

Appendix A: **Traffic Operations Analysis Report**

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Draft Report

Traffic Operations Analysis for the Mitchell Townhomes Project

Prepared for the
City of Walnut Creek

July 2, 2025



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Executive Summary

The proposed project would result in the demolition of 357,463 square feet of existing office buildings and the construction of 422 townhouse dwelling units located in the City of Walnut Creek. City staff has requested that the applicant include as a project variant, the construction of additional transportation improvements as a community benefit, including a new single-lane roundabout at Shadelands Drive/North Via Monte and additional bicycle facilities along Mitchell Drive and Shadelands Drive.

This project, with or without the Community Benefits Variant, would generate an average of 3,038 trips each day which includes 203 trips during the morning peak hour and 241 trips during the evening peak hour. With trip reductions associated with the removal of the existing office use, the anticipated net change in trip generation would include an average decrease of 62 trips each day, 231 fewer trips during the morning peak hour and 171 fewer trips during the evening peak hour. Trips associated with the existing use include a 20-percent reduction since the building occupancy was estimated to be 80 percent. Applying a 20-percent trip reduction is conservative since trip credits for a fully occupied office building could have been applied to reflect the entitled land use of the site.

Nine intersections were evaluated for this study. It was determined that each intersection would continue operating acceptably under all volume scenarios considered, both without and with the project according to the methodologies prescribed by the City's *Transportation Analysis Guidelines*, except at Shadelands Drive/North Wiget Lane which would operate unacceptably with or without project trips added. An adverse effect is not attributed to the project since conversion of this intersection to either a single-lane roundabout or traffic signal would result in Level of Service (LOS) A and B operation. The Mitchell Drive/North Wiget Lane intersection would operate at LOS A as a single-lane roundabout with or without the addition of project trips.

Under all scenarios evaluated without or with the project, the roadway segment of Ygnacio Valley Road between I-680 and Oak Grove Road is expected to operate unacceptably westbound with a delay index of 2.0 or greater and speeds below 15 miles per hour (mph) during the a.m. peak hour. During the p.m. peak hour, eastbound Ygnacio Valley Road is expected to operate unacceptably with speeds below 15 mph under all evaluated conditions. An adverse effect is not attributed to the project since neither the delay index nor average vehicle speeds would operate unacceptably with or without the project.

The intersection of Shadelands Drive/North Via Monte would continue to operate acceptably at LOS A as a single-lane roundabout if implemented as part of the Community Benefits Variant. Shadelands Drive/North Via Monte would also operate acceptably with all-way stop control.

The addition of project traffic would not cause the Peak Hour traffic signal warrant from the *California Manual on Uniform Traffic Control Devices* (CA-MUTCD) to be met for either Mitchell Drive/North Wiget Lane or Shadelands Drive/North Via Monte under all scenarios evaluated. The Peak Hour signal warrant would be met for Shadelands Drive/North Wiget Lane under all a.m. and p.m. peak hour scenarios except Existing plus Project during the a.m. peak hour.

The intersections of Shadelands Drive/North Wiget Lane and Ygnacio Valley Road/Oak Grove Road had documented collision rates above the statewide average during the study period. The installation of a traffic signal or roundabout at the intersection of Shadelands Drive/North Wiget Lane would be expected to reduce the collision rate.

The City's *Local Roadway Safety Plan* (LRSP) identifies three high-injury collision intersections within the study area and presents several safety improvements along the Ygnacio Valley Road corridor to be implemented. One of these intersections, Ygnacio Valley Road/Oak Grove Road, was also identified as having a higher-than-average collision rate when compared to similar facilities in the state.

Introduction

This report presents an analysis of the potential effects on traffic operation that would be associated with development of a proposed residential development to be located at 2775-2855 Mitchell Drive, 2730-2880 Shadelands Drive, and a portion of 2125 Oak Grove Road in the City of Walnut Creek. The traffic study was completed in accordance with the criteria established by the City of Walnut Creek and is consistent with standard traffic engineering techniques. The operational analysis presented in this report is not intended for use in evaluating transportation impacts under the guidelines set forth in the California Environmental Quality Act (CEQA).

Prelude

The purpose of this study is to provide City staff and policy makers with data that they can use to make an informed decision regarding the potential effects on traffic operation associated with the proposed project, and any associated improvements that would be required in order to reduce these effects to an acceptable level according to the City's General Plan or other policies. While no longer a part of the CEQA review process, vehicular traffic service levels at key intersections were evaluated for consistency with General Plan policies by determining the number of new trips that the proposed use would be expected to generate, distributing these trips to the surrounding street system based on anticipated travel patterns specific to the proposed project, then analyzing the effect the new traffic would be expected to have on the study intersections.

Project Profile

The project site is located on multiple parcels at 2775-2855 Mitchell Drive, 2730-2880 Shadelands Drive, and a portion of 2125 Oak Grove Road in the City of Walnut Creek and includes the redevelopment of the site from the current eleven office buildings with 30,000 to 36,000 square feet of floor area each (for 357,463 square feet total), to 422 townhouse dwelling units. Approximately 1,481 existing parking stalls would be replaced with 955 parking stalls for the project, consisting of a two-car garage for each townhouse unit and 111 total guest parking spaces. The four existing driveways on Mitchell Drive and four existing driveways on Shadelands Drive would be replaced with two new driveways on each street. Figure 1 illustrates the study area and project site location.

Community Benefits Variant

The City has requested that the applicant include as a project variant, the construction of additional transportation improvements as community benefits ("Community Benefits Variant"). Variants are variations of the proposed project at the same project site, with the same objectives, background, and development controls but with a specific alteration.

Similar to the proposed project, variants have the potential to increase or reduce potential operational effects upon implementation. This report describes and analyzes potential effects associated with the proposed Community Benefits Variant. The Community Benefits Variant is not designed to reduce or alleviate adverse effects of the proposed project, and the proposed components are not alternatives to the proposed project. Rather, the improvements that are part of the proposed variant, if selected by the applicant and approved by the City, would be constructed as additional components of the proposed project.

The proposed Community Benefits Variants includes two independent components. Firstly, the construction of a single-lane traffic roundabout at Shadelands Drive/North Via Monte immediately south of the project site ("Shadelands/Via Monte Roundabout"). The Shadelands/Via Monte Roundabout was considered and recommended for further evaluation as part of the *Shadelands Multi-Modal Improvement Plan*.



Traffic Operations Analysis for the Mitchell Townhomes Project
Figure 1 – Study Area and Existing Lane Configurations

Currently, Shadelands Drive/North Via Monte is a T-intersection with stop control along the North Via Monte approach with pedestrian crossings on east and south legs only. The proposed variant would also include striped pedestrian crosswalks on all legs of the roundabout.

The second component of the Community Benefits Variant is the establishment of Class IV bicycle facilities along portions of Shadelands Drive and Mitchell Drive. Each Class IV bikeway would be located within the public right-of way and be comprised of a 5-foot-wide bikeway with 3-foot-wide painted buffer which is consistent with the illustrations shown in the *Shadelands Multi-Modal Improvement Plan*. A description of each segment is provided below.

1. Shadelands Drive (“Shadelands Bike Lane Extensions”)
 - a. Class IV bikeway from North Via Monte to North Wiget Lane along both the north and south sides of the right-of-way.
 - b. Class IV bikeway from the eastern project boundary to Oak Grove Road on the north side of the right-of-way.
2. Mitchell Drive (“Mitchell Bike Lane Extensions”)
 - a. Class IV bikeway from the eastern project boundary to Oak Grove Road on the south side of Mitchell Drive.
 - b. Class IV bikeway from the western project boundary to Oak Grove Road on the north side of Mitchell Drive.

The proposed bicycle facility improvements would be limited to pavement striping, installation of vertical delineators and signage installed within the existing roadway to demarcate protected bike lanes. Implementation of these bicycle facilities would not require roadway widening or modifications to the curb and gutter.

Project Data

The project site is located at 2775-2855 Mitchell Drive, 2730-2880 Shadelands Drive, and a portion of 2125 Oak Grove Road in the City of Walnut Creek and includes redeveloping the site from the current 11 office buildings with 30,000 to 36,000 square feet of floor area each (for a total of 357,463 square feet), to 422 townhouse dwelling units. Approximately 1,481 existing parking stalls would be replaced with 955 parking spaces comprised of a two-car garage for each townhouse unit and 111 total guest parking spaces. The four existing driveways on Mitchell Drive and four existing driveways on Shadelands Drive would be replaced with two new driveways on each street. The proposed project site plan is shown in Figure 2.

Trip Generation

The anticipated trip generation for the proposed project was estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual, 11th Edition*, 2021 for “Single Family Attached Housing” (ITE LU #215). Because the site is currently occupied by the Walnut Creek Executive Park, the trip generation of the offices was considered. “General Office Building” (ITE LU #710) rates were applied to the existing use. These trips were reduced by 20 percent since the building occupancy was estimated to be 80 percent. Applying a 20-percent trip reduction is conservative since trip credits for a fully occupied office building could have been applied to reflect the entitled land use of the site.

The project as proposed would generate an average of 3,038 trips per day, including 203 during the a.m. peak hour and 241 p.m. peak hour trips. In comparison to the existing use, the project would be expected to generate an average of 62 net fewer daily trips, including 231 fewer vehicle trips during the morning peak hour and 171 fewer vehicle trips during the evening peak hour, as summarized in Table 1.

Table 1 – Trip Generation Summary

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Existing											
Offices	-357.453 ksf	10.84	-3,875	1.52	-543	-478	-65	1.44	-515	-88	-427
Occupancy Adjustment (20%)			775		109	96	13		103	18	85
Subtotal (Occupied)			-3,100		-434	-382	-52		-412	-70	-342
Proposed											
Townhouse	422 du	7.20	3,038	0.48	203	63	140	0.57	241	137	104
Total New Trips			-62		-231	-319	88		-171	67	-238

Note: ksf = 1,000 square feet, du = dwelling units

Trip Distribution

Data from the United States Census for years 2018 and 2019 was used to estimate the trip distribution patterns within the study area separately for the office and residential uses. Since major modifications to the roadway network in Walnut Creek are not anticipated, the same trip distribution was used for all study periods and conditions. Trips generated by the office use were distributed between the eleven existing driveways based on their proximity to each office building, with a higher portion of trips assigned to driveways nearest to each building. Residential trips were assigned to the four proposed driveways based on the number of residential units closest to each driveway.



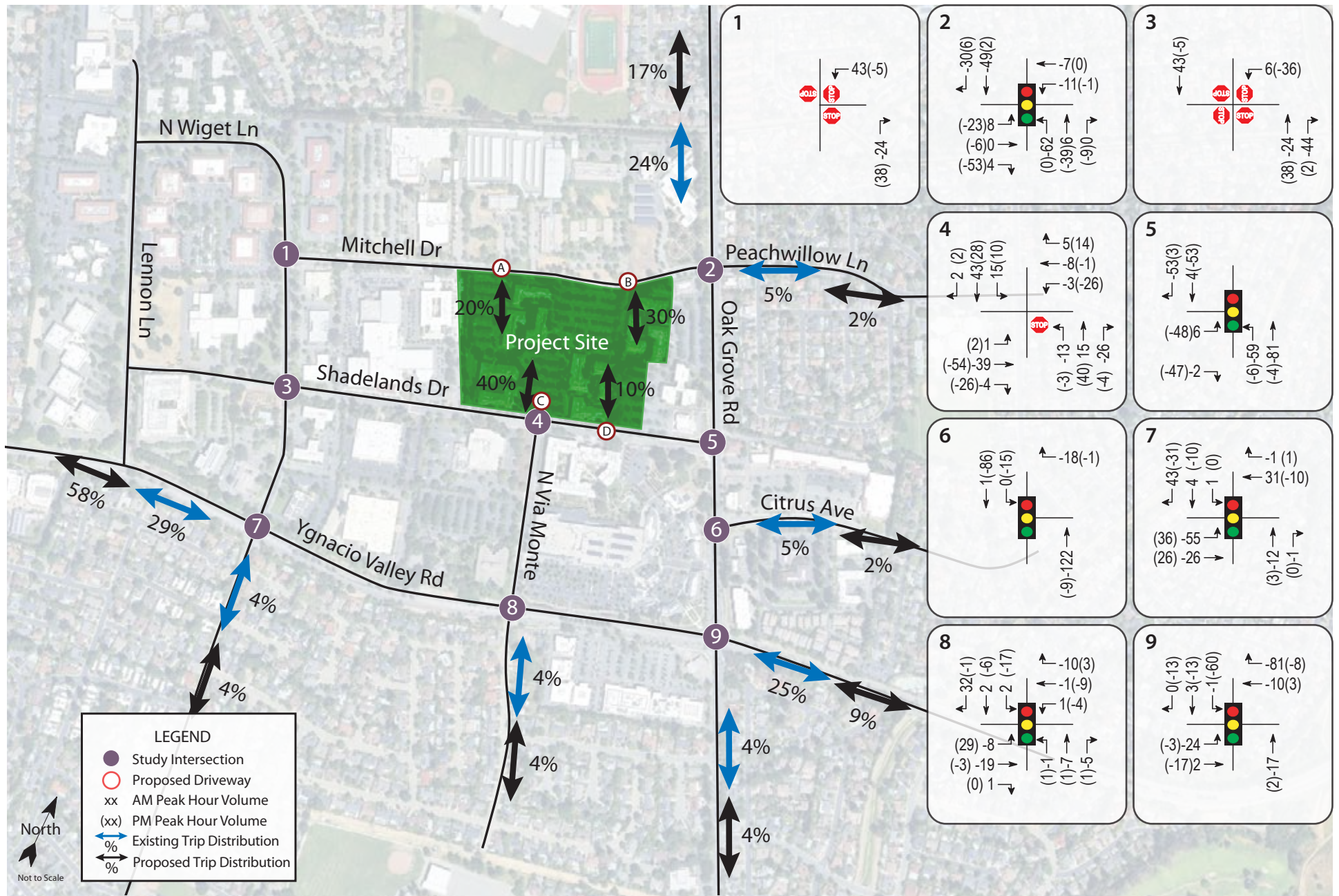
Source: Signature Development Group, KTGY, CBG, TGP 1/25

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It is noted that there are differences between the travel patterns for office and residential uses. The applied distribution assumptions for office uses and residential uses and resulting trips are shown in Table 2. Project traffic volumes and trip distribution percentages, including the proportion of residential trips assigned to each driveway, are shown in Figure 3.

Table 2 – Trip Distribution Assumptions

Route	Office Percent	Residential Percent	Trips	AM	PM
To/from North via Oak Grove Dr	24%	17%	-201	-66	-55
To/from South via Oak Grove Dr	4%	4%	-1	-10	-7
To/from South via Via Monte	4%	4%	-1	-10	-7
To/from East via Peachwillow Ln	5%	2%	-107	-18	-17
To/from East via Citrus Ave	5%	2%	-107	-18	-17
To/from South via Wiget Ln	4%	4%	-1	-10	-7
To/from East via Ygnacio Valley Rd	25%	9%	-506	-91	-82
To/from West via Ygnacio Valley Rd	29%	58%	862	-8	21
Total	100%	100%	-62	-231	-171



Traffic Operations Analysis for the Mitchell Townhomes Project
Figure 3 – Project Traffic Volumes and Trip Distribution

Transportation Setting

Study Area and Periods

A project's study area for purposes of a transportation analysis varies depending on the mode of transport. For pedestrian trips it consists of all streets within a half-mile of the project site that would lie along primary routes of pedestrian travel, or those leading to nearby generators or attractors. For bicycle trips it consists of all streets within one mile of the project site that would lie along primary routes of bicycle travel. For the safety and operational analyses, it consists of the project frontage and the following intersections.

1. Mitchell Drive/North Wiget Lane
2. Mitchell Drive/Oak Grove Road
3. Shadelands Drive/North Wiget Lane
4. Shadelands Drive/North Via Monte
5. Shadelands Drive/Oak Grove Road
6. Oak Grove Road/Citrus Avenue
7. Ygnacio Valley Road/Wiget Lane
8. Ygnacio Valley Road/Via Monte
9. Ygnacio Valley Road/Oak Grove Road

Operating conditions during the a.m. and p.m. peak periods were evaluated to capture the highest potential impacts for the proposed project as well as the highest volumes on the local transportation network. The morning peak hour occurs between 7:00 and 9:00 a.m. and reflects conditions during the home to work or school commute, while the p.m. peak hour occurs between 4:00 and 6:00 p.m. and typically reflects the highest level of congestion during the homeward bound commute. Counts were obtained for the study intersections on Tuesday, September 17, 2024, while local schools were in session. Conditions during the a.m. and p.m. peak hours were evaluated for the following scenarios.

1. **Existing Conditions.** Existing peak hour volumes, lane geometry, and traffic control (e.g., signal timing, signal phasing, etc.).
2. **Existing plus Project Conditions.** Existing peak hour volumes plus net-new project-generated trips estimated for the proposed housing project.
3. **Baseline Conditions.** (Existing plus Approved and Expected to be Approved Projects) Existing peak hour volumes plus trips from approved and expected to be approved developments in the study area vicinity.
4. **Baseline Plus Project Conditions.** (Existing Plus Approved Plus Project) Baseline Condition volumes plus net-new project-generated trips.
5. **Cumulative Conditions.** Existing peak hour volumes plus anticipated forecasted growth for the year 2040 derived from the Contra Costa County's Countywide Travel Demand Model.
6. **Cumulative Plus Project Conditions.** Cumulative Year Condition volumes plus net-new project-generated trips.

Study Intersections

The locations of the study intersections and the existing lane configurations and controls are shown in Figure 1.

Mitchell Drive/North Wiget Lane is a T-intersection with stop controls on all three approaches of the intersection. Yellow crosswalks are marked on the north and east legs.

Mitchell Drive/Oak Grove Road is a signalized four-legged intersection with protected left-turn phasing on the northbound and southbound Oak Grove Road approaches and split phasing on the eastbound and westbound Mitchell Drive approaches. Marked crosswalks and pedestrian phasing are on all four legs.

Shadelands Drive/North Wiget Lane is a four-legged all-way stop-controlled intersection. Marked crosswalks exist on all four legs.

Shadelands Drive/North Via Monte is a T-intersection with the northbound North Via Monte approach stop controlled. A crosswalk is marked on the south leg and a ladder crosswalk is marked on the uncontrolled east leg.

Shadelands Drive/Oak Grove Road is a signalized T-intersection with the northbound approach having protected left-turn phasing. The west and south legs of the intersection have marked crosswalks with pedestrian phasing.

Oak Grove Road/Citrus Avenue is a signalized T-intersection. The southbound approach has protected left-turn phasing and the north and east legs have pedestrian phasing and are marked with crosswalks. The westbound approach has a striped channelized right-turn lane separate from the traffic signal.

Ygnacio Valley Road/Wiget Lane is a signalized four-legged intersection with protected left-turn phasing on the eastbound and westbound approaches, as well as permitted left-turn phasing on the northbound and southbound Wiget Lane approaches. Crosswalks and pedestrian phasing are present on all legs of the intersection except the west.

Ygnacio Valley Road/Via Monte is a four-legged signalized intersection with the eastbound and westbound Ygnacio Valley Road approaches having protected left-turn phasing and the northbound and southbound Via Monte approaches having permitted left-turn phasing. All four legs of the intersection have yellow ladder crosswalks and pedestrian phasing.

