOS A	1.8	49.0	0.50	0.55	0.50	37.7
Approach			671	8.0	671	8.0	0.342	10.0	LOS A	2.0	52.6	0.50	0.61	0.50	35.5
All Vehicles			2153	8.0	2153	8.0	0.679	10.6	LOS B	5.6	150.0	0.63	0.72	0.70	35.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	200	120	200	240	150	70	470	80	120	650	120
Future Volume (veh/h)	100	200	120	200	240	150	70	470	80	120	650	120
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		0.99	1.00		0.98	1.00		1.00	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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	116	233	26	233	279	45	81	547	27	140	756	55
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	151	320	269	287	462	384	105	1028	457	181	1178	513
Arrive On Green	0.08	0.17	0.17	0.16	0.25	0.25	0.06	0.29	0.29	0.10	0.33	0.33
Sat Flow, veh/h	1781	1870	1574	1781	1870	1553	1781	3554	1580	1781	3554	1549
Grp Volume(v), veh/h	116	233	26	233	279	45	81	547	27	140	756	55
Grp Sat Flow(s),veh/h/ln	1781	1870	1574	1781	1870	1553	1781	1777	1580	1781	1777	1549
Q Serve(g_s), s	4.7	8.6	1.0	9.2	9.7	1.6	3.3	9.5	0.9	5.6	13.2	1.8
Cycle Q Clear(g_c), s	4.7	8.6	1.0	9.2	9.7	1.6	3.3	9.5	0.9	5.6	13.2	1.8
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	151	320	269	287	462	384	105	1028	457	181	1178	513
V/C Ratio(X)	0.77	0.73	0.10	0.81	0.60	0.12	0.77	0.53	0.06	0.78	0.64	0.11
Avail Cap(c_a), veh/h	421	764	643	737	1096	911	324	1772	788	494	2112	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	32.8	28.7	25.6	29.6	24.4	21.4	33.9	21.8	18.8	32.1	20.8	17.0
Incr Delay (d2), s/veh	7.9	3.3	0.2	5.5	1.3	0.1	11.0	0.7	0.1	7.0	0.9	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(95%),veh/ln	4.2	7.3	0.7	7.7	7.7	1.1	3.0	6.8	0.6	4.8	8.9	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.7	32.0	25.7	35.2	25.7	21.5	45.0	22.5	18.9	39.0	21.7	17.1
LnGrp LOS	D	C	C	D	C	C	D	C	B	D	C	B
Approach Vol, veh/h		375			557			655			951	
Approach Delay, s/veh		34.3			29.3			25.2			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	12.1	27.0	16.5	17.6	9.0	30.1	10.9	23.2
Change Period (Y+Rc), s	4.7	5.8	4.7	5.1	4.7	5.8	4.7	5.1
Max Green Setting (Gmax), s	20.3	36.5	30.3	29.9	13.3	43.5	17.3	42.9
Max Q Clear Time (g_c+I1), s	7.6	11.5	11.2	10.6	5.3	15.2	6.7	11.7
Green Ext Time (p_c), s	0.3	5.8	0.6	1.4	0.1	9.0	0.2	2.1

Intersection Summary	
HCM 7th Control Delay, s/veh	27.0
HCM 7th LOS	C

MOVEMENT SUMMARY

Site: 1 [SR 165 Madison Roundabout Cumulative Plus Project AM (Site Folder: Mercey Springs Rd (SR 165)/Madison Ave)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

SR 165/Madison Ave
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: SR 165															
3	L2	All MCs	3	8.0	3	8.0	0.453	8.8	LOS A	2.9	78.1	0.22	0.34	0.22	27.5
8	T1	All MCs	576	8.0	576	8.0	0.453	3.3	LOS A	2.9	78.1	0.22	0.34	0.22	32.4
Approach			579	8.0	579	8.0	0.453	3.3	LOS A	2.9	78.1	0.22	0.34	0.22	32.4
North: SR 165															
4	T1	All MCs	602	8.0	602	8.0	0.465	5.0	LOS A	2.5	67.4	0.04	0.43	0.04	38.3
14	R2	All MCs	14	8.0	14	8.0	0.465	4.9	LOS A	2.5	67.4	0.04	0.43	0.04	30.1
Approach			616	8.0	616	8.0	0.465	5.0	LOS A	2.5	67.4	0.04	0.43	0.04	38.0
West: Madison Ave															
5	L2	All MCs	46	8.0	46	8.0	0.064	8.1	LOS A	0.3	7.3	0.52	0.63	0.52	25.9
12	R2	All MCs	12	8.0	12	8.0	0.064	4.0	LOS A	0.3	7.3	0.52	0.63	0.52	27.3
Approach			58	8.0	58	8.0	0.064	7.3	LOS A	0.3	7.3	0.52	0.63	0.52	26.1
All Vehicles			1253	8.0	1253	8.0	0.465	4.3	LOS A	2.9	78.1	0.15	0.40	0.15	34.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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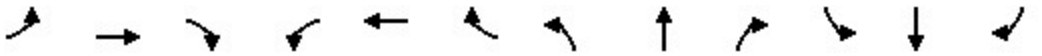

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	1320	40	20	1170	40	50	50	10	90	50	140
Future Volume (veh/h)	110	1320	40	20	1170	40	50	50	10	90	50	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	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		1.00	1.00		1.00	1.00		0.99
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	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781
Adj Flow Rate, veh/h	116	1389	41	21	1232	40	53	53	0	95	53	19
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	8	8	8	8	8	8	8	8	8	8	8	8
Cap, veh/h	124	2125	63	34	1943	63	81	81	140	123	68	165
Arrive On Green	0.07	0.63	0.63	0.04	1.00	1.00	0.09	0.09	0.00	0.11	0.11	0.11
Sat Flow, veh/h	1697	3354	99	1697	3345	109	869	869	1510	1108	618	1493
Grp Volume(v), veh/h	116	700	730	21	623	649	106	0	0	148	0	19
Grp Sat Flow(s),veh/h/ln	1697	1692	1761	1697	1692	1761	1738	0	1510	1726	0	1493
Q Serve(g_s), s	9.5	36.2	36.3	1.7	0.0	0.0	8.2	0.0	0.0	11.7	0.0	1.6
Cycle Q Clear(g_c), s	9.5	36.2	36.3	1.7	0.0	0.0	8.2	0.0	0.0	11.7	0.0	1.6
Prop In Lane	1.00		0.06	1.00		0.06	0.50		1.00	0.64		1.00
Lane Grp Cap(c), veh/h	124	1072	1116	34	983	1023	161	0	140	191	0	165
V/C Ratio(X)	0.94	0.65	0.65	0.62	0.63	0.63	0.66	0.00	0.00	0.77	0.00	0.11
Avail Cap(c_a), veh/h	124	1072	1116	61	983	1023	397	0	345	358	0	309
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.81	0.81	0.81	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	64.6	16.0	16.0	66.7	0.0	0.0	61.4	0.0	0.0	60.5	0.0	56.1
Incr Delay (d2), s/veh	62.0	3.1	3.0	14.1	2.5	2.4	4.5	0.0	0.0	6.6	0.0	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(95%),veh/ln	10.3	20.4	21.1	1.6	1.2	1.2	7.0	0.0	0.0	9.4	0.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	126.5	19.1	19.0	80.8	2.5	2.4	65.8	0.0	0.0	67.1	0.0	56.4
LnGrp LOS	F	B	B	F	A	A	E			E		E
Approach Vol, veh/h		1546			1293			106			167	
Approach Delay, s/veh		27.1			3.8			65.8			65.9	
Approach LOS		C			A			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	94.1		20.5	14.8	86.7		18.0				
Change Period (Y+Rc), s	4.6	5.4		5.0	4.6	5.4		5.0				
Max Green Setting (Gmax), s	5.0	54.0		29.0	10.2	48.8		32.0				
Max Q Clear Time (g_c+I1), s	3.7	38.3		13.7	11.5	2.0		10.2				
Green Ext Time (p_c), s	0.0	13.6		0.7	0.0	29.8		0.5				