Ygnacio Valley Road/Oak Grove Road is a signalized four-legged intersection. Protected left-turn phasing and channelized right-turn lanes exist on all four approaches of the intersection. Crosswalks and pedestrian phasing are available on all four legs of the intersection.

Study Roadways

Ygnacio Valley Road is a route of regional significance according to the *Walnut Creek General Plan 2025*, and along the project frontage is a divided six-lane roadway running northeast-southwest. Although for the purposes of this study, the roadway was considered to run east-west as this is the primary orientation throughout the City. In the vicinity of the project site the posted speed limit is 45 miles per hour (mph). Signage along Ygnacio Valley Road permits bicyclists to ride on the sidewalk.

Capacity Analysis

Intersection Level of Service Methodologies

Level of Service (LOS) is used to rank traffic operation on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, Level of Service A represents free flow conditions and Level of Service F represents forced flow or breakdown conditions. A unit of measure that indicates a level of delay generally accompanies the LOS designation.

Most study intersections were analyzed using the methodologies published in the *Highway Capacity Manual* (HCM), 6th Edition, Transportation Research Board, 2016. This source contains methodologies for various types of intersection control, all of which are related to a measurement of delay in average number of seconds per vehicle.

The Levels of Service for the intersection of Shadelands Drive/North Via Monte, which has side street stop controls, was analyzed using the “Two-Way Stop-Controlled” intersection capacity method from the HCM. This methodology determines a level of service for each minor turning movement by estimating the level of average delay in seconds per vehicle. Results are presented for individual movements together with the weighted overall average delay for the intersection.

The study intersections with stop signs on all approaches were analyzed using the “All-Way Stop-Controlled” Intersection methodology from the HCM. This methodology evaluates delay for each approach based on turning movements, opposing and conflicting traffic volumes, and the number of lanes. Average vehicle delay is computed for the intersection as a whole and is then related to a Level of Service.

The study intersections that are currently controlled by a traffic signal, or may be in the future, were generally evaluated using the signalized methodology from the HCM. This methodology is based on factors including traffic volumes, green time for each movement, phasing, whether the signals are coordinated or not, truck traffic, and pedestrian activity. Average stopped delay per vehicle in seconds is used as the basis for evaluation in this LOS methodology. For purposes of this study, delays were calculated using signal timing obtained from the City of Walnut Creek.

During the a.m. peak period, the intersection of Shadelands Drive/Oak Grove Road has “repeated” northbound protected left-turn phases in each cycle (occurring before and after the northbound through phase). Additionally, the intersection of Ygnacio Valley Road/Oak Grove Road has repeated westbound left-turn phases during the a.m. peak period and repeated southbound left-turn phases during the p.m. peak period. Because many types of irregular phasing can be modeled with HCM 2000 methodology but not the HCM, 6th Edition, average delays for intersections with repeated left-turn phases were calculated using HCM 2000 methodology.

Intersections that are proposed to be controlled by modern roundabouts were evaluated using the FHWA Roundabout Method, also contained within the Unsignalized Methodology of the HCM. This methodology determines intersection operation using a gap acceptance method along with basic geometric and volume data to calculate entering and circulating flows. This information is then translated to average vehicle delays, with LOS break points at the same delays as used in the two-way stop-controlled methodology.

The ranges of delay associated with the various levels of service are indicated in Table 3.

Table 3 – Intersection Level of Service Criteria

LOS	Two-Way Stop-Controlled	All-Way Stop-Controlled	Signalized	Roundabout
A	Delay of 0 to 10 seconds. Gaps in traffic are readily available for drivers exiting the minor street.	Delay of 0 to 10 seconds. Upon stopping, drivers are immediately able to proceed.	Delay of 0 to 10 seconds. Most vehicles arrive during the green phase, so do not stop at all.	Delay of 0 to 10 seconds.
B	Delay of 10 to 15 seconds. Gaps in traffic are somewhat less readily available than with LOS A, but no queueing occurs on the minor street.	Delay of 10 to 15 seconds. Drivers may wait for one or two vehicles to clear the intersection before proceeding from a stop.	Delay of 10 to 20 seconds. More vehicles stop than with LOS A, but many drivers still do not have to stop.	Delay of 10 to 15 seconds.
C	Delay of 15 to 25 seconds. Acceptable gaps in traffic are less frequent, and drivers may approach while another vehicle is already waiting to exit the side street.	Delay of 15 to 25 seconds. Drivers will enter a queue of one or two vehicles on the same approach and wait for vehicle to clear from one or more approaches prior to entering the intersection.	Delay of 20 to 35 seconds. The number of vehicles stopping is significant, although many still pass through without stopping.	Delay of 15 to 25 seconds.
D	Delay of 25 to 35 seconds. There are fewer acceptable gaps in traffic, and drivers may enter a queue of one or two vehicles on the side street.	Delay of 25 to 35 seconds. Queues of more than two vehicles are encountered on one or more approaches.	Delay of 35 to 55 seconds. The influence of congestion is noticeable, and most vehicles have to stop.	Delay of 25 to 35 seconds.
E	Delay of 35 to 50 seconds. Few acceptable gaps in traffic are available, and longer queues may form on the side street.	Delay of 35 to 50 seconds. Longer queues are encountered on more than one approach to the intersection.	Delay of 55 to 80 seconds. Most, if not all, vehicles must stop, and drivers consider the delay excessive.	Delay of 35 to 50 seconds.
F	Delay of more than 50 seconds. Drivers may wait for long periods before there is an acceptable gap in traffic for exiting the side streets, creating long queues.	Delay of more than 50 seconds. Drivers enter long queues on all approaches.	Delay of more than 80 seconds. Vehicles may wait through more than one cycle to clear the intersection.	Delay of more than 50 seconds.

Reference: *Highway Capacity Manual (HCM)*, Transportation Research Board, 2016

Arterial Segment Delay Index Methodology

The roadway segment delay index methodology was obtained from the City of Walnut Creek's *Transportation Analysis Guidelines*. Delay indices are calculated by dividing the congested travel time of a corridor by the free-flow travel time. A value above one indicates congestion; for example, a value of 2.0 indicates that it takes twice as long to traverse a corridor under congested conditions as under free-flow conditions. For the purposes of this analysis, the free-flow travel times used in the calculation of the delay indices were gathered from the *Shadelands*

Gateway Specific Plan DEIR, W-Trans, 2013. This approach is consistent with the 2019 *North Downtown Specific Plan* EIR and is an established baseline for evaluating delay indices.

Traffic Operation Standards

As described in the *Walnut Creek General Plan 2025*, 2013, the City has adopted a general Citywide standard of LOS D or better, and for the “core area” bound by I-680, the Iron Horse Trail, and Walden Road, a standard of LOS E or better is applied. All nine study intersections are east of the Iron Horse Trail and are therefore not considered part of the “core area” of the City. The *Transportation Analysis Guidelines* prescribes that for two-way or one-way stop-controlled intersections, the LOS of the worst movement must be reported. The *Guidelines* state that a deficiency occurs if a signalized intersection would operate acceptably without the project, then degrade to an unacceptable LOS with the addition of project traffic. If a signalized intersection would operate deficiently without the project, an increase in the vehicle-capacity ratio of more than 0.05 would result in an adverse effect of the project. Operational deficiency standards for unsignalized intersections are not identified by the *Guidelines*; however, an adverse effect would occur if the addition of project traffic would result in a traffic signal being warranted.

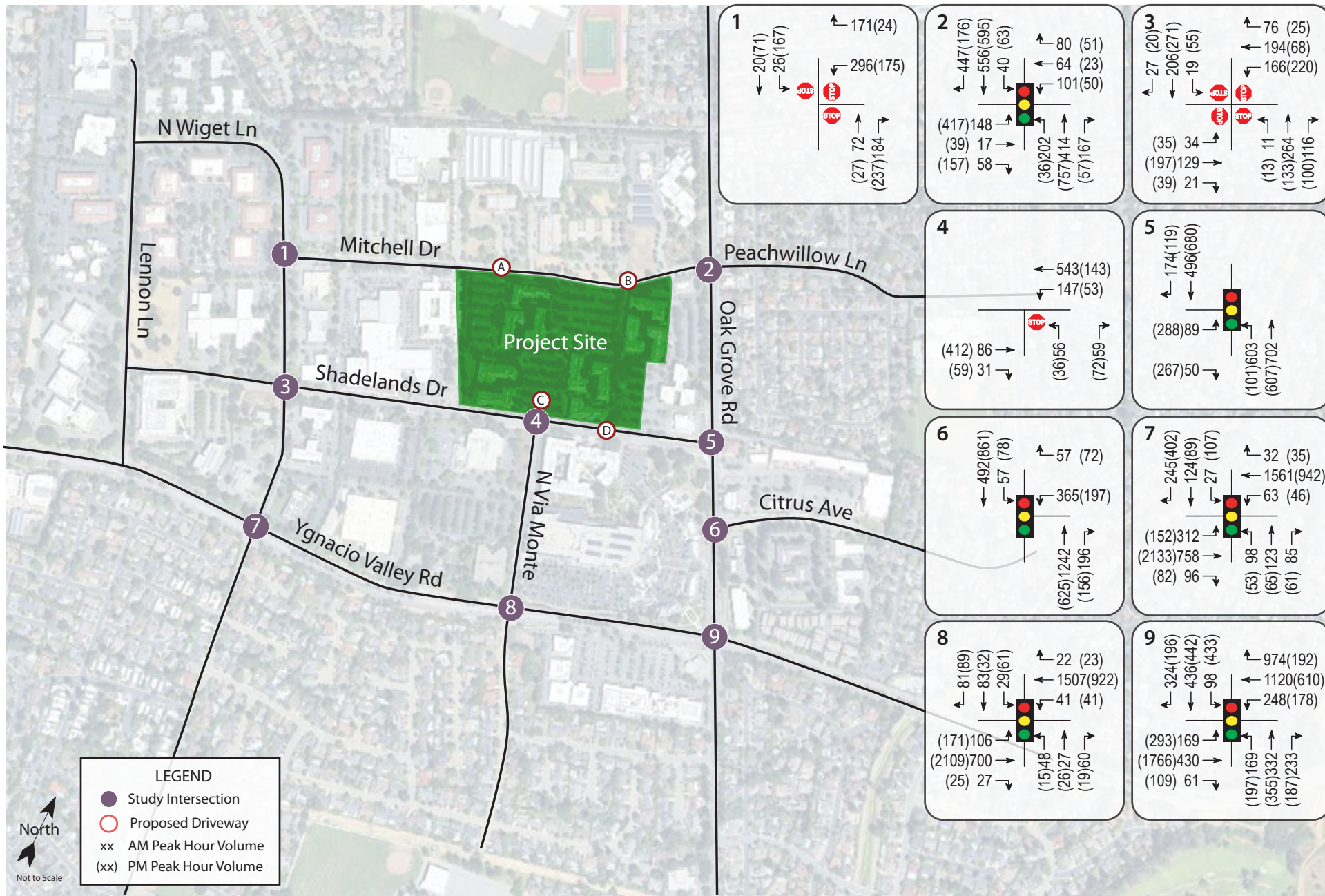
For Ygnacio Valley Road, which is a Route of Regional Significance, the standards applied by the *Guidelines* include a delay index lower than 2.0 and speeds of 15 mph or greater. A project is considered to have an adverse effect if it would result in a delay index of 2.0 or greater, or speeds below 15 mph.

Existing Conditions

The Existing conditions scenario provides an evaluation of current operation based on existing traffic volumes during the a.m. and p.m. peak periods. This condition does not include project-generated traffic volumes. The Citrus Marketplace shopping center at the northeast corner of Oak Grove Road/Citrus Avenue currently has vacant retail space, which is reflected in the existing traffic volumes. Volume data for the nine study intersections was collected in September 2024 while local schools were in session, while volumes for the Ygnacio Valley Road corridor west of Wiget Lane were sourced from the Metropolitan Transportation Commission’s (MTC) Program for Arterial System Synchronization (PASS) Synchro models. Volumes west of Wiget Lane were used for calculating delay index along Ygnacio Valley Road. Copies of the traffic count data sheets are provided in Appendix A.

Intersection Levels of Service

Under existing conditions, all study intersections operate acceptably at LOS D or better. The existing traffic volumes are shown in Figure 4. A summary of the intersection Level of Service calculations is contained in Table 4, and copies of the calculations are provided in Appendix B.



Traffic Operations Analysis for the Mitchell Townhomes Project
Figure 4 – Existing Traffic Volumes

Table 4 – Existing Peak Hour Intersection Levels of Service

Study Intersection Approach	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS
1. Mitchell Dr/N Wiget Ln	12.0	B	11.4	B
2. Mitchell Dr-Peachwillow Ln/Oak Grove Rd	26.4	C	29.0	C
3. Shadelands Dr/N Wiget Ln	22.4	C	24.5	C
4. Shadelands Dr/N Via Monte <i>Northbound (N Via Monte) Approach</i>	3.7 19.8	A C	2.7 14.8	A B
5. Shadelands Dr/Oak Grove Rd	27.8*	C	21.8	C
6. Oak Grove Rd/Citrus Ave	26.5	C	11.3	B
7. Ygnacio Valley Rd/Wiget Ln	30.0	C	17.3	B
8. Ygnacio Valley Rd/Via Monte	20.5	C	13.4	B
9. Ygnacio Valley Rd/Oak Grove Rd	53.9*	D	44.9*	D

Note: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; * = average delay calculated using HCM 2000 methodology

Roadway Segment Operations

Under existing conditions, Ygnacio Valley Road between I-680 and Oak Grove Road operates unacceptably with a delay index of 2.0 or greater and speeds below 15 mph during the a.m. peak hour in the westbound direction. During the p.m. peak hour, roadway operation is unacceptable in the eastbound direction as the average speed is 14 mph. It is noted that the travel times and speeds in this analysis were evaluated using SimTraffic simulations of the corridor, and these results may vary from field conditions particularly as they do not account for the City's adaptive traffic signal system. A summary of delay indices and speeds are shown in Table 5, and copies of the calculations are provided in Appendix C.

Table 5 – Existing Peak Hour Roadway Segment Operations

Study Segment Direction	MTT		AM Peak			PM Peak		
	AM	PM	Travel Time	Delay Index	Speed	Travel Time	Delay Index	Speed
Ygnacio Valley Rd								
Eastbound	483	639	735	1.5	18	948	1.5	14
Westbound	443	541	1,015	2.3	13	976	1.8	16

Note: MTT = Minimum Travel Time; Minimum Travel Time and Travel Time are measured in seconds; Speed is measured in miles per hour; **Bold** text = deficient operation

Baseline Conditions

Baseline operating conditions were determined with traffic from approved and expected-to-be-approved projects in the study area added to the existing volumes. It is noted that the existing volumes reflect a condition when the site was only 80 percent occupied. By analyzing operations with traffic generated by near-term projects, improvements to the study intersections can be identified that may not be needed now but would be warranted in a few years with the completion of nearby development. The following development projects were identified by City staff to be included in the evaluation of Baseline conditions.

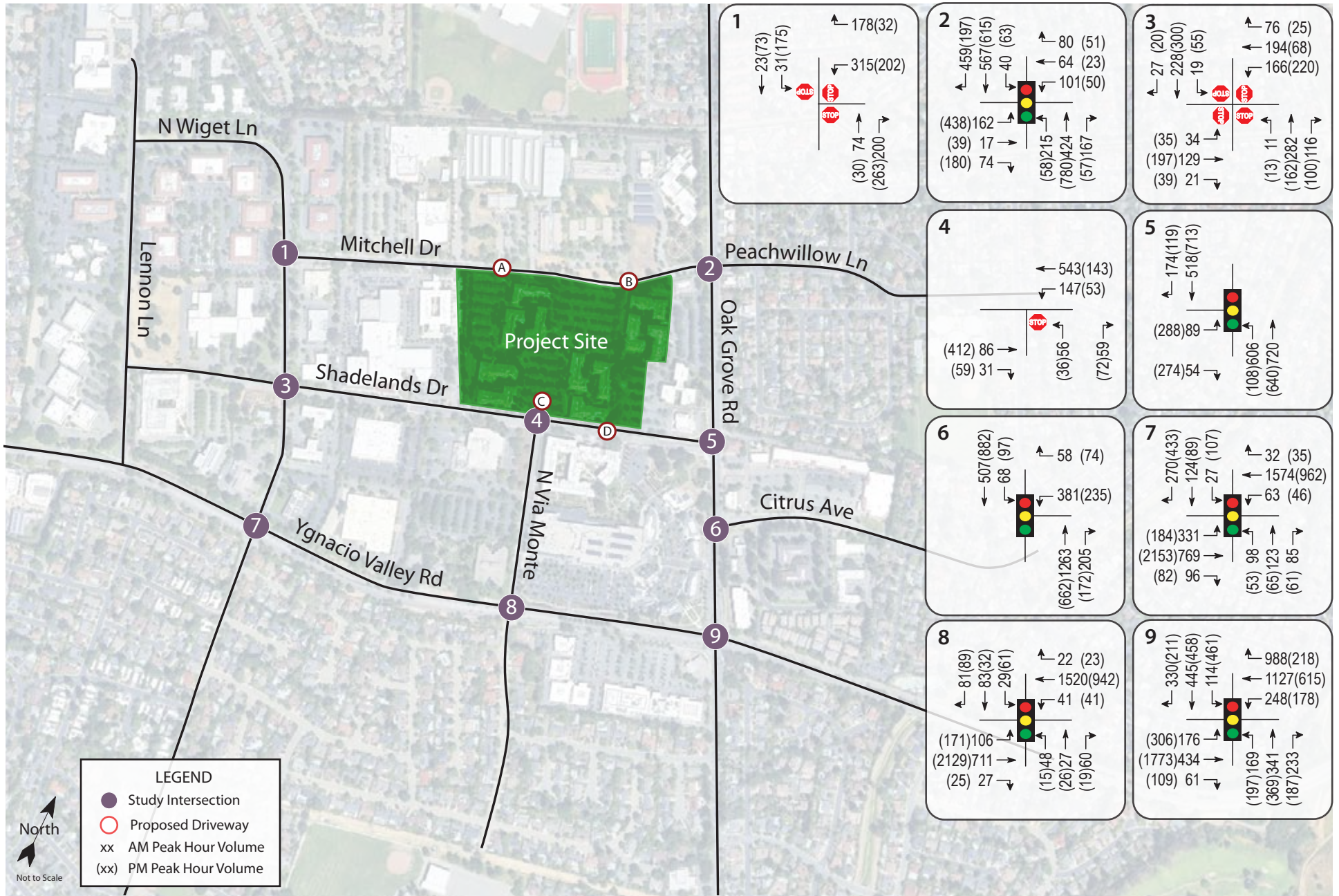
- **Chick-fil-A** is a proposed 5,363-square-foot dine-in-only (without drive-through) restaurant to be located at the northeast corner of Oak Grove Road/Citrus Avenue (2290 Oak Grove Road). As identified in the *Traffic Operations and Safety Analysis for the Proposed Chick-fil-A Restaurant at 2290 Oak Grove Road*, Hexagon Transportation Consultants, 2024, the project is expected to generate an average of 69 weekday trips during the a.m. peak hour and 142 during the p.m. peak hour. The trip distribution assumptions used by Hexagon Transportation Consultants were used in this analysis.
- **Calicraft** is a proposed project at 2700 Mitchell Drive which would replace an existing 90,890-square-foot industrial building with a three-story building containing 157,629 feet of self-storage space, 1,040 square feet of office use, and a 7,268-square-foot brewery. According to the City, the existing use was vacant when traffic counts were collected in 2024. The project is expected to generate 18 trips during the a.m. peak hour and 23 trips during the p.m. peak hour. Trip distribution assumptions from the Chick-fil-A study were applied to the project with slight modifications; the ten percent of trips distributed internally to the Shadelands Neighborhood were moved to be distributed to and from the west on Ygnacio Valley Road.
- **Oakmont Senior Housing** is a proposed project at 2800 Mitchell Drive and includes 254-unit age-restricted apartments and a residential care facility with 136 beds. The existing 95,344-square-foot industrial park at 2800 Mitchell Drive is currently vacant according to the City. Per the *Oakmont Senior Housing Traffic Study Report*, TJKM, 2021, the project is anticipated to generate 84 trips during the a.m. peak hour and 110 trips during the p.m. peak hour. The trip distribution assumptions used by TJKM were used in this analysis.
- **Spieker Walnut Creek** is a proposed assisted living community with 354 independent living units and 100 health care center units to be accessed at the north end of Kinross Drive. As specified in the *Spieker Walnut Creek – Draft Transportation Assessment*, Fehr & Peers, 2021, the project is anticipated to generate 64 trips during the a.m. peak hour and 68 trips during the p.m. peak hour. Of the 30 percent of total trips distributed between the Spieker project and the east on Ygnacio Valley Road, about half of this volume was assumed to travel to/from the Shadelands Business Park using Wiget Lane.