Intersection Summary	
HCM 7th Control Delay, s/veh	20.8
HCM 7th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	1290	30	50	1160	50	20	90	30	40	90	50
Future Volume (veh/h)	100	1290	30	50	1160	50	20	90	30	40	90	50
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		1.00	1.00		1.00	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	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796
Adj Flow Rate, veh/h	103	1330	30	52	1196	50	21	93	24	41	93	12
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	7	7	7	7	7	7	7	7	7	7	7	7
Cap, veh/h	126	2429	55	67	2260	94	41	128	29	76	146	219
Arrive On Green	0.15	1.00	1.00	0.01	0.22	0.22	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	1711	3412	77	1711	3338	139	80	884	203	294	1012	1519
Grp Volume(v), veh/h	103	665	695	52	611	635	138	0	0	134	0	12
Grp Sat Flow(s),veh/h/ln	1711	1706	1782	1711	1706	1771	1167	0	0	1306	0	1519
Q Serve(g_s), s	8.2	0.0	0.0	4.2	44.1	44.2	3.6	0.0	0.0	0.0	0.0	1.0
Cycle Q Clear(g_c), s	8.2	0.0	0.0	4.2	44.1	44.2	17.4	0.0	0.0	13.7	0.0	1.0
Prop In Lane	1.00		0.04	1.00		0.08	0.15		0.17	0.31		1.00
Lane Grp Cap(c), veh/h	126	1215	1269	67	1155	1199	198	0	0	222	0	219
V/C Ratio(X)	0.82	0.55	0.55	0.78	0.53	0.53	0.70	0.00	0.00	0.60	0.00	0.05
Avail Cap(c_a), veh/h	237	1215	1269	139	1155	1199	329	0	0	348	0	341
HCM Platoon Ratio	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.62	0.62	0.62	0.81	0.81	0.81	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	58.8	0.0	0.0	68.5	34.7	34.7	57.5	0.0	0.0	56.4	0.0	51.7
Incr Delay (d2), s/veh	15.5	1.1	1.1	14.7	1.4	1.4	4.4	0.0	0.0	2.6	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(95%),veh/ln	6.4	0.7	0.7	3.9	27.4	28.3	8.8	0.0	0.0	8.3	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	74.3	1.1	1.1	83.3	36.1	36.1	61.8	0.0	0.0	59.1	0.0	51.8
LnGrp LOS	E	A	A	F	D	D	E			E		D
Approach Vol, veh/h		1463			1298			138			146	
Approach Delay, s/veh		6.2			38.0			61.8			58.5	
Approach LOS		A			D			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.0	105.2		24.8	14.9	100.3		24.8				
Change Period (Y+Rc), s	4.6	5.5		4.6	4.6	5.5		4.6				
Max Green Setting (Gmax), s	11.4	82.5		31.4	19.4	74.5		31.4				
Max Q Clear Time (g_c+I1), s	6.2	2.0		15.7	10.2	46.2		19.4				
Green Ext Time (p_c), s	0.0	45.2		0.6	0.3	20.4		0.5				

Intersection Summary		
HCM 7th Control Delay, s/veh	24.8	
HCM 7th LOS	C	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	1350	80	110	1170	10	170	10	100	30	20	40
Future Volume (veh/h)	10	1350	80	110	1170	10	170	10	100	30	20	40
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		1.00	1.00		1.00	1.00		0.99	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	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781
Adj Flow Rate, veh/h	10	1392	79	113	1206	10	175	10	89	31	21	3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	8	8	8	8	8	8	8	8	8	8	8	8
Cap, veh/h	20	1862	105	96	2122	18	158	9	80	54	37	78
Arrive On Green	0.02	0.76	0.76	0.08	0.82	0.82	0.15	0.15	0.15	0.05	0.05	0.05
Sat Flow, veh/h	1697	3256	184	1697	3440	29	1038	59	528	1031	699	1484
Grp Volume(v), veh/h	10	722	749	113	593	623	274	0	0	52	0	3
Grp Sat Flow(s),veh/h/ln	1697	1692	1748	1697	1692	1776	1626	0	0	1730	0	1484
Q Serve(g_s), s	0.8	33.0	33.4	7.9	16.5	16.5	21.3	0.0	0.0	4.1	0.0	0.3
Cycle Q Clear(g_c), s	0.8	33.0	33.4	7.9	16.5	16.5	21.3	0.0	0.0	4.1	0.0	0.3
Prop In Lane	1.00		0.11	1.00		0.02	0.64		0.32	0.60		1.00
Lane Grp Cap(c), veh/h	20	968	1000	96	1044	1096	247	0	0	90	0	78
V/C Ratio(X)	0.51	0.75	0.75	1.18	0.57	0.57	1.11	0.00	0.00	0.57	0.00	0.04
Avail Cap(c_a), veh/h	62	968	1000	96	1044	1096	247	0	0	322	0	277
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.80	0.80	0.80	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	68.5	11.1	11.2	64.7	6.3	6.3	59.4	0.0	0.0	64.8	0.0	63.0
Incr Delay (d2), s/veh	15.6	4.2	4.2	148.4	2.2	2.1	89.1	0.0	0.0	5.1	0.0	0.2
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(95%),veh/ln	0.8	14.3	14.8	12.3	8.1	8.4	22.3	0.0	0.0	3.5	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	84.2	15.3	15.3	213.2	8.5	8.4	148.5	0.0	0.0	70.0	0.0	63.2
LnGrp LOS	F	B	B	F	A	A	F			E		E
Approach Vol, veh/h		1481			1329			274			55	
Approach Delay, s/veh		15.8			25.9			148.5			69.6	
Approach LOS		B			C			F			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.6	86.5		12.9	7.3	92.8		27.0				
Change Period (Y+Rc), s	5.7	6.4		5.6	5.7	6.4		5.7				
Max Green Setting (Gmax), s	7.9	61.3		26.1	5.1	64.1		21.3				
Max Q Clear Time (g_c+I1), s	10.3	35.4		6.1	2.8	18.5		23.3				
Green Ext Time (p_c), s	0.0	12.9		0.2	0.0	11.7		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	32.6
HCM 7th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	1440	0	0	1330	160	0	0	0	180	0	30
Future Volume (veh/h)	40	1440	0	0	1330	160	0	0	0	180	0	30
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		1.00	1.00		1.00	1.00		1.00	0.99		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	1796	1796	0	0	1796	1796	1796	1796	1796	1796	1796	1796
Adj Flow Rate, veh/h	43	1532	0	0	1415	163	0	0	0	191	0	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	7	7	0	0	7	7	7	7	7	7	7	7
Cap, veh/h	51	2894	0	0	2422	277	0	1	0	134	0	0
Arrive On Green	0.03	0.85	0.00	0.00	0.79	0.79	0.00	0.00	0.00	0.08	0.00	0.00
Sat Flow, veh/h	1711	3503	0	0	3175	353	0	1796	0	1691	0	0
Grp Volume(v), veh/h	43	1532	0	0	778	800	0	0	0	191	0	0
Grp Sat Flow(s),veh/h/ln	1711	1706	0	0	1706	1732	0	1796	0	1691	0	0
Q Serve(g_s), s	3.5	17.3	0.0	0.0	25.2	25.9	0.0	0.0	0.0	11.1	0.0	0.0
Cycle Q Clear(g_c), s	3.5	17.3	0.0	0.0	25.2	25.9	0.0	0.0	0.0	11.1	0.0	0.0
Prop In Lane	1.00		0.00	0.00		0.20	0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	51	2894	0	0	1340	1360	0	1	0	134	0	0
V/C Ratio(X)	0.84	0.53	0.00	0.00	0.58	0.59	0.00	0.00	0.00	1.42	0.00	0.00
Avail Cap(c_a), veh/h	51	2894	0	0	1340	1360	0	500	0	134	0	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	1.00	0.00	0.00	0.56	0.56	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	67.6	2.9	0.0	0.0	5.9	6.0	0.0	0.0	0.0	64.5	0.0	0.0
Incr Delay (d2), s/veh	69.3	0.7	0.0	0.0	1.0	1.1	0.0	0.0	0.0	228.6	0.0	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(95%),veh/ln	4.5	7.5	0.0	0.0	11.3	11.7	0.0	0.0	0.0	21.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	136.9	3.6	0.0	0.0	7.0	7.1	0.0	0.0	0.0	293.0	0.0	0.0
LnGrp LOS	F	A			A	A				F		
Approach Vol, veh/h		1575			1578			0			191	
Approach Delay, s/veh		7.3			7.0			0.0			293.0	
Approach LOS		A			A						F	