The following intersection modifications were completed in late 2024 after traffic counts were collected. These changes in intersection geometry are illustrated in Figure 1 and were therefore modeled under Baseline and Cumulative conditions but were not modeled under Existing conditions.

- **#1 Mitchell Drive/North Wiget Lane** – Curb extensions, or “bulbouts,” were added at the east side of the intersection. This results in the removal of *de facto* right-turn lanes on the northbound Wiget Lane and westbound Mitchell Drive approaches, as vehicles would no longer have sufficient space to pass a queued vehicle along the curb and turn right from these approaches. Intersection control remains as all-way stop-control.
- **#3 Shadelands Drive/North Wiget Lane** – Curb extensions were installed at all corners of the intersection. As a result, the *de facto* right-turn lanes on all four approaches were removed. Intersection control remains as all-way stop-control.

Intersection Levels of Service

Under these conditions, the intersections of Shadelands Drive/North Wiget Lane and Ygnacio Valley Road/Oak Grove Road would operate unacceptably at LOS E during the a.m. peak hour. The addition of curb extensions at Shadelands Drive/North Wiget Lane eliminates space for right-turning vehicles and results in deficient vehicular Level of Service. All other intersections would operate acceptably. These results are summarized in Table 6, and Baseline volumes are shown in Figure 5.



Traffic Operations Analysis for the Mitchell Townhomes Project
Figure 5 – Baseline Traffic Volumes

Table 6 – Baseline Peak Hour Intersection Levels of Service

Study Intersection <i>Approach</i>	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS
1. Mitchell Dr/N Wiget Ln	16.8	C	11.4	B
With Roundabout	6.4	A	5.5	A
2. Mitchell Dr-Peachwillow Ln/Oak Grove Rd	27.3	C	30.2	C
3. Shadelands Dr/N Wiget Ln	40.9	E	33.4	D
With Roundabout	8.1	A	8.4	A
With Traffic Signal	10.0	B	8.6	A
4. Shadelands Dr/N Via Monte	4.1	A	2.8	A
<i>Northbound (N Via Monte) Approach</i>	<i>23.0</i>	<i>C</i>	<i>15.7</i>	<i>C</i>
5. Shadelands Dr/Oak Grove Rd	28.6*	C	21.8	C
6. Oak Grove Rd/Citrus Ave	27.1	C	12.8	B
7. Ygnacio Valley Rd/Wiget Ln	30.6	C	18.1	B
8. Ygnacio Valley Rd/Via Monte	20.4	C	13.4	B
9. Ygnacio Valley Rd/Oak Grove Rd	56.4*	E	45.3*	D

Note: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; * = average delay calculated using HCM 2000 methodology; **Bold** text = deficient operation; Shaded cells = conditions with recommended improvements

Evaluation of a roundabout at Mitchell Drive/North Wiget Lane and Shadelands Drive/North Wiget Lane is recommended in the *Shadelands Multi-Modal Improvement Plan* to “calm vehicle traffic and improve vehicle flow and comfort for pedestrians and bicyclists traveling through the intersection.” Upon the installation of a single-lane roundabout at Mitchell Drive/North Wiget Lane and Shadelands Drive/North Wiget Lane, these intersections would both operate acceptably at LOS A during both peak hours. Alternatively, Shadelands Drive/North Wiget Lane would operate acceptably at LOS A or B with a two-phase traffic signal. Per the “Traffic Signal Warrants” section, the peak-hour signal warrant would be met under Baseline conditions.

Roadway Segment Operations

With Baseline volumes, Ygnacio Valley Road between I-680 and Oak Grove Road would operate unacceptably during the a.m. peak hour in the westbound direction as well as during the p.m. peak hour in the eastbound direction. The delay indices and speeds are summarized in Table 7.

Table 7 – Baseline Peak Hour Roadway Segment Operations

Study Segment Direction	MTT		AM Peak			PM Peak		
	AM	PM	Travel Time	Delay Index	Speed	Travel Time	Delay Index	Speed
Ygnacio Valley Rd								
Eastbound	483	639	752	1.6	17	992	1.6	13
Westbound	443	541	979	2.2	13	1014	1.9	15

Note: MTT = Minimum Travel Time; Minimum Travel Time and Travel Time are measured in seconds; Speed is measured in miles per hour; **Bold** text = deficient operation

Cumulative Conditions

Recent a.m. and p.m. peak hour forecasts from the Contra Costa County Travel Demand model were reviewed for roadway segments in the study area. The 2018 and 2040 growth forecasts (roadway segment link volumes) were used to derive an annual growth rate. These rates are 0.20 percent for the a.m. peak hour and 0.12 percent for the p.m. peak hour. Since these growth rates were based on the Contra Costa County Travel Demand model, they account for any potential future development contained in the regional plan, which includes projects not yet identified or approved as well as overall regional traffic growth. The low annual growth rates reflect that the roadways in the study area are generally congested under existing conditions, and additional traffic related to projected population or development growth cannot be added to roadways already operating at capacity. Unable to travel on roadways in the study area, it is presumed that the increased travel demand will use other roadways beyond the study areas, take place at less congested times of day, or switch to other modes of transportation.

Using a conservative approach, these growth rates were applied uniformly to all Baseline volumes (rather than Existing volumes) for both the a.m. and p.m. peak hours to forecast the Cumulative future traffic demand. This approach ensures that approved and expected to be approved projects from the Baseline scenario are also considered in the Cumulative scenario, as the annual growth rates derived may not be high enough to include traffic generated by near-term projects even if the projects should theoretically be included in the County model. The following modifications at the study intersections were recommended in the *Shadelands Multi-Modal Improvement Plan*, and were therefore assumed to have been implemented under Cumulative conditions.

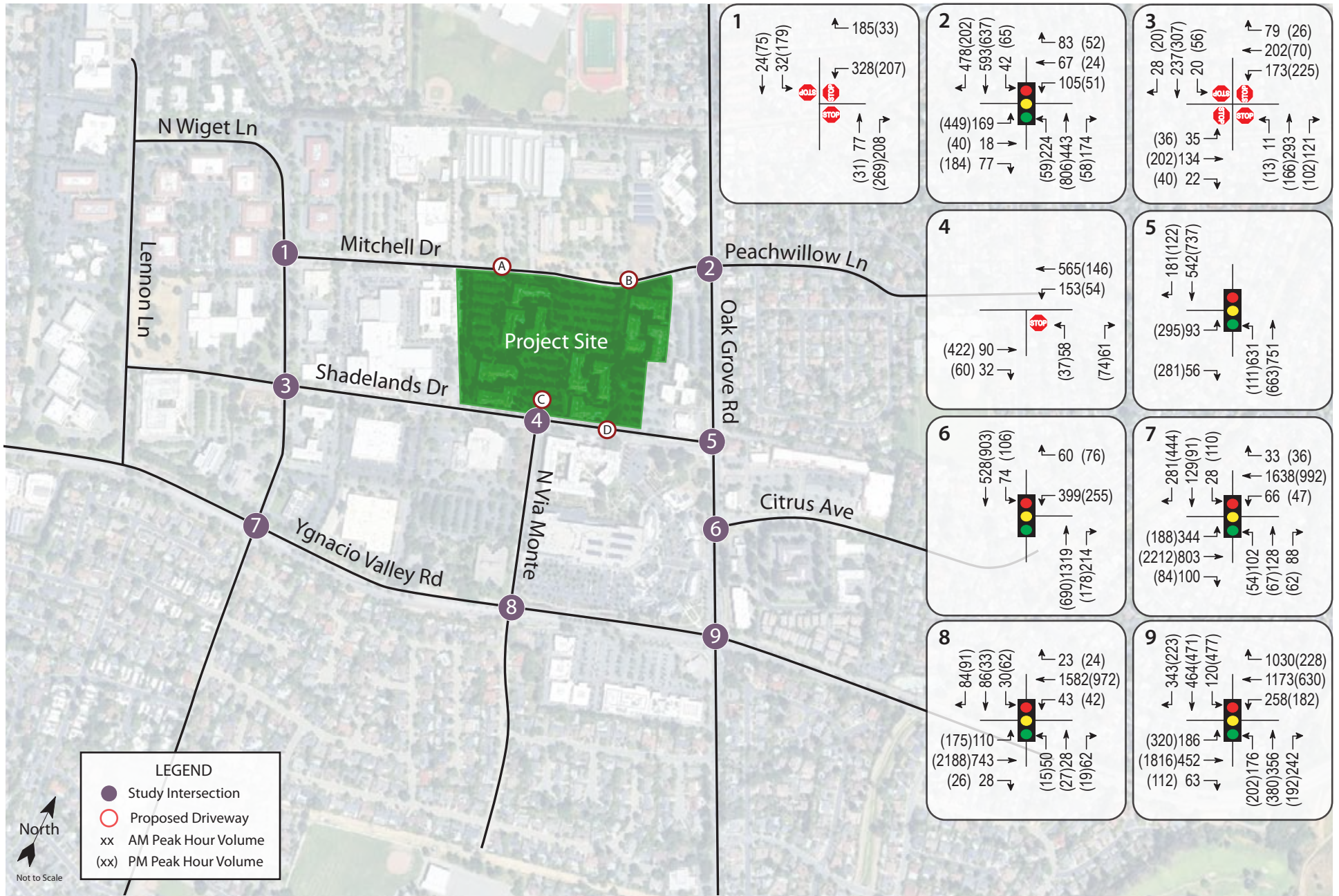
- **#7 Ygnacio Valley Road/Wiget Lane** – One of the two eastbound left-turn lanes from Ygnacio Valley Road onto Wiget Lane was assumed to be removed, and northbound Wiget Lane departing from Ygnacio Valley Road would be reduced from two lanes to one lane. Protected left-turn phasing was added on Wiget Lane.
- **#8 Ygnacio Valley Road/Via Monte** – Protected left-turn phasing was modeled on the Via Monte approaches to the intersection.

There is an existing vacancy of 8,906 square feet in the Citrus Marketplace shopping center at the northeast corner of Oak Grove Road/Citrus Avenue. As requested by the City, the vacancy was assumed to be filled under Cumulative conditions. Upon application of rates from ITE for “Shopping Plaza (40-150k)” (ITE LU #821), the 8,906-square-foot space would generate approximately 15 a.m. peak-hour trips and 46 p.m. peak-hour trips. The trip distribution assumptions from the Chick-fil-A study with slight modifications were applied for this use. While the Citrus Marketplace shopping center was assumed to become fully occupied, conversely, the existing office buildings at the project site were assumed to remain 20 percent vacant under Cumulative conditions. These assumptions reflect a conservative analysis.

Minor adjustments were made to signal timings under the Cumulative volumes to account for changes in demand patterns that would be typically addressed by periodic retiming.

Intersection Levels of Service

Under the anticipated Cumulative volumes, and with the addition of the previously mentioned modifications, the study intersections would be expected to acceptably except for the intersection of Shadelands Drive/North Wiget Lane which would operate unacceptably at LOS E during the a.m. peak hour. Cumulative volumes are shown in Figure 6 and operating conditions are summarized in Table 8.



Traffic Operations Analysis for the Mitchell Townhomes Project
Figure 6 – Cumulative Traffic Volumes

Table 8 – Cumulative Peak Hour Intersection Levels of Service

Study Intersection Approach	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS
1. Mitchell Dr/N Wiget Ln	14.3	B	10.6	B
With Roundabout	6.0	A	5.2	A
2. Mitchell Dr-Peachwillow Ln/Oak Grove Rd	27.9	C	29.5	C
3. Shadelands Dr/N Wiget Ln	35.4	E	21.9	C
With Roundabout	7.9	A	7.6	A
With Traffic Signal	9.8	A	8.0	A
4. Shadelands Dr/N Via Monte	3.9	A	2.5	A
Northbound (N Via Monte) Approach	21.4	C	13.9	B
5. Shadelands Dr/Oak Grove Rd	28.2*	C	21.7	C
6. Oak Grove Rd/Citrus Ave	26.8	C	13.4	B
7. Ygnacio Valley Rd/Wiget Ln	41.9	D	24.0	C
8. Ygnacio Valley Rd/Via Monte	23.5	C	16.3	B
9. Ygnacio Valley Rd/Oak Grove Rd	48.2*	D	42.2*	D

Note: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; * = average delay calculated using HCM 2000 methodology; **Bold** text = deficient operation; Shaded cells = conditions with recommended improvements

The intersection of Mitchell Drive/North Wiget Lane would operate at LOS A as a single-lane roundabout during both peak hours. With a single-lane roundabout (as recommended as an option in the *Shadelands Multi-Modal Improvement Plan*) or a traffic signal, the intersection of Shadelands Drive/North Wiget Lane would operate acceptably at LOS A during both peak hours. The peak-hour signal warrant would be satisfied under Cumulative conditions, as discussed in the “Traffic Signal Warrants” section.

Roadway Segment Operations

Under projected Cumulative volumes, westbound Ygnacio Valley Road would operate unacceptably during the a.m. peak hour and eastbound Ygnacio Valley Road would operate unacceptably during the p.m. peak hour. The delay indices and speeds are summarized in Table 9.

Table 9 – Cumulative Peak Hour Roadway Segment Operations

Study Segment Direction	MTT		AM Peak			PM Peak		
	AM	PM	Travel Time	Delay Index	Speed	Travel Time	Delay Index	Speed
Ygnacio Valley Rd								
Eastbound	483	639	785	1.6	17	1051	1.6	12
Westbound	443	541	1099	2.5	12	1050	1.9	15

Note: MTT = Minimum Travel Time; Minimum Travel Time and Travel Time are measured in seconds; Speed is measured in miles per hour; **Bold** text = deficient operation

Project Conditions

Intersection Operation

Existing plus Project Conditions

Upon the addition of project-related traffic to the Existing volumes and removal of traffic associated with the office buildings currently occupying the site, the study intersections would continue operating acceptably. These results are summarized in Table 10.

Table 10 – Existing and Existing plus Project Peak Hour Intersection Levels of Service

Study Intersection <i>Approach</i>	Existing Conditions				Existing plus Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. Mitchell Dr/N Wiget Ln	12.0	B	11.4	B	13.3	B	11.7	B
2. Mitchell Dr-Peachwillow Ln/Oak Grove Rd	26.4	C	29.0	C	23.2	C	27.9	C
3. Shadelands Dr/N Wiget Ln	22.4	C	24.5	C	23.6	C	22.3	C
4. Shadelands Dr/N Via Monte	3.7	A	2.7	A	6.5	A	4.2	A
<i>NB (N Via Monte) Approach</i>	19.8	C	14.8	B	30.3	D	16.0	C
<i>SB (Project Dwy) Approach</i>	-	-	-	-	32.8	D	18.1	C
5. Shadelands Dr/Oak Grove Rd	27.8*	C	21.8	C	27.0*	C	19.6	B
6. Oak Grove Rd/Citrus Ave	26.5	C	11.3	B	25.8	C	11.3	B
7. Ygnacio Valley Rd/Wiget Ln	30.0	C	17.3	B	29.3	C	17.4	B
8. Ygnacio Valley Rd/Via Monte	20.5	C	13.4	B	20.6	C	13.6	B
9. Ygnacio Valley Rd/Oak Grove Rd	53.9*	D	44.9*	D	45.7*	D	44.3*	D

Note: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; * = average delay calculated using HCM 2000 methodology

It should be noted that with the change in traffic volumes associated with the project, average delay at several intersections would decrease. This would occur because the project includes the removal of trips for certain movements which results in lower average vehicle delays at some intersections.

Finding – The study intersections would continue operating acceptably upon the addition of project-generated traffic and removal of traffic associated with the existing office uses.

Baseline plus Project Conditions

With project-related traffic added to Baseline volumes and removal of traffic from the existing offices, the study intersections would operate at acceptable Levels of Service except for Shadelands Drive/North Wiget Lane which would continue to operate at LOS E during the a.m. peak hour. These results are summarized in Table 11.

Table 11 – Baseline and Baseline plus Project Peak Hour Intersection Levels of Service

Study Intersection Approach	Baseline Conditions				Baseline plus Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. Mitchell Dr/N Wiget Ln	16.8	C	11.4	B	20.7	C	11.8	B
With Roundabout	6.4	A	5.5	A	6.9	A	5.7	A
2. Mitchell Dr-Peachwillow Ln/Oak Grove Rd	27.3	C	30.2	C	23.9	C	29.1	C
3. Shadelands Dr/N Wiget Ln	40.9	E	33.4	D	37.4	E	32.3	D
With Roundabout	8.1	A	8.4	A	8.1	A	8.2	A
With Traffic Signal	10.0	B	8.6	A	9.5	A	8.2	A
4. Shadelands Dr/N Via Monte	4.1	A	2.8	A	6.5	A	4.2	A
NB (N Via Monte) Approach	23.0	C	15.7	C	30.3	D	16.0	C
SB (Project Dwy) Approach	-	-	-	-	32.8	D	18.1	C
5. Shadelands Dr/Oak Grove Rd	28.6*	C	21.8	C	27.8*	C	19.6	B
6. Oak Grove Rd/Citrus Ave	27.1	C	12.8	B	26.4	C	12.8	B
7. Ygnacio Valley Rd/Wiget Ln	30.6	C	18.1	B	30.0	C	18.4	B
8. Ygnacio Valley Rd/Via Monte	20.4	C	13.4	B	20.6	C	13.5	B
9. Ygnacio Valley Rd/Oak Grove Rd	56.4*	E	45.3*	D	47.0*	D	44.8*	D

Note: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; * = average delay calculated using HCM 2000 methodology; **Bold text** = deficient operation; Shaded cells = conditions with recommended improvements

As previously discussed, the average delay at several intersections would decrease since some turning movements would undergo a decrease in traffic volumes with the project. It is also noted that the level of service at the intersection of Ygnacio Valley Road/Oak Grove Road would improve from LOS E to D upon the addition (or removal) of project-related traffic during the a.m. peak hour.