Timer - Assigned Phs	2	4	5	6	8
Phs Duration (G+Y+Rc), s	123.8	16.2	8.8	115.0	0.0
Change Period (Y+Rc), s	5.1	5.1	4.6	5.1	4.6
Max Green Setting (Gmax), s	75.1	11.1	4.2	66.3	39.0
Max Q Clear Time (g_c+I1), s	19.3	13.1	5.5	27.9	0.0
Green Ext Time (p_c), s	17.6	0.0	0.0	19.5	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	23.5
HCM 7th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	330	1140	150	150	940	240	140	380	170	250	340	410
Future Volume (veh/h)	330	1140	150	150	940	240	140	380	170	250	340	410
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		0.99	1.00		0.99	1.00		1.00	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	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796
Adj Flow Rate, veh/h	355	1226	92	161	1011	95	151	409	143	269	366	409
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	7	7	7	7	7	7	7	7	7	7	7	7
Cap, veh/h	260	1560	686	134	1309	575	196	492	170	205	883	620
Arrive On Green	0.05	0.15	0.15	0.05	0.26	0.26	0.06	0.20	0.20	0.12	0.26	0.26
Sat Flow, veh/h	1711	3413	1500	1711	3413	1500	3319	2486	859	1711	3413	1499
Grp Volume(v), veh/h	355	1226	92	161	1011	95	151	279	273	269	366	409
Grp Sat Flow(s),veh/h/ln	1711	1706	1500	1711	1706	1500	1659	1706	1639	1711	1706	1499
Q Serve(g_s), s	21.3	48.4	7.4	11.0	38.4	6.9	6.3	22.0	22.4	16.8	12.5	30.9
Cycle Q Clear(g_c), s	21.3	48.4	7.4	11.0	38.4	6.9	6.3	22.0	22.4	16.8	12.5	30.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.52	1.00		1.00
Lane Grp Cap(c), veh/h	260	1560	686	134	1309	575	196	338	324	205	883	620
V/C Ratio(X)	1.36	0.79	0.13	1.20	0.77	0.17	0.77	0.83	0.84	1.31	0.41	0.66
Avail Cap(c_a), veh/h	260	1560	686	134	1309	575	220	475	456	205	1134	730
HCM Platoon Ratio	0.33	0.33	0.33	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.79	0.79	0.79	0.88	0.88	0.88	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	66.5	52.8	35.4	66.3	46.3	34.6	64.9	53.9	54.0	61.6	43.1	33.4
Incr Delay (d2), s/veh	182.2	3.2	0.3	135.8	4.0	0.5	11.6	8.0	9.4	170.1	0.3	1.7
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(95%),veh/ln	34.3	30.0	5.3	15.8	24.1	4.8	5.3	15.3	15.2	26.3	9.1	17.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	248.7	56.1	35.8	202.1	50.3	35.2	76.5	61.8	63.4	231.7	43.4	35.1
LnGrp LOS	F	E	D	F	D	D	E	E	E	F	D	D
Approach Vol, veh/h		1673			1267			703			1044	
Approach Delay, s/veh		95.8			68.5			65.6			88.6	
Approach LOS		F			E			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.7	69.8	12.5	42.0	26.0	59.5	21.0	33.5
Change Period (Y+Rc), s	4.7	5.8	4.2	5.8	4.7	5.8	4.2	5.8
Max Green Setting (Gmax), s	11.0	52.7	9.3	46.5	21.3	42.4	16.8	39.0
Max Q Clear Time (g_c+I1), s	13.0	50.4	8.3	32.9	23.3	40.4	18.8	24.4
Green Ext Time (p_c), s	0.0	1.8	0.0	3.2	0.0	1.4	0.0	2.8

Intersection Summary	
HCM 7th Control Delay, s/veh	82.3
HCM 7th LOS	F

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1600	140	120	1240	140	140
Future Volume (veh/h)	1600	140	120	1240	140	140
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)		0.98	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	1781	1781	1781	1781	1781	1781
Adj Flow Rate, veh/h	1702	109	128	1319	149	16
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	8	8	8	8	8	8
Cap, veh/h	2529	1104	150	2925	204	94
Arrive On Green	1.00	1.00	0.09	0.86	0.06	0.06
Sat Flow, veh/h	3474	1477	1697	3474	3291	1510
Grp Volume(v), veh/h	1702	109	128	1319	149	16
Grp Sat Flow(s),veh/h/ln	1692	1477	1697	1692	1646	1510
Q Serve(g_s), s	0.0	0.0	10.4	12.1	6.2	1.4
Cycle Q Clear(g_c), s	0.0	0.0	10.4	12.1	6.2	1.4
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2529	1104	150	2925	204	94
V/C Ratio(X)	0.67	0.10	0.85	0.45	0.73	0.17
Avail Cap(c_a), veh/h	2529	1104	182	2925	705	324
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.28	0.28	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	62.9	2.1	64.5	62.2
Incr Delay (d2), s/veh	0.4	0.1	26.5	0.5	4.9	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	0.0	9.5	4.6	4.9	1.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	0.4	0.1	89.4	2.6	69.4	63.1
LnGrp LOS	A	A	F	A	E	E
Approach Vol, veh/h	1811			1447	165	
Approach Delay, s/veh	0.4			10.3	68.8	
Approach LOS	A			B	E	

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	16.4	110.3			126.7	13.3
Change Period (Y+Rc), s	4.0	5.7			5.7	4.6
Max Green Setting (Gmax), s	15.0	80.7			99.7	30.0
Max Q Clear Time (g_c+I1), s	12.4	2.0			14.1	8.2
Green Ext Time (p_c), s	0.1	40.1			23.6	0.5

Intersection Summary		
HCM 7th Control Delay, s/veh	7.9	
HCM 7th LOS	A	

Intersection	
Intersection Delay, s/veh	9.6
Intersection LOS	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	60	60	30	140	120	20
Future Vol, veh/h	60	60	30	140	120	20
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	91	91	45	212	182	30
Number of Lanes	1	0	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay, s/veh	9.4	10	9.3
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	18%	50%	0%
Vol Thru, %	82%	0%	86%
Vol Right, %	0%	50%	14%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	170	120	140
LT Vol	30	60	0
Through Vol	140	0	120
RT Vol	0	60	20
Lane Flow Rate	258	182	212
Geometry Grp	1	1	1
Degree of Util (X)	0.332	0.242	0.27
Departure Headway (Hd)	4.639	4.783	4.574
Convergence, Y/N	Yes	Yes	Yes
Cap	773	747	783
Service Time	2.683	2.83	2.619
HCM Lane V/C Ratio	0.334	0.244	0.271
HCM Control Delay, s/veh	10	9.4	9.3
HCM Lane LOS	A	A	A
HCM 95th-tile Q	1.5	0.9	1.1

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	27	20	5	20	25	30	50	9	36	60	30
Future Vol, veh/h	40	27	20	5	20	25	30	50	9	36	60	30
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	45	31	23	6	23	28	34	57	10	41	68	34
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	8.2	7.7	8.2	8.4
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	46%	10%	29%
Vol Thru, %	0%	85%	31%	40%	48%
Vol Right, %	0%	15%	23%	50%	24%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	30	59	87	50	126
LT Vol	30	0	40	5	36
Through Vol	0	50	27	20	60
RT Vol	0	9	20	25	30
Lane Flow Rate	34	67	99	57	143
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.052	0.091	0.124	0.068	0.175
Departure Headway (Hd)	5.491	4.882	4.512	4.33	4.412
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	654	735	797	828	815
Service Time	3.211	2.601	2.529	2.35	2.431
HCM Lane V/C Ratio	0.052	0.091	0.124	0.069	0.175
HCM Control Delay, s/veh	8.5	8.1	8.2	7.7	8.4
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	0.3	0.4	0.2	0.6

MOVEMENT SUMMARY

Site: 1 [SR 165 Scripps Roundabout Cumulative Plus Project PM (Site Folder: Mercey Springs Rd (SR 165)/Scripps Dr)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

SR 165/Scripps Dr
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: SR 165															
3	L2	All MCs	50	4.0	50	4.0	0.641	13.4	LOS B	5.3	137.5	0.64	0.65	0.70	31.2
8	T1	All MCs	458	4.0	458	4.0	0.641	7.7	LOS A	5.3	137.5	0.64	0.65	0.70	36.6
18	R2	All MCs	207	4.0	207	4.0	0.641	7.5	LOS A	5.3	137.5	0.64	0.65	0.70	28.7
Approach			714	4.0	714	4.0	0.641	8.1	LOS A	5.3	137.5	0.64	0.65	0.70	33.5
East: Scripps Dr															
1	L2	All MCs	163	4.0	163	4.0	0.475	9.0	LOS A	3.2	83.5	0.73	0.70	0.79	27.6
6	T1	All MCs	24	4.0	24	4.0	0.475	4.0	LOS A	3.2	83.5	0.73	0.70	0.79	25.1
16	R2	All MCs	239	4.0	239	4.0	0.475	4.9	LOS A	3.2	83.5	0.73	0.70	0.79	27.9
Approach			426	4.0	426	4.0	0.475	6.4	LOS A	3.2	83.5	0.73	0.70	0.79	27.7
North: SR 165															
7	L2	All MCs	185	4.0	185	4.0	0.639	12.3	LOS B	5.0	128.8	0.58	0.61	0.60	28.5
4	T1	All MCs	429	4.0	429	4.0	0.639	6.6	LOS A	5.0	128.8	0.58	0.61	0.60	36.4
14	R2	All MCs	133	4.0	133	4.0	0.639	6.5	LOS A	5.0	128.8	0.58	0.61	0.60	31.3
Approach			747	4.0	747	4.0	0.639	8.0	LOS A	5.0	128.8	0.58	0.61	0.60	33.2
West: Page Ave															
5	L2	All MCs	107	4.0	107	4.0	0.223	11.2	LOS B	1.3	34.0	0.73	0.72	0.73	29.4
2	T1	All MCs	17	4.0	17	4.0	0.223	5.9	LOS A	1.3	34.0	0.73	0.72	0.73	24.6
12	R2	All MCs	45	4.0	45	4.0	0.223	6.4	LOS A	1.3	34.0	0.73	0.72	0.73	29.7
Approach			168	4.0	168	4.0	0.223	9.4	LOS A	1.3	34.0	0.73	0.72	0.73	28.9
All Vehicles			2055	4.0	2055	4.0	0.641	7.8	LOS A	5.3	137.5	0.64	0.65	0.68	31.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	50	890	730	50	50	60
Future Vol, veh/h	50	890	730	50	50	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	220	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	52	927	760	52	52	63

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	813	0	-	0	1328	380
Stage 1	-	-	-	-	760	-
Stage 2	-	-	-	-	568	-
Critical Hdwy	4.16	-	-	-	6.86	6.96
Critical Hdwy Stg 1	-	-	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	2.23	-	-	-	3.53	3.33
Pot Cap-1 Maneuver	803	-	-	-	145	615
Stage 1	-	-	-	-	420	-
Stage 2	-	-	-	-	528	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	803	-	-	-	136	615
Mov Cap-2 Maneuver	-	-	-	-	136	-
Stage 1	-	-	-	-	392	-
Stage 2	-	-	-	-	528	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.52	0	33.82
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	803	-	-	-	236
HCM Lane V/C Ratio	0.065	-	-	-	0.485
HCM Ctrl Dly (s/v)	9.8	-	-	-	33.8
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0.2	-	-	-	2.4

MOVEMENT SUMMARY

Site: 13 [SR 165 Pioneer Roundabout Cumulative Plus Project PM (Site Folder: SR 165_Pioneer_Cumulative Year 2046)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

SR 165/Pioneer Rd
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: SR 165															
3	L2	All MCs	160	6.0	160	6.0	0.301	17.1	LOS B	1.3	35.2	0.72	0.86	0.73	33.4
8	T1	All MCs	149	6.0	149	6.0	0.301	9.8	LOS A	1.4	37.1	0.72	0.77	0.72	38.3
18	R2	All MCs	64	6.0	64	6.0	0.301	9.3	LOS A	1.4	37.1	0.71	0.77	0.71	36.9
Approach			372	6.0	372	6.0	0.301	12.8	LOS B	1.4	37.1	0.72	0.81	0.72	35.8
East: Pioneer Road															
1	L2	All MCs	32	6.0	32	6.0	0.208	15.9	LOS B	1.0	25.5	0.69	0.76	0.69	35.5
6	T1	All MCs	234	6.0	234	6.0	0.208	9.1	LOS A	1.0	26.8	0.69	0.73	0.69	35.9
16	R2	All MCs	11	6.0	11	6.0	0.208	8.6	LOS A	1.0	26.8	0.68	0.71	0.68	36.9
Approach			277	6.0	277	6.0	0.208	9.9	LOS A	1.0	26.8	0.69	0.73	0.69	35.9
North: SR 165															
7	L2	All MCs	21	6.0	21	6.0	0.250	15.1	LOS B	1.2	30.9	0.57	0.67	0.57	36.4
4	T1	All MCs	160	6.0	160	6.0	0.250	8.7	LOS A	1.2	30.9	0.57	0.67	0.57	38.6
14	R2	All MCs	426	6.0	426	6.0	0.451	8.0	LOS A	2.6	68.6	0.62	0.68	0.64	37.8
Approach			606	6.0	606	6.0	0.451	8.5	LOS A	2.6	68.6	0.61	0.67	0.62	38.0
West: Pioneer Road															
5	L2	All MCs	521	6.0	521	6.0	0.477	12.8	LOS B	3.3	87.0	0.54	0.64	0.54	34.3
2	T1	All MCs	426	6.0	426	6.0	0.460	6.6	LOS A	3.1	81.7	0.54	0.53	0.54	36.8
12	R2	All MCs	53	6.0	53	6.0	0.460	6.3	LOS A	3.1	81.7	0.54	0.53	0.54	37.6
Approach			1000	6.0	1000	6.0	0.477	9.8	LOS A	3.3	87.0	0.54	0.59	0.54	35.5
All Vehicles			2255	6.0	2255	6.0	0.477	10.0	LOS A	3.3	87.0	0.60	0.66	0.61	36.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	240	60	130	150	120	40	640	90	80	550	70
Future Volume (veh/h)	140	240	60	130	150	120	40	640	90	80	550	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		0.99	1.00		0.98	1.00		0.99	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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	146	250	13	135	156	25	42	667	30	83	573	26
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	192	356	299	177	341	282	74	1122	497	110	1194	518
Arrive On Green	0.11	0.19	0.19	0.10	0.18	0.18	0.04	0.32	0.32	0.06	0.34	0.34
Sat Flow, veh/h	1781	1870	1573	1781	1870	1549	1781	3554	1573	1781	3554	1543
Grp Volume(v), veh/h	146	250	13	135	156	25	42	667	30	83	573	26
Grp Sat Flow(s),veh/h/ln	1781	1870	1573	1781	1870	1549	1781	1777	1573	1781	1777	1543
Q Serve(g_s), s	4.9	7.6	0.4	4.5	4.5	0.8	1.4	9.7	0.8	2.8	7.8	0.7
Cycle Q Clear(g_c), s	4.9	7.6	0.4	4.5	4.5	0.8	1.4	9.7	0.8	2.8	7.8	0.7
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	192	356	299	177	341	282	74	1122	497	110	1194	518
V/C Ratio(X)	0.76	0.70	0.04	0.76	0.46	0.09	0.57	0.59	0.06	0.75	0.48	0.05
Avail Cap(c_a), veh/h	592	916	770	534	855	708	242	2183	966	417	2532	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	26.5	23.1	20.2	26.8	22.3	20.7	28.7	17.6	14.6	28.2	16.0	13.7
Incr Delay (d2), s/veh	6.2	2.6	0.1	6.6	1.0	0.1	6.6	0.8	0.1	9.9	0.5	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(95%),veh/ln	4.2	6.2	0.3	3.9	3.6	0.5	1.3	6.5	0.5	2.5	5.2	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.6	25.7	20.2	33.4	23.3	20.9	35.3	18.4	14.6	38.1	16.5	13.8
LnGrp LOS	C	C	C	C	C	C	D	B	B	D	B	B
Approach Vol, veh/h		409			316			739			682	
Approach Delay, s/veh		28.0			27.4			19.2			19.0	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.5	25.1	10.8	16.7	7.2	26.3	11.3	16.2
Change Period (Y+Rc), s	4.7	5.8	4.7	5.1	4.7	5.8	4.7	5.1
Max Green Setting (Gmax), s	14.3	37.5	18.3	29.9	8.3	43.5	20.3	27.9
Max Q Clear Time (g_c+I1), s	11.8	11.7	6.5	9.6	3.4	9.8	6.9	6.5
Green Ext Time (p_c), s	0.1	7.4	0.3	1.5	0.0	6.7	0.3	0.9