As the peak hour signal warrant for Shadelands Drive/North Wiget Lane would be met under both Baseline and Baseline plus Project conditions, the project would not cause an adverse effect at the intersection. The intersection of Shadelands Drive/North Wiget Lane would operate acceptably at LOS A or B with the addition of project traffic and the installation of either a single-lane roundabout or traffic signal. The Mitchell Drive/North Wiget Lane intersection would operate at LOS A with or without project traffic as a single-lane roundabout.

Finding – With the exception of Shadelands Drive/North Wiget Lane, the study intersections would operate acceptably under Baseline plus Project conditions. The project would not cause an adverse effect on operations at Shadelands Drive/North Wiget Lane, and a single-lane roundabout or traffic signal at the intersection would result in LOS A or B operations. The Mitchell Drive/North Wiget Lane intersection would operate at LOS A as a single-lane roundabout with or without the addition of project trips.

Cumulative plus Project Conditions

Under Cumulative plus Project conditions and with the recommended roadway modifications from the *Shadelands Multi-Modal Improvement Plan* listed previously in the “Cumulative Conditions” section, the study intersections would be expected to operate acceptably. The Cumulative plus Project operating conditions are summarized in Table 12.

Table 12 – Cumulative and Cumulative plus Project Peak Hour Intersection Levels of Service

Study Intersection Approach	Cumulative Conditions				Cumulative plus Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. Mitchell Dr/N Wiget Ln	14.3	B	10.6	B	15.8	C	10.8	B
With Roundabout	6.0	A	5.2	A	6.4	A	5.4	A
2. Mitchell Dr-Peachwillow Ln/Oak Grove Rd	27.9	C	29.5	C	24.4	C	28.5	C
3. Shadelands Dr/N Wiget Ln	35.4	E	21.9	C	31.6	D	21.4	C
With Roundabout	7.9	A	7.6	A	7.9	A	7.4	A
With Traffic Signal	9.8	A	8.0	A	9.3	A	7.7	A
4. Shadelands Dr/N Via Monte	3.9	A	2.5	A	5.8	A	3.7	A
NB (N Via Monte) Approach	21.4	C	13.9	B	26.8	D	14.2	B
SB (Project Dwy) Approach	-	-	-	-	29.8	D	15.9	C
5. Shadelands Dr/Oak Grove Rd	28.2*	C	21.7	C	27.5*	C	19.6	B
6. Oak Grove Rd/Citrus Ave	26.8	C	13.4	B	26.2	C	13.4	B
7. Ygnacio Valley Rd/Wiget Ln	41.9	D	24.0	C	39.4	D	24.8	C
8. Ygnacio Valley Rd/Via Monte	23.5	C	16.3	B	23.7	C	16.3	B
9. Ygnacio Valley Rd/Oak Grove Rd	48.2*	D	42.2*	D	43.3*	D	41.5*	D

Note: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; ** = delay greater than 120 seconds; **Bold** text = deficient operation; Shaded cells = conditions with recommended improvements

As previously discussed, the average delay at several intersections would decrease since the project is anticipated to decrease traffic volumes at some turning movements. Operation at Shadelands Drive/North Wiget Lane would improve from LOS E to D upon the replacement of the existing office use with the proposed project.

The *Shadelands Multi-Modal Improvement Plan* recommends that roundabouts be evaluated as potential improvements at Mitchell Drive/North Wiget Lane and Shadelands Drive/North Wiget Lane. Under Cumulative or Cumulative plus Project conditions, these intersections would operate acceptably at LOS A during both peak hours as a single-lane roundabout. Additionally, the intersection of Shadelands Drive/North Wiget Lane would operate at LOS A with a traffic signal.

Finding – The study intersections would operate acceptably under Cumulative plus Project conditions.

Roadway Segment Operation

Existing plus Project Conditions

The delay index and speed results for Ygnacio Valley Road for Existing and Existing plus Project volumes are summarized in Table 13. It is noted that the change in either delay index or vehicle speeds is analyzed for informational purposes only and any facilities identified to be operating below the established standard would not be considered an adverse effect.

Table 13 – Existing and Existing plus Project Peak Hour Roadway Segment Operations

Study Segment Direction	Existing						Existing plus Project					
	AM Peak			PM Peak			AM Peak			PM Peak		
	Travel Time	DI	Speed	Travel Time	DI	Speed	Travel Time	DI	Speed	Travel Time	DI	Speed
Ygnacio Valley Rd												
Eastbound	735	1.5	18	948	1.5	14	719	1.5	18	941	1.5	14
Westbound	1,015	2.3	13	976	1.8	16	1,113	2.5	12	932	1.7	16

Note: DI = Delay Index, MTT = Minimum Travel Time; Minimum Travel Time and Travel Time are measured in seconds; Speed is measured in miles per hour; **Bold** text = deficient operation

Finding – Upon the addition of volumes from the proposed project and removal of volumes from the existing office use at the project site with 80 percent current occupancy, Ygnacio Valley Road between I-680 and Oak Grove Road is expected to continue to operate unacceptably during the a.m. peak hour in the westbound direction with a delay index of 2.0 or greater and speed less than 15 mph. Eastbound Ygnacio Valley Road would continue to operate unacceptably during the p.m. peak hour with a speed less than 15 mph.

Baseline plus Project Conditions

Baseline and Baseline plus Project delay indices and speeds are summarized in Table 14.

Table 14 – Baseline and Baseline plus Project Peak Hour Roadway Segment Operations

Study Segment Direction	Baseline						Baseline plus Project					
	AM Peak			PM Peak			AM Peak			PM Peak		
	Travel Time	DI	Speed	Travel Time	DI	Speed	Travel Time	DI	Speed	Travel Time	DI	Speed
Ygnacio Valley Rd												
Eastbound	752	1.6	17	992	1.6	13	728	1.5	18	986	1.5	13
Westbound	979	2.2	13	1,014	1.9	15	1,151	2.6	11	996	1.8	16

Note: DI = Delay Index, MTT = Minimum Travel Time; Minimum Travel Time and Travel Time are measured in seconds; Speed is measured in miles per hour; **Bold** text = deficient operation

Finding – Under Baseline conditions without or with the proposed project, Ygnacio Valley Road between I-680 and Oak Grove Road would operate unacceptably during the a.m. peak hour in the westbound direction and during the p.m. peak hour in the eastbound direction.

Cumulative plus Project Conditions

The anticipated Cumulative and Cumulative plus Project delay indices and speeds are summarized in Table 15.

Table 15 – Cumulative and Cumulative plus Project Peak Hour Roadway Segment Operations

Study Segment Direction	Cumulative						Cumulative plus Project					
	AM Peak			PM Peak			AM Peak			PM Peak		
	Travel Time	DI	Speed	Travel Time	DI	Speed	Travel Time	DI	Speed	Travel Time	DI	Speed
Ygnacio Valley Rd												
Eastbound	785	1.6	17	1,051	1.6	12	756	1.6	17	1,097	1.7	12
Westbound	1,099	2.5	12	1,050	1.9	15	1,286	2.9	10	1,030	1.9	15

Note: DI = Delay Index, MTT = Minimum Travel Time; Minimum Travel Time and Travel Time are measured in seconds;
Speed is measured in miles per hour; **Bold** text = deficient operation

Finding – With the proposed project, westbound Ygnacio Valley Road would be expected to continue operating unacceptably during the a.m. peak hour and eastbound Ygnacio Valley Road would continue operating unacceptably during the p.m. peak hour.

Shadelands Drive/North Via Monte All-Way Stop Control

Intersection level of service and queuing at Shadelands Drive/North Via Monte was also analyzed with all-way stop control. Under this type of control, Shadelands Drive/North Via Monte would operate acceptably at LOS D or better, with or without the addition of project trips.

During the a.m. peak hour, the westbound 95th-percentile queue at Shadelands Drive/North Via Monte would be between 290 feet and 335 feet for each scenario evaluated, while the p.m. peak hour 95th-percentile queues for the eastbound approach would measure between 75 feet and 140 feet. The 95th-percentile queue lengths for each remaining approach would not exceed 35 feet under any scenario assessed. If the 95th-percentile queue lengths occur during the a.m. peak hour, access to several driveways may be limited since these driveways are located within 335 feet to the east of the Shadelands Drive/North via Monte intersection.

Table 16 summarizes the LOS results with all-way stop control. Appendix D contains LOS and queuing calculations (queues are labeled as “HCM 95th-ile Q” and measured in number of 25-foot-long vehicles), for Shadelands Drive/North Via Monte with all-way stop control.

Table 16 – Shadelands Dr/N Via Monte Levels of Service with All-Way Stop Control

Shadelands Dr/N Via Monte	No Project Condition				Plus Project Condition			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Existing Condition	29.9	D	14.2	B	30.8	D	12.8	B
Baseline Condition	29.9	D	14.2	B	30.8	D	12.8	B
Cumulative Condition	26.0	D	11.8	B	26.7	D	11.0	B

Note: Delay is measured in average seconds per vehicle; LOS = Level of Service

Finding – With all-way stop control, the intersection of Shadelands Drive/North Via Monte would operate acceptably at LOS D or better. Access to some driveways east of the intersection may be limited since the calculated queue length at the westbound approach is calculated to extend up to 335 feet east of the intersection during the a.m. peak hour.

Community Benefits Variant

As previously stated, the construction of a single-lane roundabout at Shadelands Drive/North Via Monte is currently being considered as part of the Community Benefits Variant. As a single-lane roundabout, Shadelands Drive/North Via Monte would operate acceptably at LOS A with or without the addition of project trips. Therefore, the project would not be expected to conflict with the conversion of this intersection from side-street stop-control into a roundabout identified in the *Shadelands Multi-Modal Improvement Plan* as a potential improvement. Table 17 summarizes the Existing, Baseline, and Cumulative operating conditions without and with the proposed project. Level of Service calculations for Shadelands Drive/North Via Monte with the proposed roundabout are contained in Appendix E.

Table 17 – Shadelands Dr/N Via Monte Levels of Service with Roundabout

Shadelands Dr/N Via Monte	No Project Condition				Plus Project Condition			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Existing Condition	8.3	A	6.3	A	8.4	A	5.7	A
Baseline Condition	8.3	A	6.3	A	8.4	A	5.7	A
Cumulative Condition	7.9	A	5.7	A	8.1	A	5.2	A

Note: Delay is measured in average seconds per vehicle; LOS = Level of Service

Finding – With a single-lane roundabout installed at Shadelands Drive/North Via Monte, the intersection would continue to operate acceptably at LOS A under all scenarios evaluated.

Traffic Signal Warrants

A signal warrant analysis was performed to determine potential need for traffic signals at the unsignalized study intersections of Mitchell Drive/North Wiget Lane, Shadelands Drive/North Wiget Lane, and Shadelands Drive/North Via Monte.

Chapter 4C of the *California Manual on Uniform Traffic Control Devices* (CA-MUTCD) provides guidance on when a traffic signal should be considered. There are nine different warrants, or criteria, presented, as follows:

- Warrant 1, Eight-Hour Vehicular Volume
- Warrant 2, Four-Hour Vehicular Volume
- Warrant 3, Peak Hour Volume
- Warrant 4, Pedestrian Volume
- Warrant 5, School Crossing
- Warrant 6, Coordinated Signal System
- Warrant 7, Crash Experience
- Warrant 8, Roadway Network
- Warrant 9, Intersection Near a Grade Crossing

Warrant 3, which is often the first warrant to be met, has a notice that this signal warrant shall be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time. Under the Peak Hour Warrant the need for a traffic control signal shall be considered if an engineering study finds that the criteria in either of the following two categories are met:

- A. If all three of the following conditions exist for the same one hour (any four consecutive 15-minute periods) of an average day:
 1. The total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equals or exceeds: four vehicle-hours for a one-lane approach; or five vehicle-hours for a two-lane approach, and
 2. The volume on the same minor-street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes, and
 3. The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches.
- B. The plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume minor-street approach (one direction only) for one hour (any four consecutive 15-minute periods) of an average day falls above the applicable curve in Figure 4C-3 for the existing combination of approach lanes.

For the purposes of this study, Warrant 3, the Peak Hour volume warrant, which determines the need for traffic control based on the highest volume hour of the day, was used as an initial indication of traffic control needs. The use of this signal warrant is common practice for planning studies. Other warrants, which are more generally applicable to existing traffic issues, require collection of traffic volumes for the highest four or eight hours of the day, review of the collision history, and evaluation of the system surrounding the location.

The Peak Hour signal warrant would not be met for the intersection of Mitchell Drive/North Wiget Lane or Shadelands Drive/North Via Monte under Cumulative conditions with or without the project. Therefore, it is presumed that the warrant would not be met for either intersection for Existing or Baseline scenarios (with or without project traffic) as the Cumulative scenarios represent the highest-volume, most conservative conditions. At Shadelands Drive/North Wiget Lane, a signal would be warranted during the a.m. peak hour for all scenarios except the "Existing plus Project" scenario. As completion of the proposed project and removal of existing office uses on the project site would be expected to result in a net loss of 19 a.m. peak hour trips and one p.m. peak hour trip at Shadelands Drive/North Wiget Lane, it would not be appropriate for the project applicant to pay a proportional share for improvements at the intersection. These results are summarized in Table 18 and copies of the signal warrant worksheets are included in Appendix F.

Table 18 – Signal Warrant Summary

Study Intersection	AM Peak Hour						PM Peak Hour					
	E	E+P	B	B+P	C	C+P	E	E+P	B	B+P	C	C+P
1. Mitchell Dr/N Wiget Ln	-	-	-	-	NW	NW	-	-	-	-	NW	NW
3. Shadelands Dr/N Wiget Ln	W	NW	W	W	W	W	NW	NW	NW	NW	NW	NW
4. Shadelands Dr/N Via Monte	-	-	-	-	NW	NW	-	-	-	-	NW	NW

Note: W = Signal warranted per Warrant 3; NW = Warrant 3 not satisfied; E = Existing Conditions; E+P = Existing plus Project Conditions; B = Baseline Conditions; B+P = Baseline plus Project Conditions; C = Cumulative Conditions; C+P = Cumulative plus Project Conditions

Finding – The addition of project traffic does not cause the Peak Hour signal warrant to be met at Mitchell Drive/North Wiget Lane, Shadelands Drive/North Wiget Lane, or Shadelands Drive/North Via Monte under any scenario evaluated. While a signal would be warranted at Shadelands Drive/North Wiget Lane under all scenarios except "Existing plus Project," the project would be expected to slightly reduce the total number of trips at the intersection.

Collision History

The collision history for the study area was reviewed to determine any trends or patterns that may indicate a safety issue. Collision rates were calculated based on records available from the California Highway Patrol as published in their Statewide Integrated Traffic Records System (SWITRS) reports. The most current five-year period available is October 25, 2019, through October 24, 2024.

As presented in Table 19, the calculated collision rates for the study intersections were compared to average collision rates for similar facilities statewide, as indicated in *2022 Crash Data on California State Highways*, California Department of Transportation (Caltrans). These average rates statewide are for intersections in the same environment (urban) as the project, with the same number of approaches (three or four), and the same controls (all-way stop, two-way stop, or traffic signal). Every intersection, except for the intersections of Shadelands Drive/North Wiget Lane and Ygnacio Valley Road/Oak Grove Road, had collision rates below the statewide average for similar facilities. The intersections of Shadelands Drive/North Wiget Lane and Ygnacio Valley Road/Oak Grove Road also had injury rates above the statewide average for similar facilities. The collision rate calculations are provided in Appendix G.

Table 19 – Collision Rates for the Study Intersections

Study Intersection	Number of Collisions (2019-2024)	Calculated Collision Rate (c/mve)	Statewide Average Collision Rate (c/mve)
1. Mitchell Dr/N Wiget Ln	0	0.00	0.11
2. Mitchell Dr/Oak Grove Rd	3	0.07	0.33
3. Shadelands Dr/N Wiget Ln	9	0.42	0.21
4. Shadelands Dr/N Via Monte	1	0.07	0.13
5. Shadelands Dr/Oak Grove Rd	5	0.13	0.28
6. Oak Grove Rd/Citrus Ave	2	0.06	0.28
7. Ygnacio Valley Rd/Wiget Ln	19	0.25	0.33
8. Ygnacio Valley Rd/Via Monte	14	0.22	0.33
9. Ygnacio Valley Rd/Oak Grove Rd*	40	0.44	0.33

Note: c/mve = collisions per million vehicles entering, **bold** text denotes metric exceeds statewide average for similar facilities; * = includes one fatal collision

Of the nine collisions at the intersection of Shadelands Drive/North Wiget Lane, four were broadsides, two involved a pedestrian, and one each was a sideswipe, rear-end, and “other” collision. An automobile right-of-way violation was listed as the cause of three collisions, another three were due to an unknown reason, and one each was attributed to a pedestrian right-of-way violation, following too closely, and driving at unsafe speeds. The *Shadelands Multi-Modal Improvement Plan*, 2020, recommends a roundabout at the intersection of Shadelands Drive/North Wiget Lane. Based on data available from the Crash Modification Factor Clearinghouse, converting this intersection from all-way stop control to a roundabout would be expected to reduce collisions by between 58 and 72 percent, reduce injuries by between 82 and 88 percent.

At the intersection of Ygnacio Valley Road/Oak Grove Road, 14 of the 40 total collisions were broadsides, 13 were rear-ends, seven were sideswipes, three were head-on, and three hit objects. Unsafe speeds were the cause of 13 collisions, nine were due to automobile right-of-way violations, five were caused by improper turning, three were attributed to traffic signals or signs, unsafe starting or backing was listed as the cause of three collisions, two were caused by unknown reasons, two were due to improper passing, one collision was attributed to driving under the influence, and one due to unsafe lane changing, with one collision reason not stated. There was one fatal collision

of a westbound driver hitting an object in the early morning that was attributed to driving at unsafe speeds. Over half of all the collisions that happened at or near this intersection involved a westbound driver, which is notable as this stretch of Ygnacio Valley Road traverses Lime Ridge with a 55-mph speed limit and two-mile gap to the next upstream intersection.

Local Roadway Safety Plan

The City of Walnut Creek's *Local Roadway Safety Plan* (LRSP), 2023, identifies a list of the top injury collision locations citywide between 2015 and 2021. Three of the intersections on this list are located within the project area: Ygnacio Valley Road/Oak Grove Road, Ygnacio Valley Road/Via Monte, and Ygnacio Valley Road/Wiget Lane. As shown above, Ygnacio Valley Road/Oak Grove Road also had an above average collision rate during the analysis period.

The LRSP provides several systematic corridor-level improvements on Ygnacio Valley Road. Narrowed travel lanes, buffers between vehicle and pedestrian traffic, and modified signal timing are all included as recommendations in the Plan. Protected left-turn phasing is identified as another improvement at Ygnacio Valley Road's intersections with Via Monte and Wiget Lane, as well as the installation of crosswalks on Wiget Lane, the removal of uncontrolled slip lanes at Oak Grove Road, and the extension of median noses at all intersections.

These improvements should be implemented, if possible, to address safety concerns along Ygnacio Valley Road and around the project site.

Finding – The City's LRSP identifies three high-injury collision intersections on Ygnacio Valley Road within the study area and presents several safety improvements along the corridor to be implemented. One of these intersections, Ygnacio Valley Road/Oak Grove Road, was also identified as having a higher-than-average collision rate when compared to similar facilities statewide.

Pedestrian Safety

Collision records for the study area were reviewed to determine if there had been any crashes involving pedestrians. During the five-year study period between October 25, 2019, through October 24, 2024, there were four reported pedestrian collisions occurring at the study intersections. One collision occurred at each of the intersections of Ygnacio Valley Road/Via Monte and Ygnacio Valley Road/Wiget Lane, while two pedestrian collisions occurred at Shadelands Drive/North Wiget Lane. A clear trend was not observed at these intersections or regarding these reported collisions.

Bicyclist Safety

Collision records for the study area were reviewed to determine if there had been any bicyclist-involved crashes. During the five-year study period between October 25, 2019, through October 24, 2024, there were three reported bicycle collisions. One collision occurred at each of the intersections of Oak Grove Road/Citrus Avenue, Ygnacio Valley Road/Via Monte, and Ygnacio Valley Road/Wiget Lane. Primary collision factors included speeding, improper turning, and driving or biking under the influence of alcohol. As such, no clear pattern was observed at these intersections.

Conclusions and Recommendations

Conclusions

- The proposed project is expected to generate an average of 3,038 trips each day which includes 203 trips during the morning peak hour and 241 trips during the evening peak hour. With trip reductions applied for the removal of the existing office use, the anticipated net trip generation would include an average decrease of 62 daily trips with 231 fewer morning peak hour trips and 171 fewer evening peak hour trips. It is noted that the trips associated with the existing use include a 20-percent reduction since the building occupancy was estimated to be 80 percent. Applying a 20-percent trip reduction is conservative since trip credits for a fully occupied office building could have been applied to reflect the entitled land use of the site.
- Under Existing conditions, the study intersections would operate acceptably with or without the addition of project-generated traffic and removal of traffic associated with the existing office uses on the project site.
- Under Baseline plus Project conditions and with curb extensions at Mitchell Drive/North Wiget Lane and Shadelands Drive/North Wiget Lane, all intersections except Shadelands Drive/North Wiget Lane would operate acceptably. Installation of a single-lane roundabout or traffic signal at Shadelands Drive/North Wiget Lane would result in LOS A operations. Further, this is not considered an adverse effect caused by the project since a traffic signal would be warranted with or without the addition of project trips. Ygnacio Valley Road/Oak Grove Road would operate unacceptably at LOS E with Baseline volumes without the proposed project.
- The study intersections are expected to operate acceptably under Cumulative plus Project conditions with modifications to the study intersections identified in the *Shadelands Multi-Modal Plan* and curb extensions added at Mitchell Drive/North Wiget Lane and Shadelands Drive/North Wiget Lane.
- Under all scenarios evaluated (with or without the project), the roadway segment of Ygnacio Valley Road between I-680 and Oak Grove Road is expected to operate unacceptably westbound with a delay index of 2.0 or greater and speeds below 15 mph during the a.m. peak hour. During the p.m. peak hour, eastbound Ygnacio Valley Road is expected to operate unacceptably with speeds below 15 mph under all evaluated conditions.
- The intersection of Mitchell Drive/North Wiget Lane would continue to operate acceptably as a roundabout with or without the additional vehicle trips associated with the proposed project.
- Shadelands Drive/North Via Monte would operate acceptably as a roundabout as is proposed under the Community Benefits Variant, or with all-way stop control.
- The addition of project traffic would not cause the Peak Hour traffic signal warrant to be met at either Mitchell Drive/North Wiget Lane or Shadelands Drive/North Via Monte under all scenarios evaluated. The Peak Hour signal warrant would be warranted at Shadelands Drive/North Wiget Lane under all a.m. and p.m. peak hour scenarios except Existing plus Project for the a.m. peak hour.
- The intersections of Shadelands Drive/North Wiget and Ygnacio Valley Road/Oak Grove Road had collision rates above the statewide average during the study period. The installation of a traffic signal or roundabout at the intersection of Shadelands Drive/North Wiget Lane would be expected to reduce the collision rate. A majority of collisions at the intersection of Ygnacio Valley Road/Oak Grove Road involved westbound vehicles arriving from the Lime Ridge pass where vehicle speeds are higher.

Study Participants and References

Study Participants

Principal in Charge	Mark E. Spencer, PE (Traffic)
Senior Traffic Engineer	Kenny Jeong, PE (Traffic)
Assistant Engineer	Nathan Sharafian, EIT
Graphics	Jessica Bender
Editing/Formatting	Rebecca Mansour, Erika Totanes
Quality Control	Kevin Carstens, PE (Civil, Traffic)

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WCR036

Appendix A

Traffic Counts

DRAFT

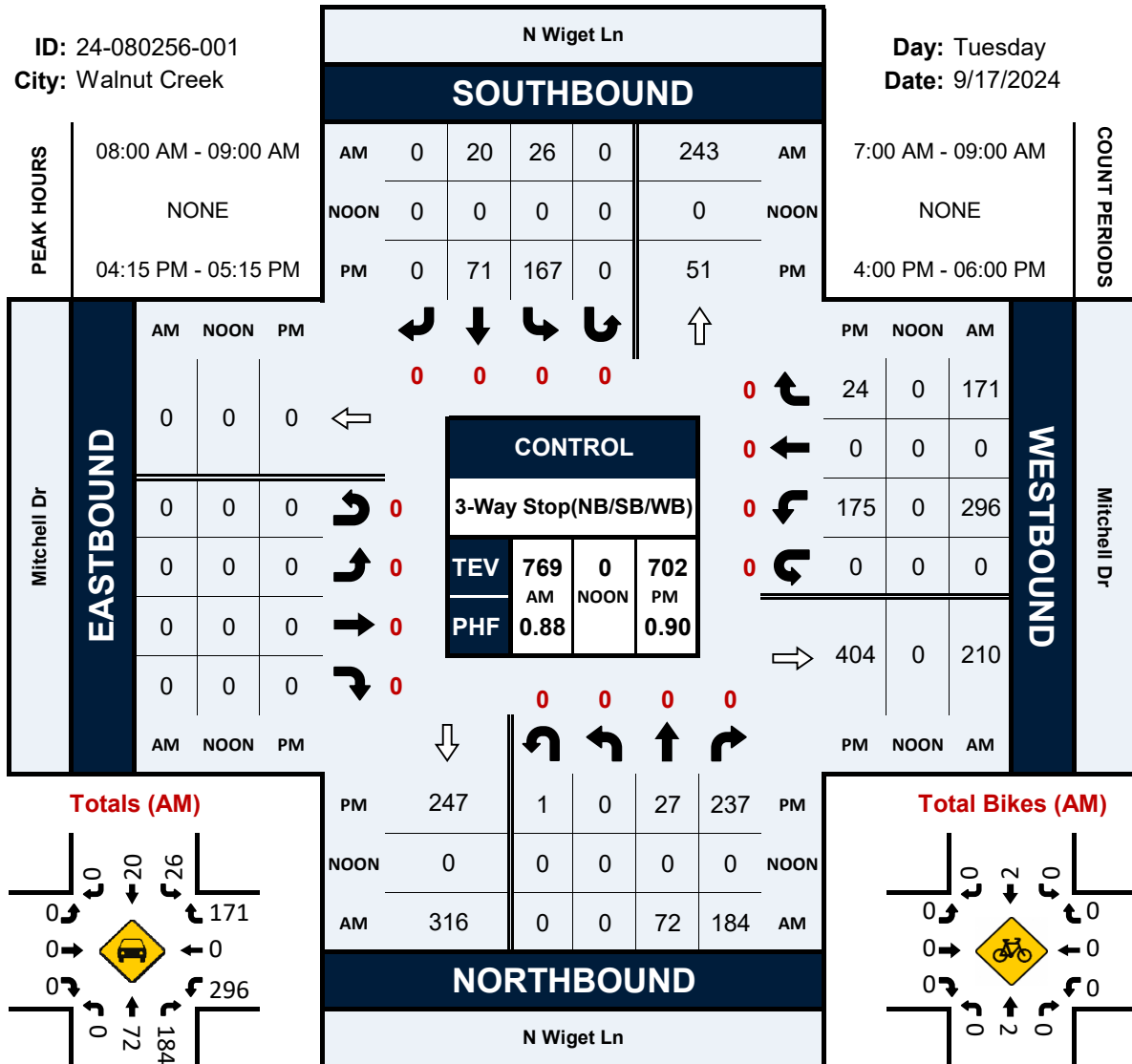
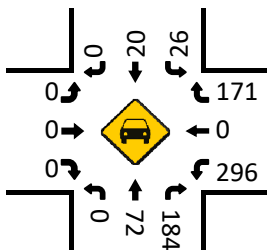
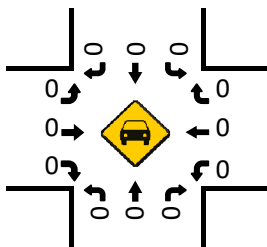
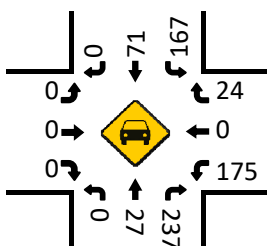
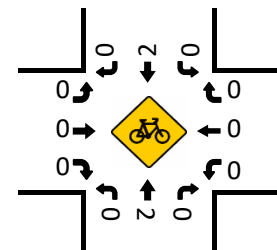
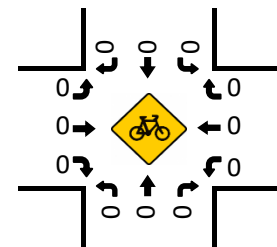
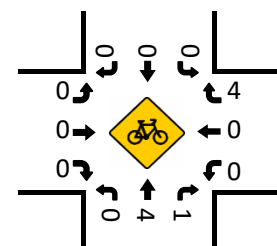
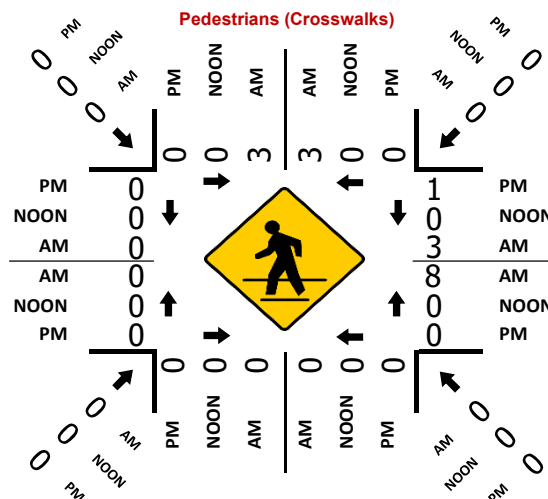


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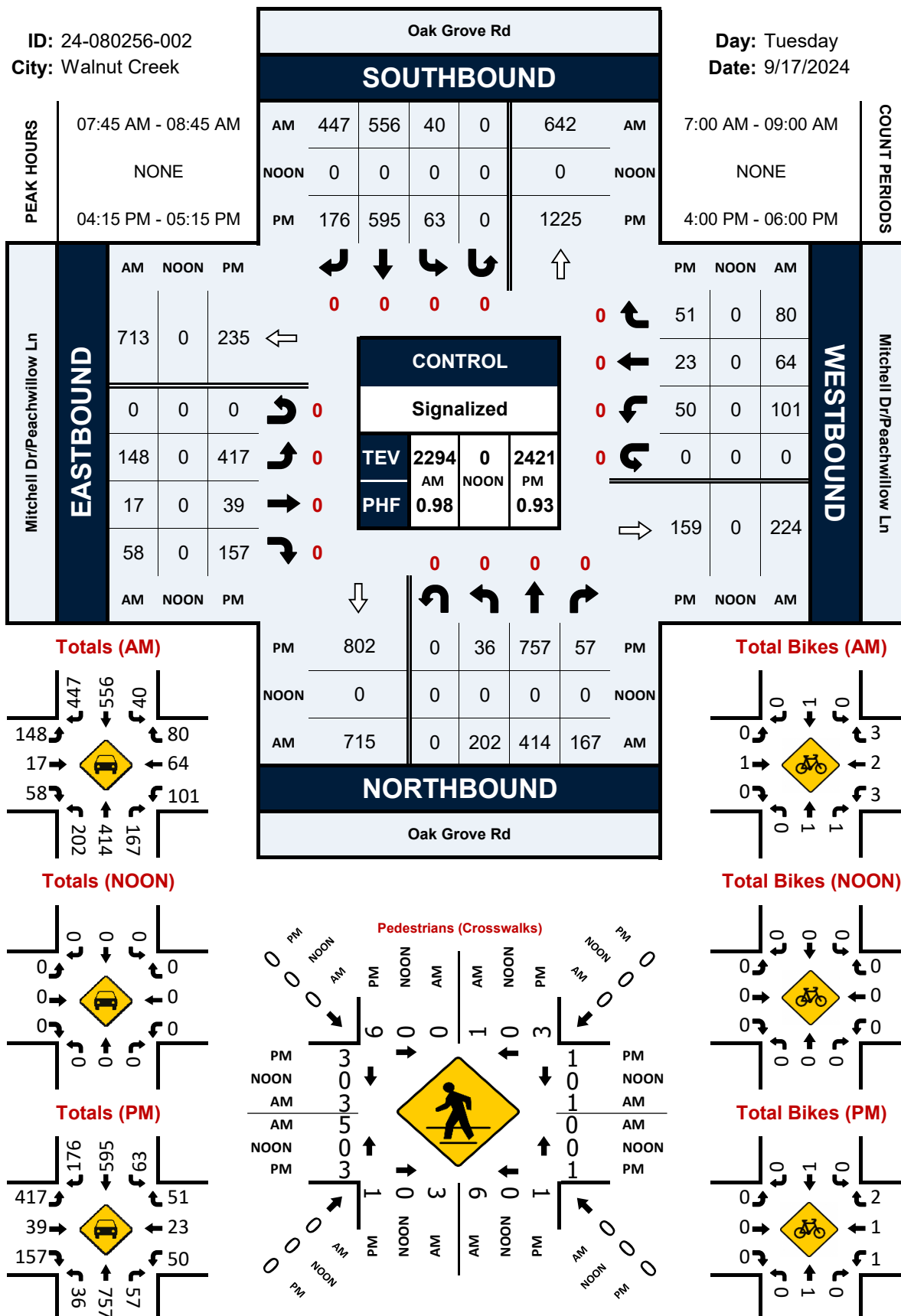
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City: Walnut Creek

Day: Tuesday
Date: 9/17/2024

**Totals (AM)****Totals (NOON)****Totals (PM)****Total Bikes (AM)****Total Bikes (NOON)****Total Bikes (PM)****Pedestrians (Crosswalks)**