Intersection Summary	
HCM 7th Control Delay, s/veh	22.0
HCM 7th LOS	C

MOVEMENT SUMMARY

Site: 1 [SR 165 Madison Roundabout Cumulative Plus Project PM (Site Folder: Mercey Springs Rd (SR 165)/Madison Ave)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

SR 165/Madison Ave
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: SR 165															
3	L2	All MCs	14	8.0	14	8.0	0.641	8.8	LOS A	6.2	163.7	0.24	0.33	0.24	27.5
8	T1	All MCs	815	8.0	815	8.0	0.641	3.3	LOS A	6.2	163.7	0.24	0.33	0.24	32.3
Approach			829	8.0	829	8.0	0.641	3.4	LOS A	6.2	163.7	0.24	0.33	0.24	32.2
North: SR 165															
4	T1	All MCs	739	8.0	739	8.0	0.602	5.1	LOS A	4.3	115.3	0.12	0.42	0.12	38.0
14	R2	All MCs	52	8.0	52	8.0	0.602	4.9	LOS A	4.3	115.3	0.12	0.42	0.12	29.9
Approach			791	8.0	791	8.0	0.602	5.1	LOS A	4.3	115.3	0.12	0.42	0.12	37.3
West: Madison Ave															
5	L2	All MCs	27	8.0	27	8.0	0.044	9.1	LOS A	0.2	5.5	0.60	0.66	0.60	25.6
12	R2	All MCs	8	8.0	8	8.0	0.044	5.0	LOS A	0.2	5.5	0.60	0.66	0.60	27.0
Approach			35	8.0	35	8.0	0.044	8.2	LOS A	0.2	5.5	0.60	0.66	0.60	25.9
All Vehicles			1655	8.0	1655	8.0	0.641	4.3	LOS A	6.2	163.7	0.19	0.38	0.19	34.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Appendix C.
Peak Hour Signal Warrant Worksheets

Fehr & Peers

Major Street	11th Street	Project	Presidential Estates
Minor Street	Madison Avenue	Scenario	Existing Plus Project Conditions
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	11	0	4
Through	280	306	0	0
Right	2	0	0	32
Total	282	317	0	36

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	10.9
Approach with Worst Case Delay	WB
Total Vehicles on Approach	36

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Existing Plus Project Conditions	**0.1**	**36**	**635**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Not Met**
Warrant Met	**NO**		

Fehr & Peers

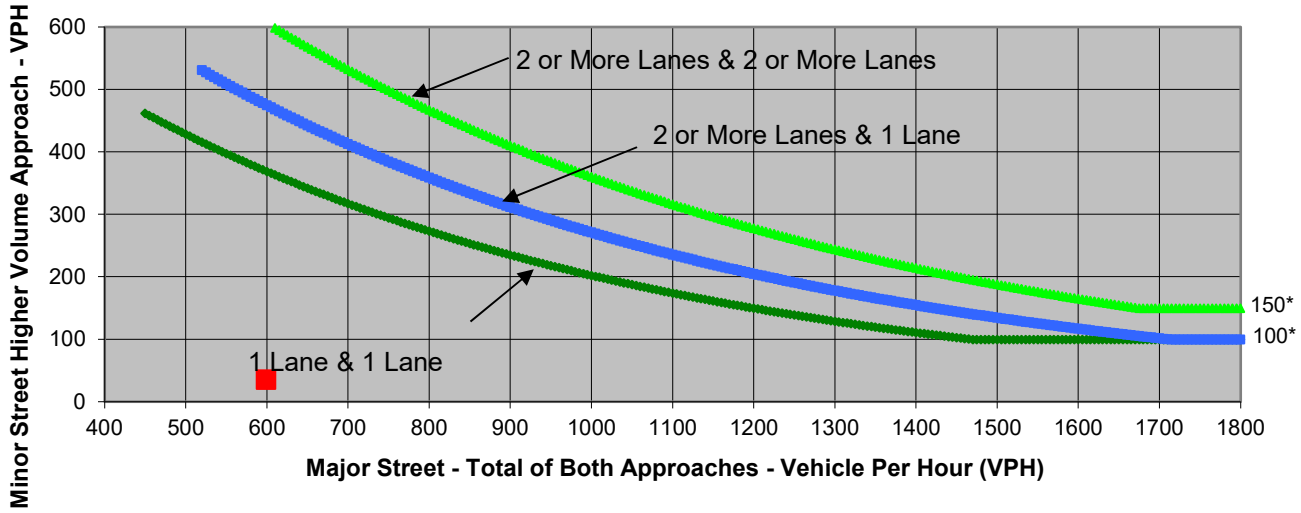
Major Street	11th Street	Project	Presidential Estates
Minor Street	Madison Avenue	Scenario	Existing Plus Project Conditions
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	11	0	4
Through	280	306	0	0
Right	2	0	0	32
Total	282	317	0	36

Major Street Direction

x	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	11th Street	Madison Avenue	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**599**	**36**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Fehr & Peers

Major Street	11th Street
Minor Street	Madison Avenue

Project	Presidential Estates
Scenario	Existing Plus Project Conditions
Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	40	0	2
Through	113	95	0	0
Right	7	0	0	19
Total	120	135	0	21

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	9.27
Approach with Worst Case Delay	WB
Total Vehicles on Approach	21

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Existing Plus Project Conditions	**0.1**	**21**	**276**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Not Met**
Warrant Met	**NO**		

Fehr & Peers

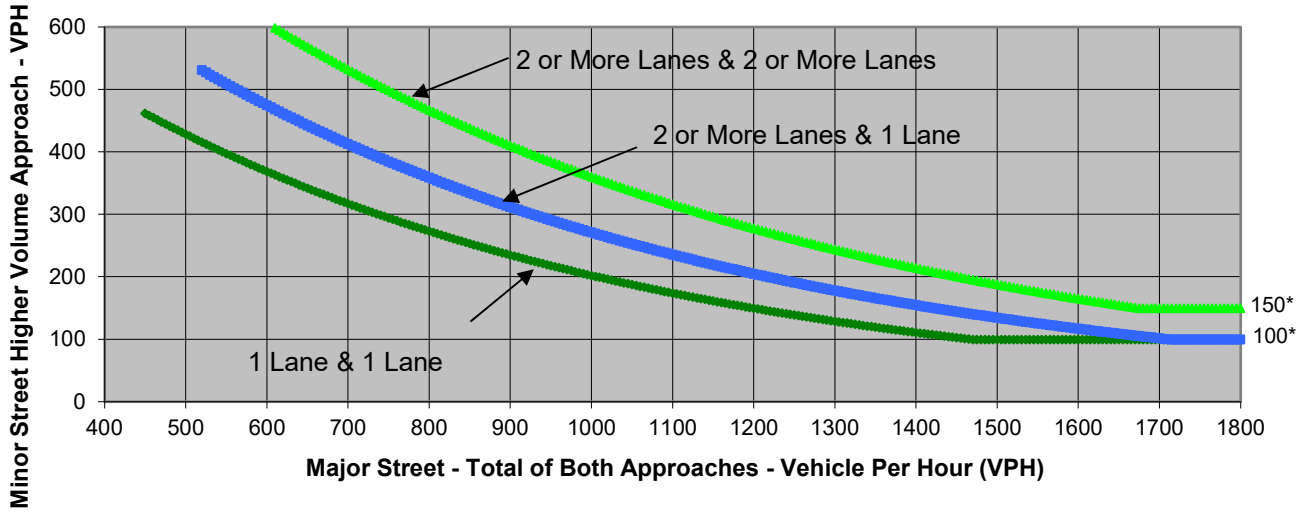
Major Street	11th Street	Project	Presidential Estates
Minor Street	Madison Avenue	Scenario	Existing Plus Project Conditions
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	40	0	2
Through	113	95	0	0
Right	7	0	0	19
Total	120	135	0	21