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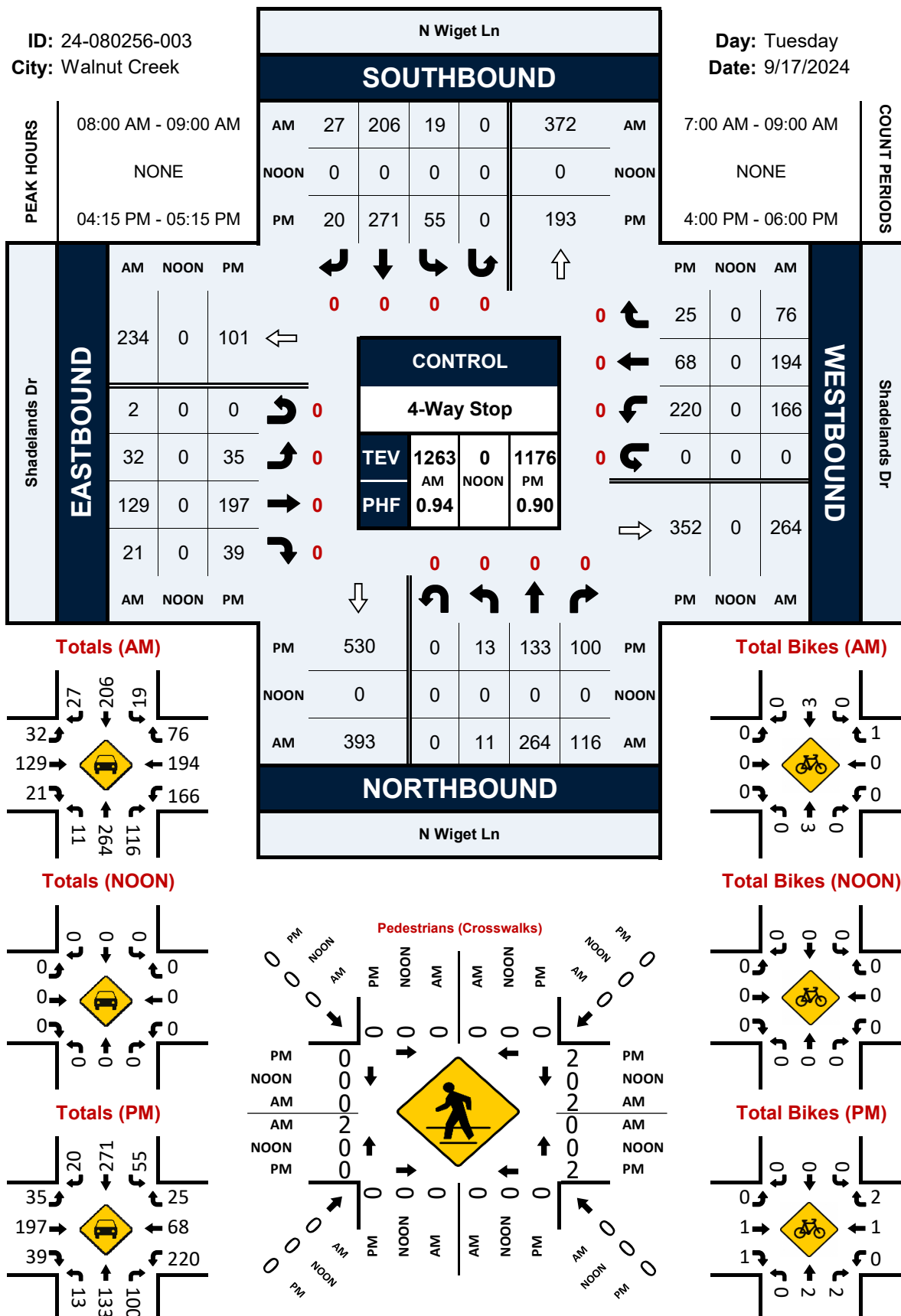
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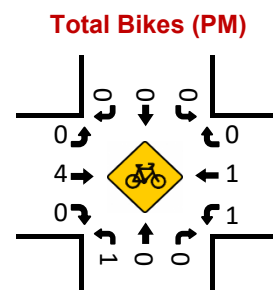
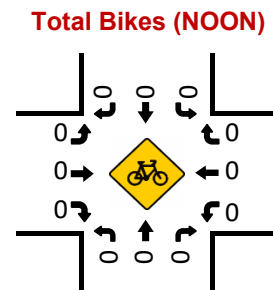
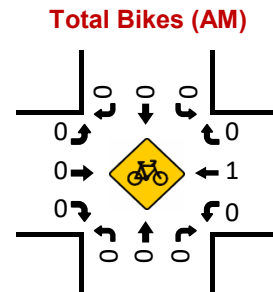
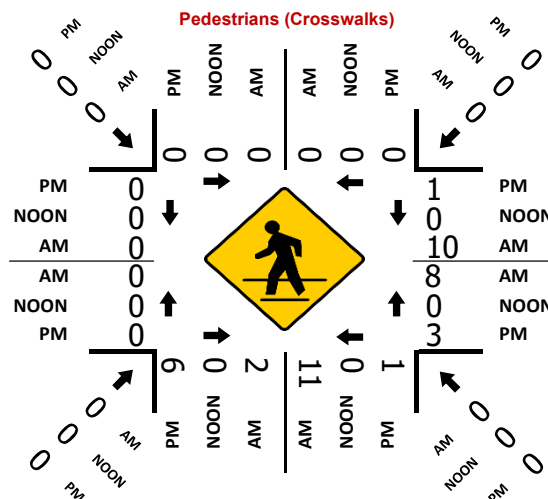
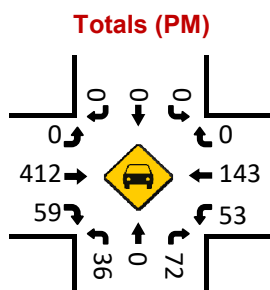
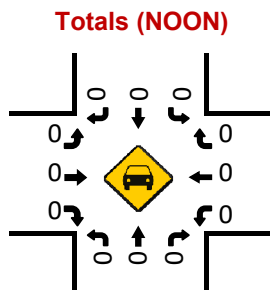
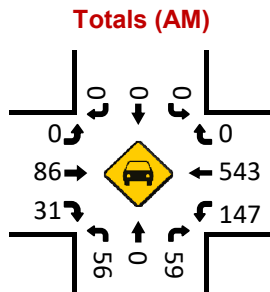
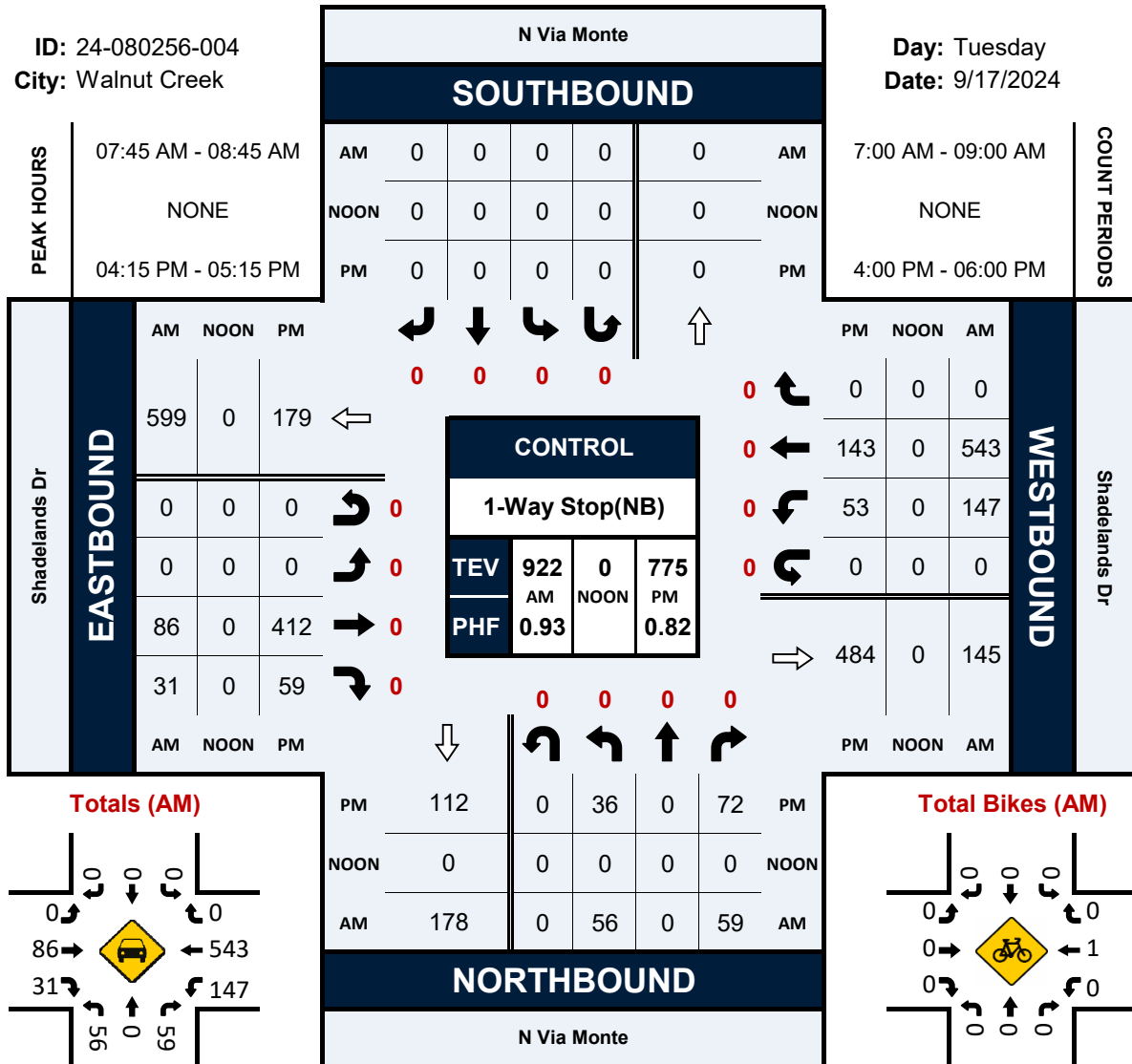


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City: Walnut Creek

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Date: 9/17/2024

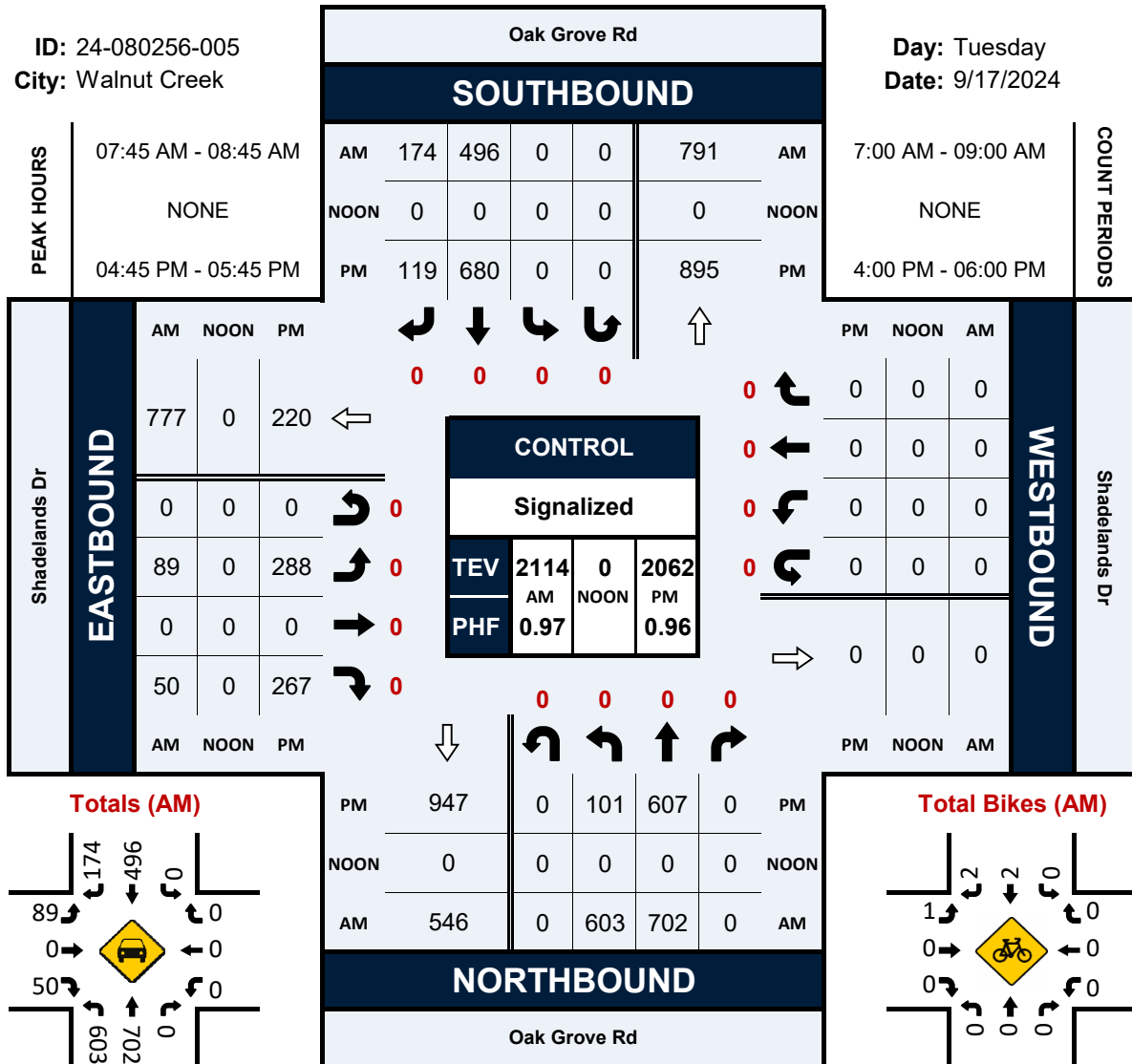


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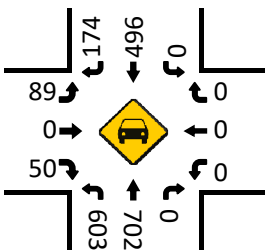
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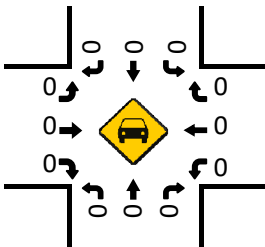
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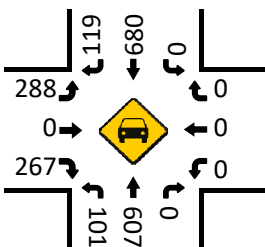
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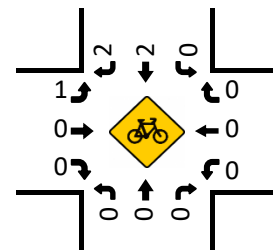
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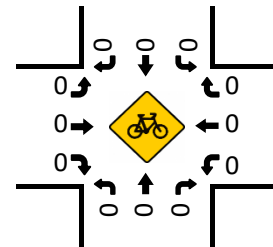
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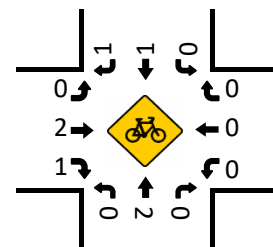
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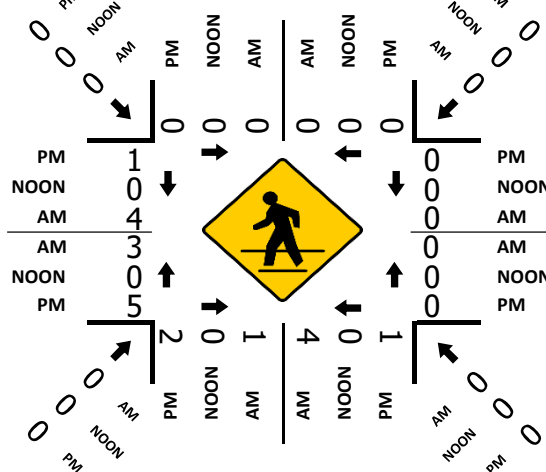
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Total Bikes (PM)



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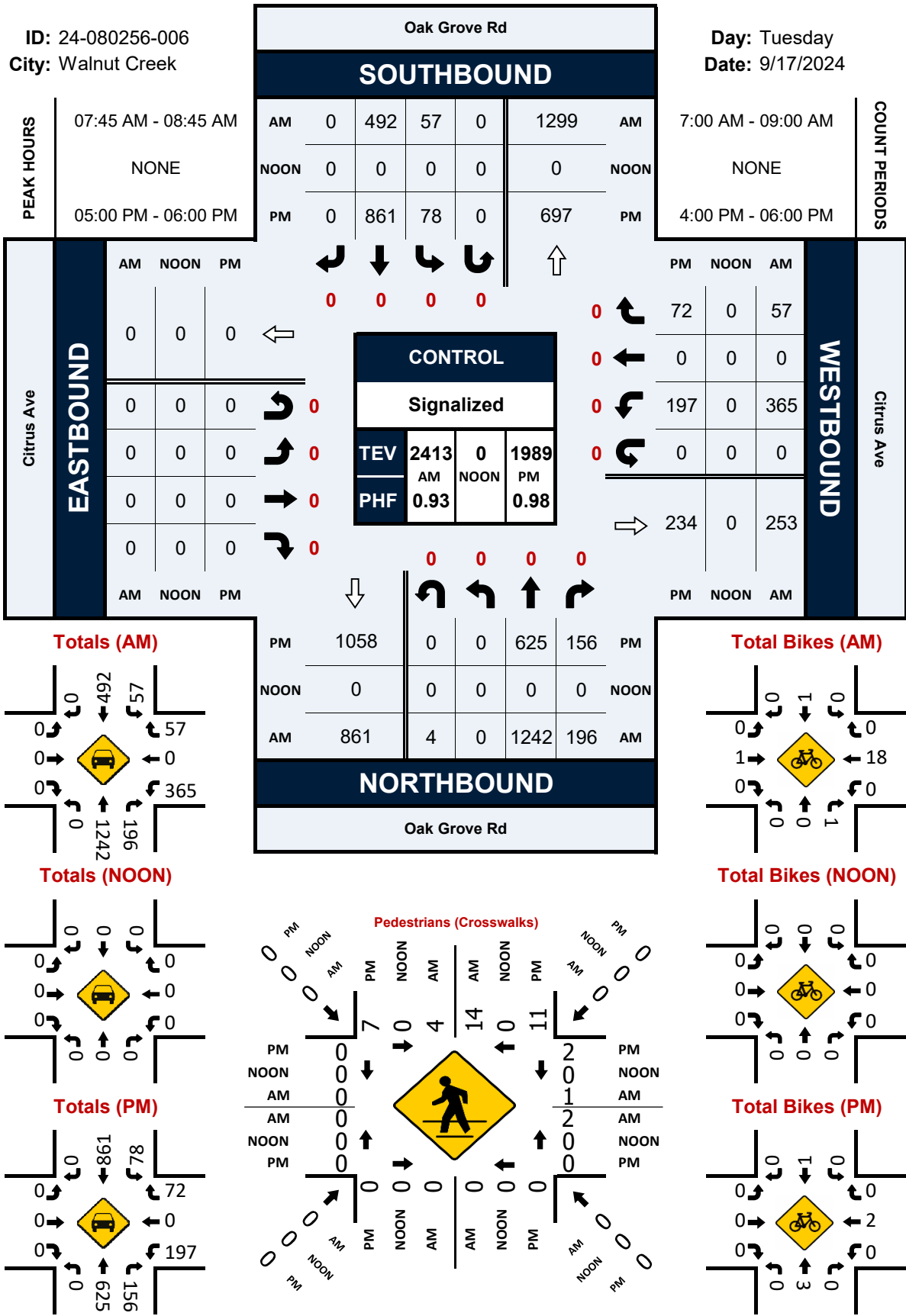


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City: Walnut Creek

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Date: 9/17/2024

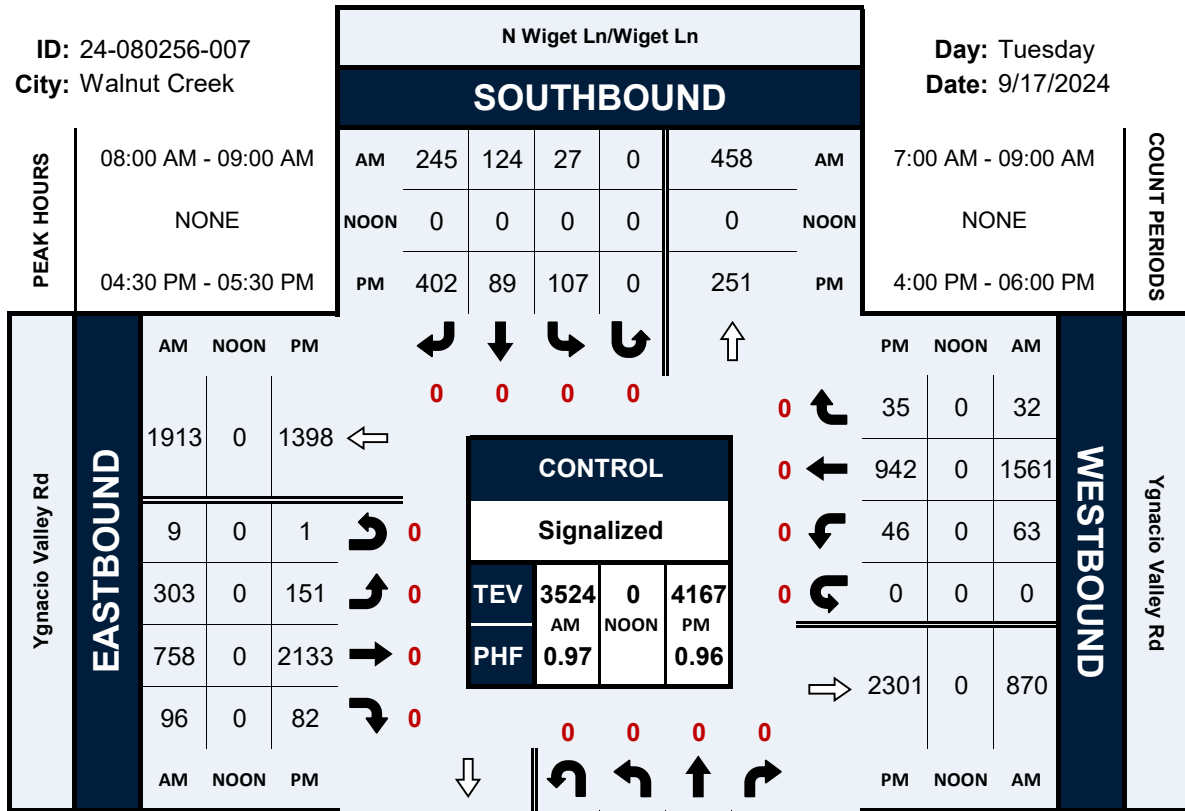


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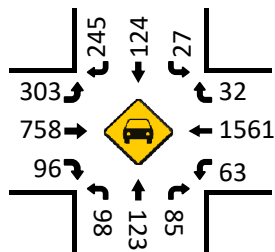
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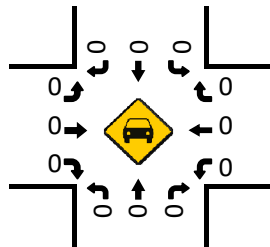
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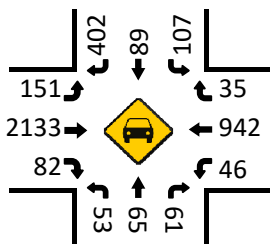
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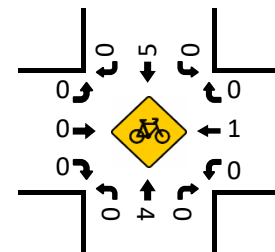
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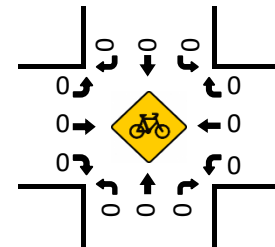
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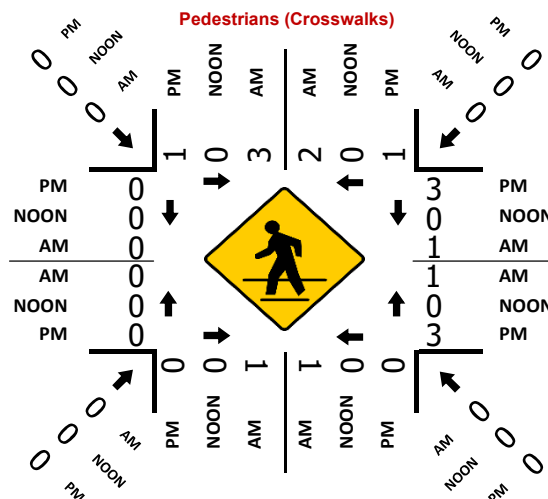
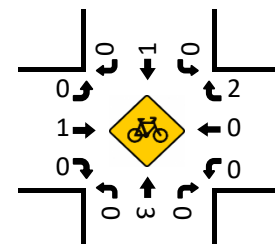
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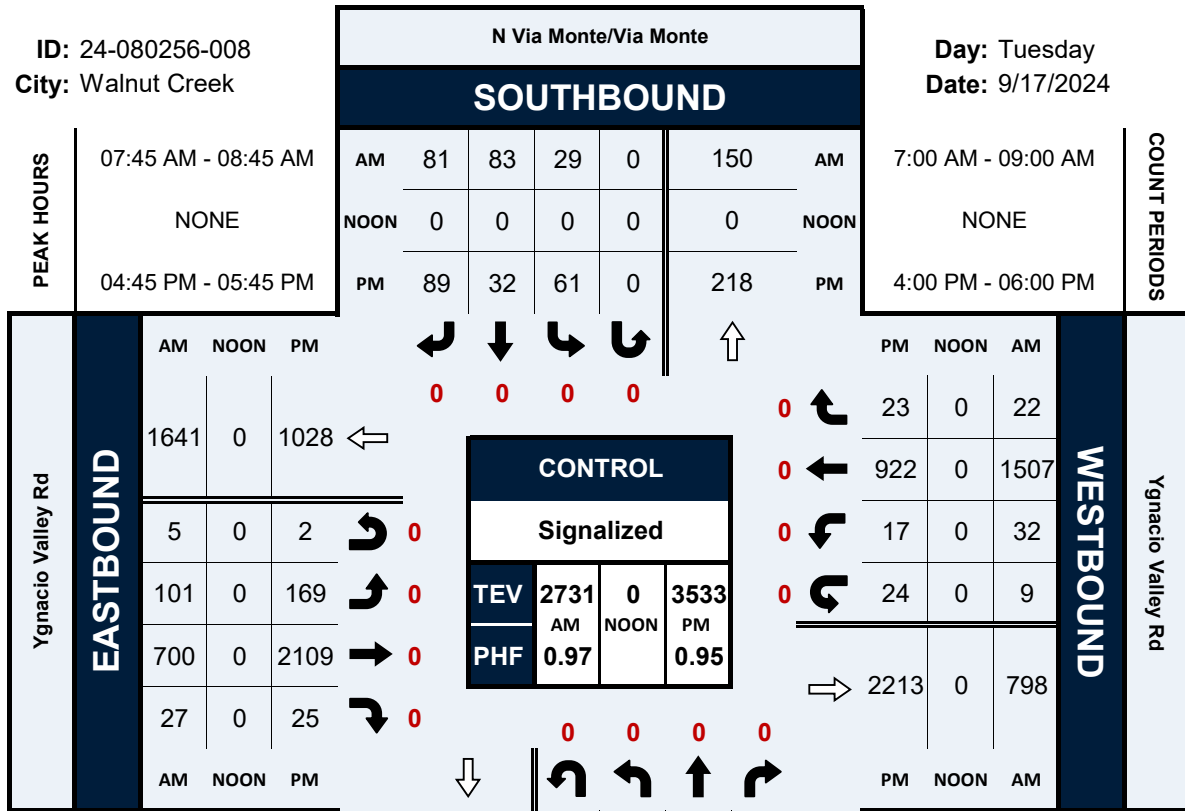


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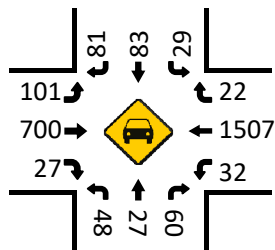
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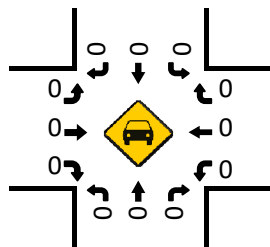
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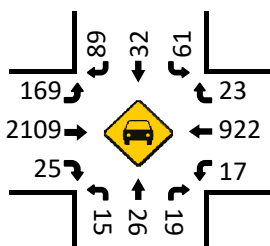
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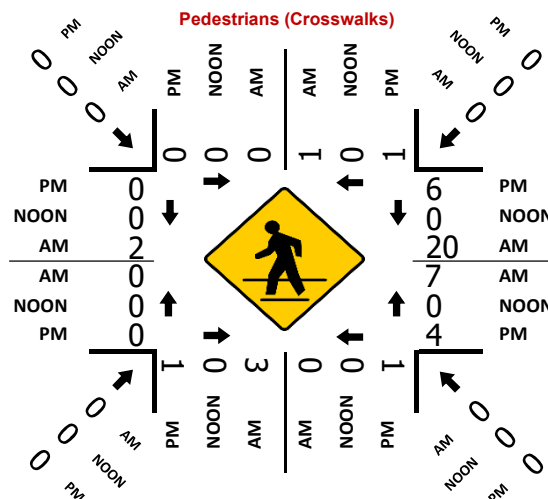


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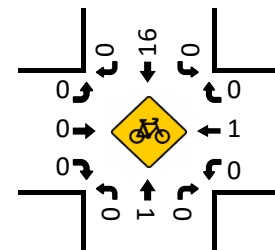


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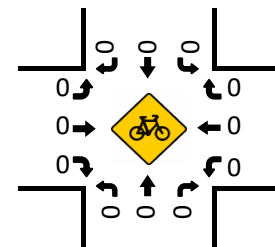
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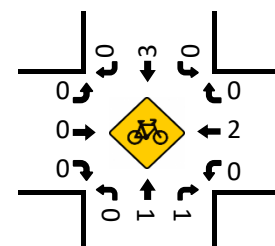
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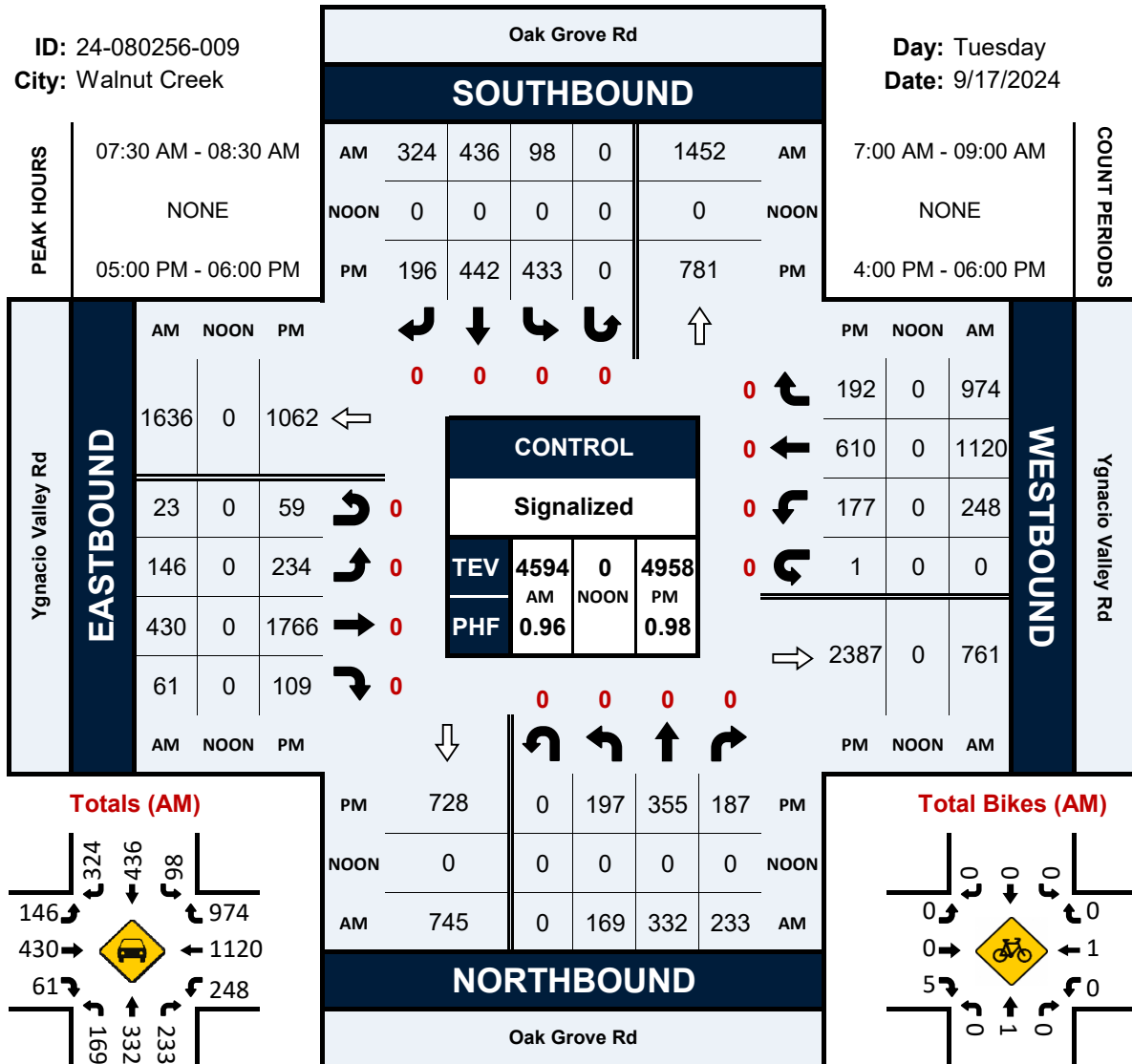


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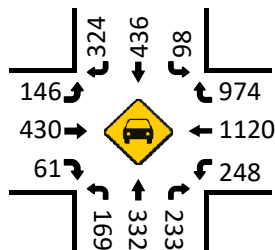
Peak Hour Turning Movement Count

ID: 24-080256-009
City: Walnut Creek

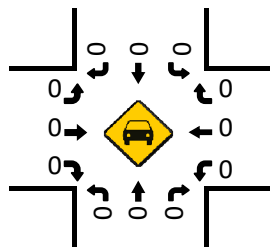
Day: Tuesday
Date: 9/17/2024



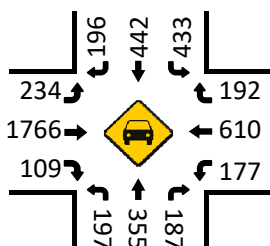
Totals (AM)



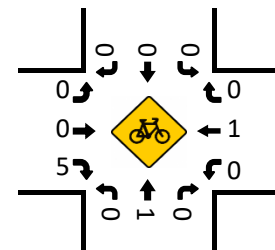
Totals (NOON)



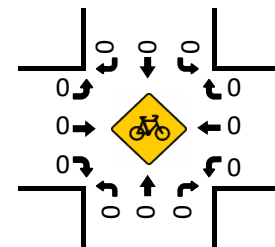
Totals (PM)



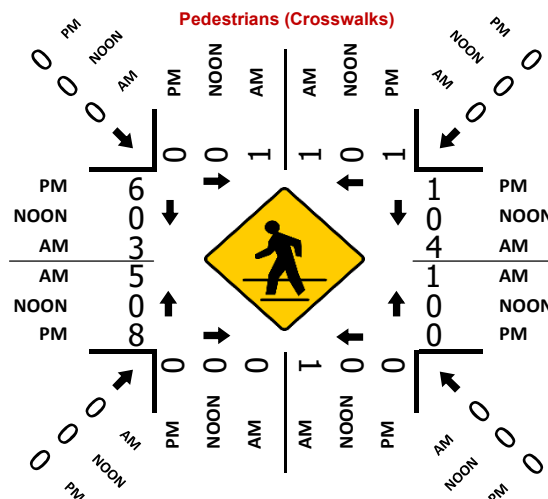
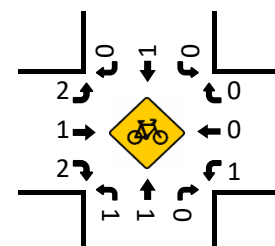
Total Bikes (AM)



Total Bikes (NOON)



Total Bikes (PM)





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Appendix B

Intersection Level of Service Calculations

DRAFT



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HCM 6th AWSC
1: N Wiget Ln & Mitchell Dr

11/12/2024

Intersection						
Intersection Delay, s/veh	12					
Intersection LOS	B					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↩	↩	↩	↩	↩	↩
Traffic Vol, veh/h	296	171	72	184	26	20
Future Vol, veh/h	296	171	72	184	26	20
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	336	194	82	209	30	23
Number of Lanes	1	1	1	1	0	1
Approach	WB	NB		SB		
Opposing Approach		SB		NB		
Opposing Lanes	0	1		2		
Conflicting Approach Left	NB			WB		
Conflicting Lanes Left	2	0		2		
Conflicting Approach Right	SB	WB				
Conflicting Lanes Right	1	2		0		
HCM Control Delay	13.3	10.1		9.8		
HCM LOS	B	B		A		

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	0%	57%
Vol Thru, %	100%	0%	0%	0%	43%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	72	184	296	171	46
LT Vol	0	0	296	0	26
Through Vol	72	0	0	0	20
RT Vol	0	184	0	171	0
Lane Flow Rate	82	209	336	194	52
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.135	0.305	0.552	0.254	0.089
Departure Headway (Hd)	5.954	5.247	5.905	4.698	6.112
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	598	680	605	756	580
Service Time	3.733	3.025	3.689	2.482	4.212
HCM Lane V/C Ratio	0.137	0.307	0.555	0.257	0.09
HCM Control Delay	9.7	10.3	15.8	9.1	9.8
HCM Lane LOS	A	B	C	A	A
HCM 95th-tile Q	0.5	1.3	3.4	1	0.3

HCM 6th Signalized Intersection Summary
2: Oak Grove Rd & Mitchell Dr/Peachwillow Ln

11/12/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	148	17	58	101	64	80	202	414	167	40	556	447
Future Volume (veh/h)	148	17	58	101	64	80	202	414	167	40	556	447
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No		No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	163	0	26	103	65	51	206	422	112	41	567	312
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	509	0	219	149	94	207	246	1243	326	91	790	434
Arrive On Green	0.14	0.00	0.14	0.13	0.13	0.13	0.14	0.45	0.45	0.05	0.36	0.36
Sat Flow, veh/h	3563	0	1534	1113	702	1549	1781	2769	727	1781	2184	1201
Grp Volume(v), veh/h	163	0	26	168	0	51	206	269	265	41	461	418
Grp Sat Flow(s),veh/h/ln	1781	0	1534	1815	0	1549	1781	1777	1719	1781	1777	1608
Q Serve(g_s), s	3.5	0.0	1.2	7.4	0.0	2.5	9.5	8.3	8.5	1.9	18.8	18.9
Cycle Q Clear(g_c), s	3.5	0.0	1.2	7.4	0.0	2.5	9.5	8.3	8.5	1.9	18.8	18.9
Prop In Lane	1.00		1.00	0.61		1.00	1.00		0.42	1.00		0.75
Lane Grp Cap(c), veh/h	509	0	219	243	0	207	246	798	772	91	643	582
V/C Ratio(X)	0.32	0.00	0.12	0.69	0.00	0.25	0.84	0.34	0.34	0.45	0.72	0.72
Avail Cap(c_a), veh/h	2115	0	911	711	0	607	635	1266	1225	635	1266	1145
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.4	0.0	31.5	34.8	0.0	32.7	35.4	15.1	15.1	38.8	23.2	23.2
Incr Delay (d2), s/veh	0.4	0.0	0.3	4.9	0.0	0.9	2.9	0.4	0.4	1.3	2.1	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	0.5	3.6	0.0	0.9	4.1	3.1	3.1	0.8	7.6	6.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.9	0.0	31.8	39.8	0.0	33.5	38.3	15.4	15.5	40.1	25.3	25.5
LnGrp LOS	C	A	C	D	A	C	D	B	B	D	C	C
Approach Vol, veh/h	189			219			740			920		
Approach Delay, s/veh	32.7			38.3			21.8			26.1		
Approach LOS	C			D			C			C		
Timer - Assigned Phs	2	3	4			6	7	8				
Phs Duration (G+Y+Rc), s	15.9	16.1	35.5			16.7	8.8	42.8				
Change Period (Y+Rc), s	4.6	4.5	5.0			4.7	4.5	5.0				
Max Green Setting (Gmax), s	33.0	30.0	60.0			50.0	30.0	60.0				
Max Q Clear Time (g_c+I1), s	9.4	11.5	20.9			5.5	3.9	10.5				
Green Ext Time (p_c), s	1.6	0.2	9.6			0.9	0.0	5.1				
Intersection Summary												
HCM 6th Ctrl Delay	26.4											
HCM 6th LOS	C											

HCM 6th AWSC
3: N Wiget Ln & Shadelands Dr

11/12/2024

Intersection												
Intersection Delay, s/veh22.4												
Intersection LOS C												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱		↰	↱		↰	↱
Traffic Vol, veh/h	34	129	21	166	194	76	11	264	116	19	206	27
Future Vol, veh/h	34	129	21	166	194	76	11	264	116	19	206	27
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	137	22	177	206	81	12	281	123	20	219	29
Number of Lanes	0	1	1	0	1	1	0	1	1	0	1	1
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	2			2			2			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	2			2			2			2		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			2			2			2		
HCM Control Delay	15.4			30.9			18.9			18.1		
HCM LOS	C			D			C			C		