Major Street Direction

x	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	11th Street	Madison Avenue	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**255**	**21**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Fehr & Peers

Major Street	11th Street	Project	Presidential Estates
Minor Street	Madison Avenue	Scenario	Cumulative Plus Project Conditions
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	11	0	4
Through	288	309	0	0
Right	2	0	0	32
Total	290	320	0	36

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	10.98
Approach with Worst Case Delay	WB
Total Vehicles on Approach	36

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Cumulative Plus Project Conditions	**0.1**	**36**	**646**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Not Met**
Warrant Met	**NO**		

Fehr & Peers

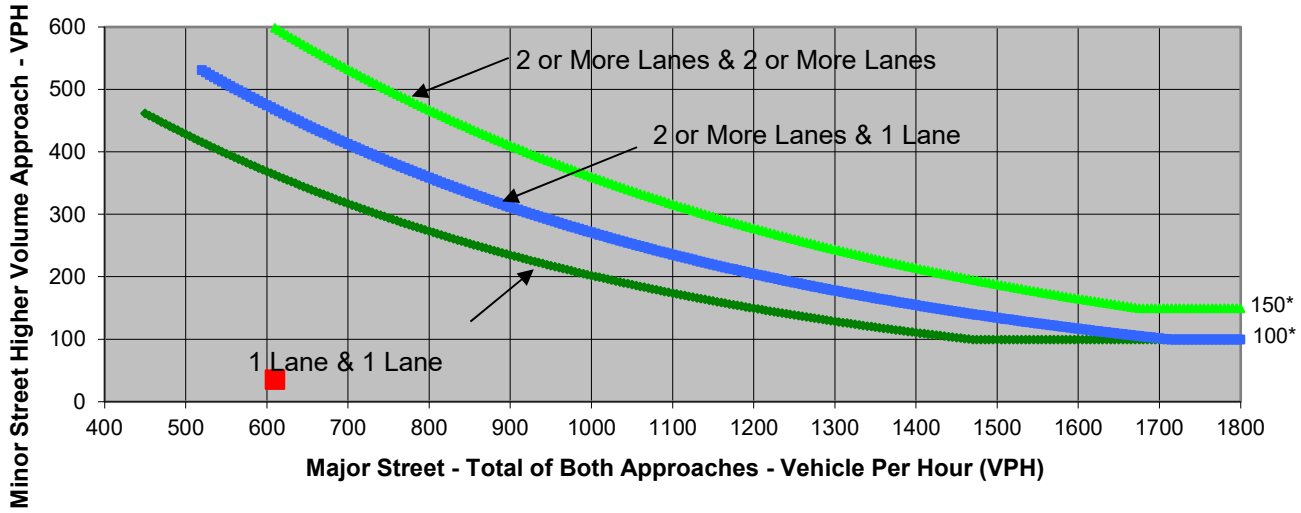
Major Street	11th Street	Project	Presidential Estates
Minor Street	Madison Avenue	Scenario	Cumulative Plus Project Conditions
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	11	0	4
Through	288	309	0	0
Right	2	0	0	32
Total	290	320	0	36

Major Street Direction

x	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	11th Street	Madison Avenue	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**610**	**36**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Fehr & Peers

Major Street	11th Street
Minor Street	Madison Avenue

Project	Presidential Estates
Scenario	Cumulative Plus Project Conditions
Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	40	0	2
Through	151	140	0	0
Right	7	0	0	19
Total	158	180	0	21

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	9.57
Approach with Worst Case Delay	WB
Total Vehicles on Approach	21

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Cumulative Plus Project Conditions	**0.1**	**21**	**359**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Not Met**
Warrant Met	**NO**		

Fehr & Peers

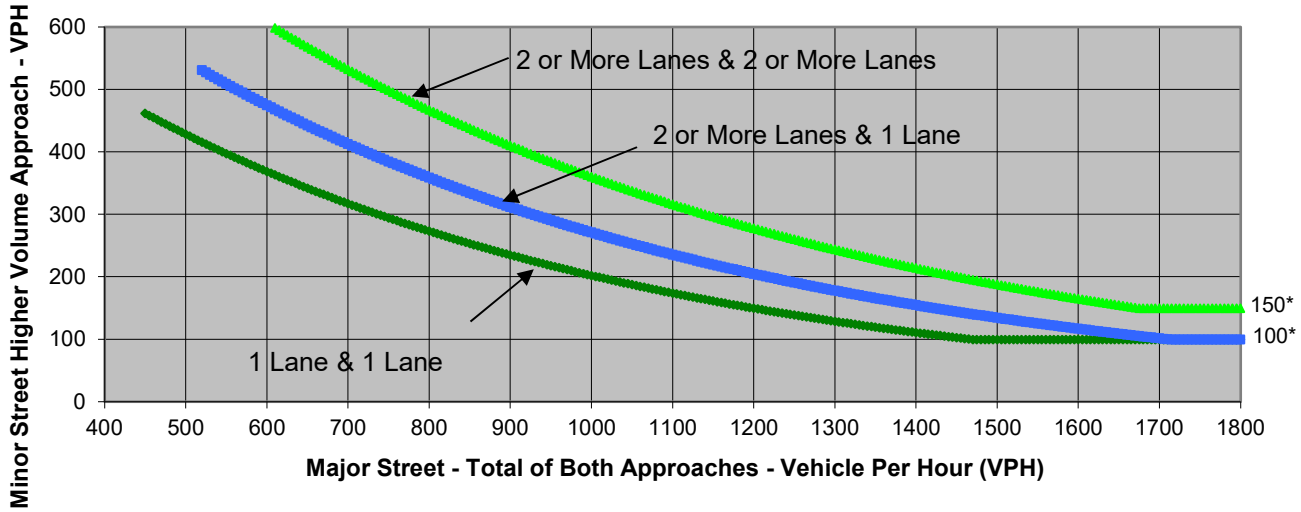
Major Street	11th Street	Project	Presidential Estates
Minor Street	Madison Avenue	Scenario	Cumulative Plus Project Conditions
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	40	0	2
Through	151	140	0	0
Right	7	0	0	19
Total	158	180	0	21

Major Street Direction

x	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	11th Street	Madison Avenue	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**338**	**21**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Fehr & Peers

Major Street	Pioneer Road
Minor Street	Eleventh Street

Project	Presidential Estates
Scenario	Existing Plus Project Conditions
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	55	132	0
Through	0	0	235	279
Right	0	117	0	121
Total	0	172	367	400

Major Street Direction

	North/South
x	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	35.47
Approach with Worst Case Delay	SB
Total Vehicles on Approach	172

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Existing Plus Project Conditions	**1.7**	**172**	**939**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

Fehr & Peers

Major Street	Pioneer Road	Project	Presidential Estates
Minor Street	Eleventh Street	Scenario	Existing Plus Project Conditions
		Peak Hour	AM

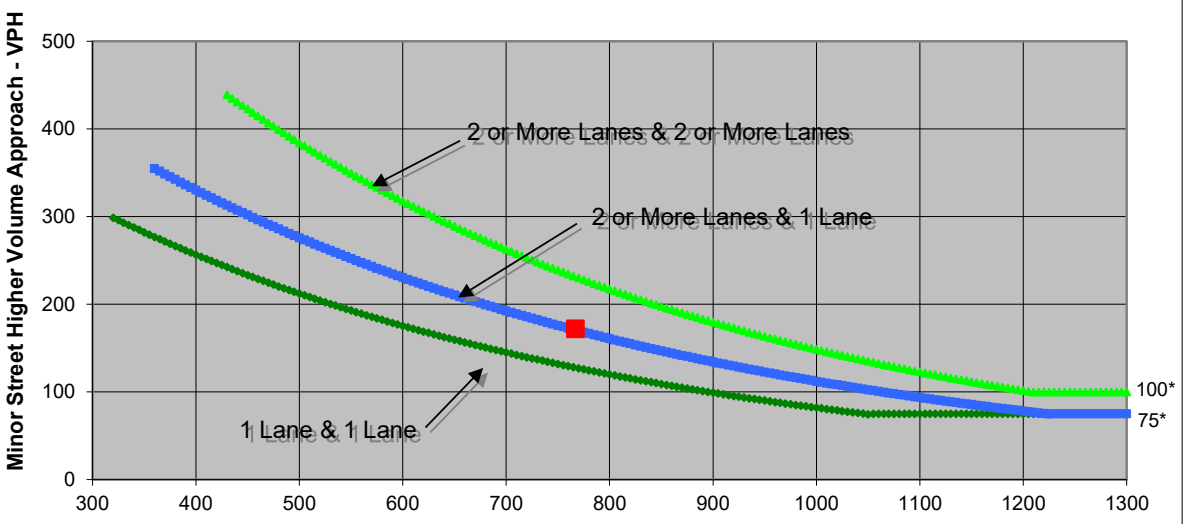
Turn Movement Volumes

	NB	SB	EB	WB
Left		55	132	
Through			235	279
Right		117		121
Total	0	172	367	400

Major Street Direction

	North/South
x	East/West

Figure 4C-4. Warrant 3B, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Pioneer Road	Eleventh Street	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**767**	**172**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Fehr & Peers

Major Street	Pioneer Road	Project	Presidential Estates
Minor Street	Eleventh Street	Scenario	Existing Plus Project Conditions
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	47	49	0
Through	0	0	391	320
Right	0	52	0	52
Total	0	99	440	372

Major Street Direction

	North/South
x	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	15
Approach with Worst Case Delay	SB
Total Vehicles on Approach	99

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Existing Plus Project Conditions	**0.4**	**99**	**911**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

Fehr & Peers

Major Street	Pioneer Road	Project	Presidential Estates
Minor Street	Eleventh Street	Scenario	Existing Plus Project Conditions
		Peak Hour	PM

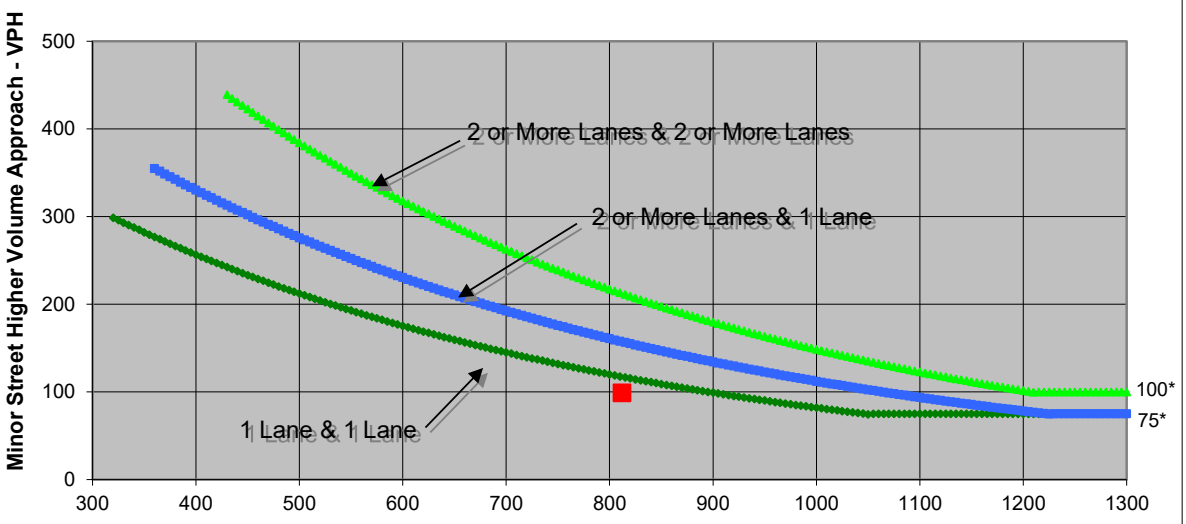
Turn Movement Volumes

	NB	SB	EB	WB
Left		47	49	
Through			391	320
Right		52		52
Total	0	99	440	372

Major Street Direction

	North/South
x	East/West

Figure 4C-4. Warrant 3B, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Pioneer Road	Eleventh Street	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**812**	**99**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Fehr & Peers

Major Street	Pioneer Road	Project	Presidential Estates
Minor Street	Eleventh Street	Scenario	Cumulative Plus Project Conditions
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	60	140	0
Through	0	0	510	757
Right	0	120	0	110
Total	0	180	650	867

Major Street Direction

	North/South
x	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	620
Approach with Worst Case Delay	SB
Total Vehicles on Approach	180

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Cumulative Plus Project Conditions	**31**	**180**	**1,697**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

Fehr & Peers

Major Street	Pioneer Road	Project	Presidential Estates
Minor Street	Eleventh Street	Scenario	Cumulative Plus Project Conditions
		Peak Hour	AM

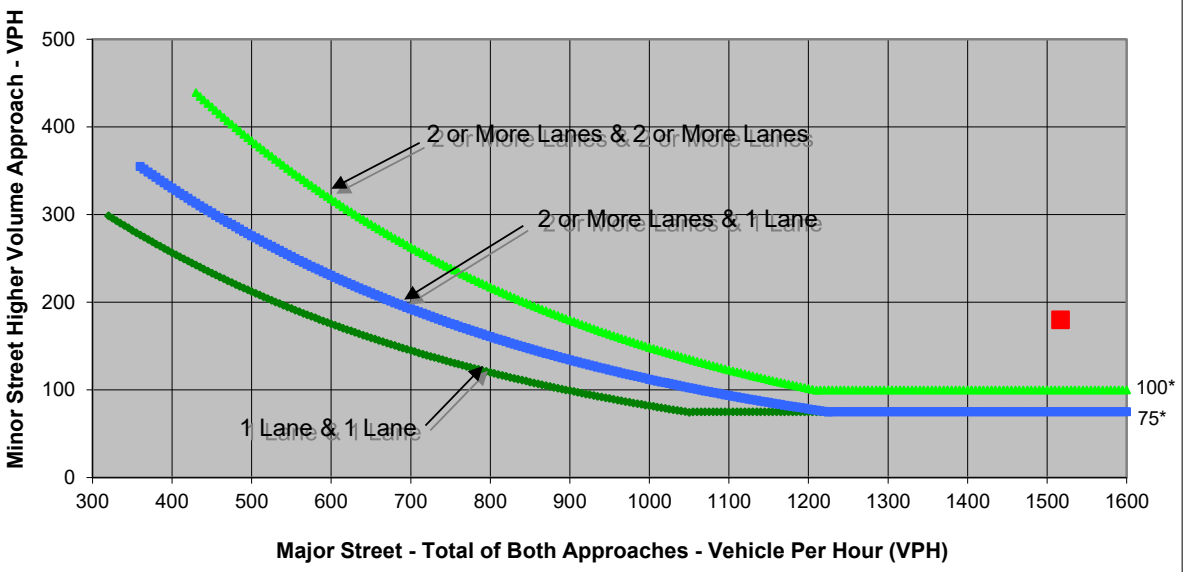
Turn Movement Volumes

	NB	SB	EB	WB
Left		60	140	
Through			510	757
Right		120		110
Total	0	180	650	867

Major Street Direction

	North/South
x	East/West

Figure 4C-4. Warrant 3B, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Pioneer Road	Eleventh Street	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**1,517**	**180**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Fehr & Peers

Major Street	Pioneer Road	Project	Presidential Estates
Minor Street	Eleventh Street	Scenario	Cumulative Plus Project Conditions
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	50	50	0
Through	0	0	890	730
Right	0	60	0	50
Total	0	110	940	780

Major Street Direction

	North/South
x	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	34
Approach with Worst Case Delay	SB
Total Vehicles on Approach	110

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Cumulative Plus Project Conditions	**1**	**110**	**1,830**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

Fehr & Peers

Major Street	Pioneer Road	Project	Presidential Estates
Minor Street	Eleventh Street	Scenario	Cumulative Plus Project Conditions
		Peak Hour	PM

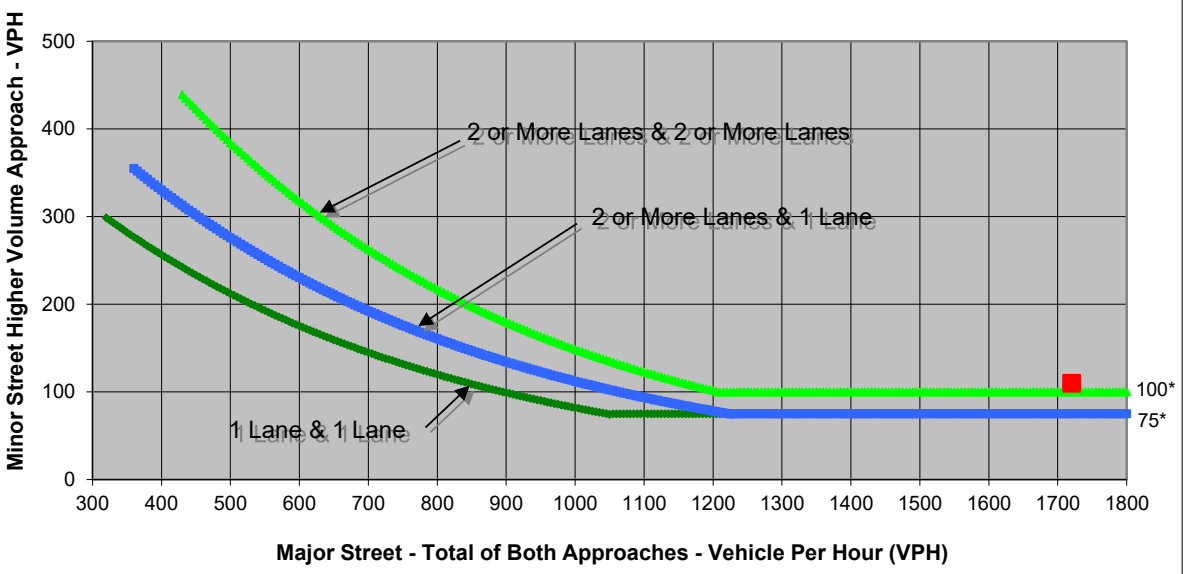
Turn Movement Volumes

	NB	SB	EB	WB
Left		50	50	
Through			890	730
Right		60		50
Total	0	110	940	780

Major Street Direction

	North/South
x	East/West

Figure 4C-4. Warrant 3B, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Pioneer Road	Eleventh Street	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**1,720**	**110**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Fehr & Peers

Major Street	Mercy Springs Road (SR 165)	Project	Presidential Estates
Minor Street	Pioneer Road	Scenario	Existing Plus Project Conditions
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	53	0	244	0
Through	128	130	0	0
Right	0	341	38	0
Total	181	471	282	0

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	37
Approach with Worst Case Delay	EB
Total Vehicles on Approach	282

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Existing Plus Project Conditions	**2.9**	**282**	**934**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

Fehr & Peers

Major Street	Mercy Springs Road (SR 165)	Project	Presidential Estates
Minor Street	Pioneer Road	Scenario	Existing Plus Project Conditions
		Peak Hour	AM

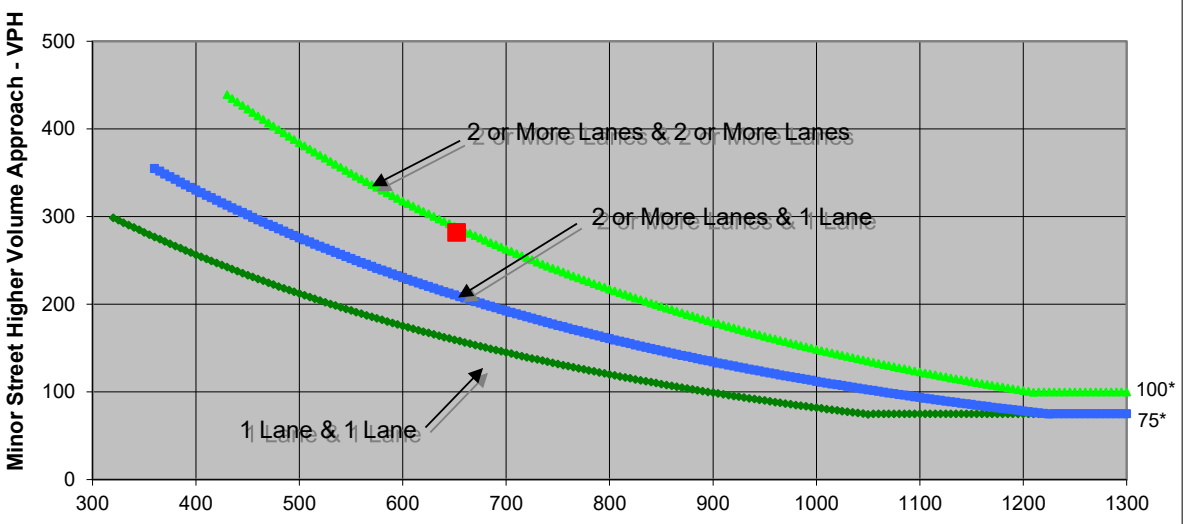
Turn Movement Volumes

	NB	SB	EB	WB
Left	53		244	
Through	128	130		
Right		341	38	
Total	181	471	282	0

Major Street Direction

x	North/South
	East/West

Figure 4C-4. Warrant 3B, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Mercy Springs Road (SR 165)	Pioneer Road	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**652**	**282**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Fehr & Peers

Major Street	Mercy Springs Road (SR 165)	Project	Presidential Estates
Minor Street	Pioneer Road	Scenario	Existing Plus Project Conditions
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	21	0	375	0
Through	121	81	0	0
Right	0	311	24	0
Total	142	392	399	0

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	26.8
Approach with Worst Case Delay	EB
Total Vehicles on Approach	399

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Existing Plus Project Conditions	**3**	**399**	**933**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

Fehr & Peers

Major Street	Mercy Springs Road (SR 165)	Project	Presidential Estates
Minor Street	Pioneer Road	Scenario	Existing Plus Project Conditions
		Peak Hour	PM

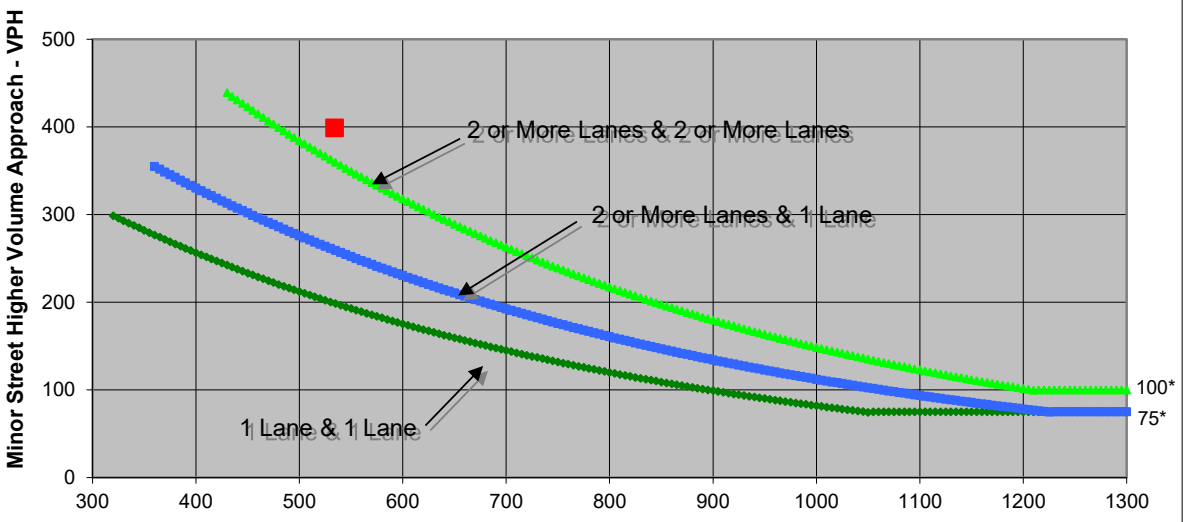
Turn Movement Volumes

	NB	SB	EB	WB
Left	21		375	
Through	121	81		
Right		311	24	
Total	142	392	399	0

Major Street Direction

x	North/South
	East/West

Figure 4C-4. Warrant 3B, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Mercy Springs Road (SR 165)	Pioneer Road	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**534**	**399**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

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