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	4%	0%	21%	0%	46%	0%	8%	0%
Vol Thru, %	96%	0%	79%	0%	54%	0%	92%	0%
Vol Right, %	0%	100%	0%	100%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	275	116	163	21	360	76	225	27
LT Vol	11	0	34	0	166	0	19	0
Through Vol	264	0	129	0	194	0	206	0
RT Vol	0	116	0	21	0	76	0	27
Lane Flow Rate	293	123	173	22	383	81	239	29
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.616	0.234	0.39	0.045	0.807	0.149	0.523	0.057
Departure Headway (Hd)	7.575	6.835	8.096	7.265	7.585	6.631	7.862	7.096
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	474	523	442	490	475	538	457	502
Service Time	5.351	4.611	5.887	5.055	5.357	4.402	5.642	4.877
HCM Lane V/C Ratio	0.618	0.235	0.391	0.045	0.806	0.151	0.523	0.058
HCM Control Delay	21.9	11.7	16	10.4	35.2	10.6	19	10.3
HCM Lane LOS	C	B	C	B	E	B	C	B
HCM 95th-tile Q	4.1	0.9	1.8	0.1	7.5	0.5	3	0.2

HCM 6th TWSC
4: N Via Monte & Shadelands Dr

11/12/2024

Intersection						
Int Delay, s/veh 3.7						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↰	↰	↰
Traffic Vol, veh/h	86	31	147	543	56	59
Future Vol, veh/h	86	31	147	543	56	59
Conflicting Peds, #/hr	0	13	31	0	13	31
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	92	33	158	584	60	63

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1053
Stage 1	-	-	140
Stage 2	-	-	913
Critical Hdwy	-	4.12	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	2.218	3.318
Pot Cap-1 Maneuver	-	1424	251
Stage 1	-	-	887
Stage 2	-	-	391
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1387	201
Mov Cap-2 Maneuver	-	-	201
Stage 1	-	-	864
Stage 2	-	-	321

Approach	EB	WB	NB
HCM Control Delay, s	0	1.7	19.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	201	828	-	-	1387	-
HCM Lane V/C Ratio	0.3	0.077	-	-	0.114	-
HCM Control Delay (s)	30.4	9.7	-	-	7.9	0
HCM Lane LOS	D	A	-	-	A	A
HCM 95th %tile Q(veh)	1.2	0.2	-	-	0.4	-

HCM Signalized Intersection Capacity Analysis
5: Oak Grove Rd & Shadelands Dr

11/12/2024

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	89	50	603	702	496	174
Future Volume (vph)	89	50	603	702	496	174
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1		4.5	5.0	5.0	
Lane Util. Factor	0.97		1.00	0.95	0.95	
Frpb, ped/bikes	0.99		1.00	1.00	0.99	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.95		1.00	1.00	0.96	
Flt Protected	0.97		0.95	1.00	1.00	
Satd. Flow (prot)	3273		1770	3539	3366	
Flt Permitted	0.97		0.95	1.00	1.00	
Satd. Flow (perm)	3273		1770	3539	3366	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	92	52	622	724	511	179
RTOR Reduction (vph)	47	0	0	0	22	0
Lane Group Flow (vph)	97	0	622	724	668	0
Confl. Peds. (#/hr)		5			7	
Confl. Bikes (#/hr)					4	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	6		3 11	8	4	
Permitted Phases						
Actuated Green, G (s)	11.3		50.5	108.6	49.1	
Effective Green, g (s)	11.3		50.5	108.6	49.1	
Actuated g/C Ratio	0.09		0.39	0.84	0.38	
Clearance Time (s)	5.1			5.0	5.0	
Vehicle Extension (s)	2.0			4.0	4.0	
Lane Grp Cap (vph)	284		687	2956	1271	
v/s Ratio Prot	c0.03		c0.35	0.20	c0.20	
v/s Ratio Perm						
v/c Ratio	0.34		0.91	0.24	0.53	
Uniform Delay, d1	55.8		37.5	2.2	31.4	
Progression Factor	1.00		0.93	0.24	1.00	
Incremental Delay, d2	0.3		12.3	0.1	1.6	
Delay (s)	56.1		47.0	0.7	33.0	
Level of Service	E		D	A	C	
Approach Delay (s)	56.1			22.1	33.0	
Approach LOS	E			C	C	
Intersection Summary						
HCM 2000 Control Delay			27.8		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.68			
Actuated Cycle Length (s)			130.0		Sum of lost time (s)	19.1
Intersection Capacity Utilization			76.2%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM 6th Signalized Intersection Summary
6: Oak Grove Rd & Citrus Ave

11/12/2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	365	57	1242	196	57	492
Future Volume (veh/h)	365	57	1242	196	57	492
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	392	35	1335	195	61	529
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	491	225	1800	260	98	2378
Arrive On Green	0.14	0.14	0.58	0.58	0.05	0.67
Sat Flow, veh/h	3456	1585	3198	449	1781	3647
Grp Volume(v), veh/h	392	35	759	771	61	529
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1777	1781	1777
Q Serve(g_s), s	14.3	2.5	40.7	41.9	4.4	7.5
Cycle Q Clear(g_c), s	14.3	2.5	40.7	41.9	4.4	7.5
Prop In Lane	1.00	1.00		0.25	1.00	
Lane Grp Cap(c), veh/h	491	225	1030	1030	98	2378
V/C Ratio(X)	0.80	0.16	0.74	0.75	0.63	0.22
Avail Cap(c_a), veh/h	891	408	1030	1030	158	2378
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.47	0.47	0.83	0.83
Uniform Delay (d), s/veh	53.9	48.9	20.0	20.3	60.1	8.4
Incr Delay (d2), s/veh	4.2	0.5	2.3	2.4	5.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	1.0	16.3	16.8	2.1	2.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	58.2	49.4	22.3	22.7	65.5	8.5
LnGrp LOS	E	D	C	C	E	A
Approach Vol, veh/h	427		1530			590
Approach Delay, s/veh	57.5		22.5			14.4
Approach LOS	E		C			B
Timer - Assigned Phs						
	2		4		7	8
Phs Duration (G+Y+Rc), s	23.0		92.0		11.6	80.4
Change Period (Y+Rc), s	4.5		5.0		4.5	5.0
Max Green Setting (Gmax), s	33.5		87.0		11.5	71.0
Max Q Clear Time (g_c+I), s	16.3		9.5		6.4	43.9
Green Ext Time (p_c), s	2.2		5.6		0.0	17.0
Intersection Summary						
HCM 6th Ctrl Delay			26.5			
HCM 6th LOS			C			

HCM 6th Signalized Intersection Summary
7: Wiget Ln/N Wiget Ln & Ygnacio Valley Rd.

11/12/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↰↱	↰	↰↱	↰↱	↰	↰	↰	↰	↰↱	↰↱	↰
Traffic Volume (veh/h)	312	758	96	63	1561	32	98	123	85	27	124	245
Future Volume (veh/h)	312	758	96	63	1561	32	98	123	85	27	124	245
Initial Q (Qb), veh	0	0	0	0	0	0	2	0	0	0	0	0
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	1969	1969	1969	1969	1969	1969	2000	2000	2000	2000	2000	2000
Adj Flow Rate, veh/h	322	781	85	65	1609	22	101	127	32	28	128	132
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, %	2	2	2	2	2	2	0	0	0	0	0	0
Cap, veh/h	401	2658	288	96	2698	790	195	370	308	210	370	307
Arrive On Green	0.22	1.00	1.00	0.05	0.48	0.48	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	3638	4922	533	1875	5611	1643	1135	2000	1661	1244	2000	1659
Grp Volume(v), veh/h	322	567	299	65	1609	22	101	127	32	28	128	132
Grp Sat Flow(s), veh/h/ln	1819	1792	1872	1875	1870	1643	1135	2000	1661	1244	2000	1659
Q Serve(g_s), s	12.6	0.0	0.0	5.1	31.3	1.1	12.8	8.3	2.4	3.0	8.4	10.6
Cycle Q Clear(g_c), s	12.6	0.0	0.0	5.1	31.3	1.1	21.2	8.3	2.4	11.4	8.4	10.6
Prop In Lane	1.00		0.28	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	401	1935	1011	96	2698	790	195	370	308	210	370	307
V/C Ratio(X)	0.80	0.29	0.30	0.68	0.60	0.03	0.52	0.34	0.10	0.13	0.35	0.43
Avail Cap(c_a), veh/h	618	1935	1011	131	2698	790	355	653	543	385	653	542
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)	0.99	0.99	0.99	0.90	0.90	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.9	0.0	0.0	70.0	28.3	20.5	62.9	53.2	50.8	58.1	53.3	54.2
Incr Delay (d2), s/veh	4.3	0.4	0.7	2.8	0.9	0.1	0.8	0.2	0.1	0.1	0.2	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	5.4	0.1	0.2	2.5	13.8	0.4	4.2	4.3	1.0	1.0	4.3	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	61.2	0.4	0.7	72.8	29.2	20.6	65.2	53.4	50.9	58.2	53.5	54.5
LnGrp LOS	E	A	A	E	C	C	E	D	D	E	D	D
Approach Vol, veh/h	1188			1696			260			288		
Approach Delay, s/veh	17.0			30.8			57.7			54.4		
Approach LOS	B			C			E			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	20.0	75.1		30.1	11.2	84.0		30.1				
Change Period (Y+Rc), s	4.5	5.3		5.0	4.5	5.3		5.0				
Max Green Setting (Gmax), s	24.5	63.7		47.0	9.5	78.7		47.0				
Max Q Clear Time (g_c+1), s	14.6	33.3		23.2	7.1	2.0		13.4				
Green Ext Time (p_c), s	1.0	28.9		0.7	0.0	36.9		0.7				
Intersection Summary												
HCM 6th Ctrl Delay	30.0											
HCM 6th LOS	C											

HCM 6th Signalized Intersection Summary
8: S Via Monte/N Via Monte & Ygnacio Valley Rd.

11/12/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↰↱	↰	↰↱	↰↱	↰	↰	↰	↰	↰↱	↰↱	↰
Traffic Volume (veh/h)	106	700	27	41	1507	22	48	27	60	29	83	81
Future Volume (veh/h)	106	700	27	41	1507	22	48	27	60	29	83	81
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	0.97		0.95	0.97		0.94
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	1969	1969	1969	1890	1969	1969	2000	2000	2000	2000	2000	2000
Adj Flow Rate, veh/h	109	722	23	42	1554	20	49	28	23	30	86	47
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, %	2	2	2	2	2	2	0	0	0	0	0	0
Cap, veh/h	179	3192	101	66	3104	40	197	106	375	231	276	151
Arrive On Green	0.10	1.00	1.00	0.04	0.57	0.56	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	3638	5503	175	1800	5468	70	681	455	1615	1340	1186	648
Grp Volume(v), veh/h	109	490	255	42	1018	556	77	0	23	30	0	133
Grp Sat Flow(s), veh/h/ln	1819	1870	1937	1800	1792	1955	1135	0	1615	1340	0	1834
Q Serve(g_s), s	4.3	0.0	0.0	3.5	25.7	25.8	5.3	0.0	1.7	3.0	0.0	9.0
Cycle Q Clear(g_c), s	4.3	0.0	0.0	3.5	25.7	25.8	14.3	0.0	1.7	17.3	0.0	9.0
Prop In Lane	1.00		0.09	1.00		0.04	0.64		1.00	1.00		0.35
Lane Grp Cap(c), veh/h	179	2170	1123	66	2034	1110	303	0	375	231	0	426
V/C Ratio(X)	0.61	0.23	0.23	0.63	0.50	0.50	0.25	0.00	0.06	0.13	0.00	0.31
Avail Cap(c_a), veh/h	376	2170	1123	150	2034	1110	362	0	441	286	0	501
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)	0.98	0.98	0.98	0.75	0.75	0.75	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	66.3	0.0	0.0	71.2	19.6	19.6	51.4	0.0	44.8	57.2	0.0	47.7
Incr Delay (d2), s/veh	1.2	0.2	0.5	2.8	0.7	1.2	0.2	0.0	0.0	0.1	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(50%), veh/ln	1.9	0.1	0.1	1.6	10.5	11.6	2.6	0.0	0.7	1.0	0.0	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	67.5	0.2	0.5	74.0	20.2	20.8	51.6	0.0	44.9	57.3	0.0	47.8
LnGrp LOS	E	A	A	E	C	C	D	A	D	E	A	D
Approach Vol, veh/h	854			1616			100			163		
Approach Delay, s/veh	8.9			21.8			50.0			49.5		
Approach LOS	A			C			D			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.9	88.2		37.8	9.0	90.0		37.8				
Change Period (Y+Rc), s	4.5	5.3		5.0	4.5	5.3		5.0				
Max Green Setting (Gmax), s	14.5	81.7		39.0	11.5	84.7		39.0				
Max Q Clear Time (g_c+1), s	6.3	27.8		16.3	5.5	2.0		19.3				
Green Ext Time (p_c), s	0.1	49.2		0.2	0.0	33.2		0.3				
Intersection Summary												
HCM 6th Ctrl Delay	20.5											
HCM 6th LOS	C											

HCM Signalized Intersection Capacity Analysis
9: Oak Grove Rd & Ygnacio Valley Rd.

11/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	169	430	61	248	1120	974	169	332	233	98	436	324
Future Volume (vph)	169	430	61	248	1120	974	169	332	233	98	436	324
Ideal Flow (vphpl)	1940	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Total Lost time (s)	3.5	2.7		3.5	2.7	2.7	3.5	3.0	4.0	3.5	3.0	2.0
Lane Util. Factor	0.97	0.91		1.00	0.97	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3505	5241		1863	3804	1641	1881	3762	1650	3650	3762	1659
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3505	5241		1863	3804	1641	1881	3762	1650	3650	3762	1659
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	176	448	64	258	1167	1015	176	346	243	102	454	338
RTOR Reduction (vph)	0	11	0	0	0	278	0	0	151	0	0	0
Lane Group Flow (vph)	176	501	0	258	1167	737	176	346	92	102	454	338
Confl. Peds. (#/hr)			1			2			5			8
Confl. Bikes (#/hr)			5			1			1			
Heavy Vehicles (%)	2%	2%		2%	2%		1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Free
Protected Phases	1	6		5	13	2	3	8		7	4	
Permitted Phases						2			8			Free
Actuated Green, G (s)	12.9	41.5		28.6	61.7	61.7	18.4	44.4	44.4	12.0	38.0	150.0
Effective Green, g (s)	13.9	43.8		30.6	64.0	64.0	19.4	46.4	45.4	13.0	40.0	150.0
Actuated g/C Ratio	0.09	0.29		0.20	0.43	0.43	0.13	0.31	0.30	0.09	0.27	1.00
Clearance Time (s)	4.5	5.0			5.0	5.0	4.5	5.0	5.0	4.5	5.0	
Vehicle Extension (s)	3.0	6.0			6.0	6.0	2.0	2.0	2.0	3.0	2.0	
Lane Grp Cap (vph)	324	1530		380	1623	700	243	1163	499	316	1003	1659
v/s Ratio Prot	0.05	0.10		c0.14	0.31		c0.09	0.09		0.03	c0.12	
v/s Ratio Perm						c0.45			0.06			c0.20
v/c Ratio	0.54	0.33		0.68	0.72	1.05	0.72	0.30	0.18	0.32	0.45	0.20
Uniform Delay, d1	65.0	41.6		55.2	35.6	43.0	62.7	39.4	38.6	64.4	45.9	0.0
Progression Factor	1.13	1.25		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.6		5.2	2.8	48.7	8.7	0.7	0.8	0.6	1.5	0.3
Delay (s)	75.2	52.6		60.4	38.3	91.7	71.5	40.1	39.4	65.0	47.3	0.3
Level of Service	E	D		E	D	F	E	D	D	E	D	A
Approach Delay (s)	58.4			62.9			47.1			31.6		
Approach LOS	E			E			D			C		
Intersection Summary												
HCM 2000 Control Delay		53.9										D
HCM 2000 Volume to Capacity ratio		0.82										
Actuated Cycle Length (s)		150.0				Sum of lost time (s)		16.2				
Intersection Capacity Utilization		98.3%				ICU Level of Service		F				
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th AWSC
1: N Wiget Ln & Mitchell Dr

11/12/2024

Intersection						
Intersection Delay, s/veh	11.4					
Intersection LOS	B					
Movement						
	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	175	24	27	237	167	71
Future Vol, veh/h	175	24	27	237	167	71
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	194	27	30	263	186	79
Number of Lanes	1	1	1	1	0	1
Approach						
	WB		NB		SB	
Opposing Approach			SB		NB	
Opposing Lanes	0		1		2	
Conflicting Approach Left	NB				WB	
Conflicting Lanes Left	2		0		2	
Conflicting Approach Right	SB		WB			
Conflicting Lanes Right	1		2		0	
HCM Control Delay	12.1		10		12.3	
HCM LOS	B		A		B	
Lane						
	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1	
Vol Left, %	0%	0%	100%	0%	70%	
Vol Thru, %	100%	0%	0%	0%	30%	
Vol Right, %	0%	100%	0%	100%	0%	
Sign Control	Stop	Stop	Stop	Stop	Stop	
Traffic Vol by Lane	27	237	175	24	238	
LT Vol	0	0	175	0	167	
Through Vol	27	0	0	0	71	
RT Vol	0	237	0	24	0	
Lane Flow Rate	30	263	194	27	264	
Geometry Grp	7	7	7	7	4	
Degree of Util (X)	0.046	0.352	0.35	0.039	0.404	
Departure Headway (Hd)	5.514	4.807	6.472	5.259	5.497	
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	
Cap	642	737	560	685	648	
Service Time	3.308	2.601	4.172	2.959	3.596	
HCM Lane V/C Ratio	0.047	0.357	0.346	0.039	0.407	
HCM Control Delay	8.6	10.2	12.6	8.2	12.3	
HCM Lane LOS	A	B	B	A	B	
HCM 95th-tile Q	0.1	1.6	1.6	0.1	2	

HCM 6th Signalized Intersection Summary
2: Oak Grove Rd & Mitchell Dr/Peachwillow Ln

11/12/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	417	39	157	50	23	51	36	757	57	63	595	176
Future Volume (veh/h)	417	39	157	50	23	51	36	757	57	63	595	176
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.95	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	478	0	87	54	25	21	39	814	57	68	640	159
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	597	0	265	115	53	141	76	1784	125	93	1515	376
Arrive On Green	0.17	0.00	0.17	0.09	0.09	0.09	0.04	0.53	0.53	0.05	0.54	0.54
Sat Flow, veh/h	3563	0	1579	1236	572	1510	1781	3363	235	1781	2804	696
Grp Volume(v), veh/h	478	0	87	79	0	21	39	430	441	68	405	394
Grp Sat Flow(s),veh/h/ln	1781	0	1579	1809	0	1510	1781	1777	1822	1781	1777	1723
Q Serve(g_s), s	15.5	0.0	5.8	5.0	0.0	1.5	2.6	18.0	18.0	4.5	16.3	16.3
Cycle Q Clear(g_c), s	15.5	0.0	5.8	5.0	0.0	1.5	2.6	18.0	18.0	4.5	16.3	16.3
Prop In Lane	1.00		1.00	0.68		1.00	1.00		0.13	1.00		0.40
Lane Grp Cap(c), veh/h	597	0	265	168	0	141	76	942	966	93	960	931
V/C Ratio(X)	0.80	0.00	0.33	0.47	0.00	0.15	0.52	0.46	0.46	0.73	0.42	0.42
Avail Cap(c_a), veh/h	929	0	412	458	0	383	186	942	966	186	960	931
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.84	0.84	0.84	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.0	0.0	44.0	51.6	0.0	50.0	56.2	17.5	17.5	56.0	16.4	16.4
Incr Delay (d2), s/veh	3.3	0.0	0.9	2.9	0.0	0.7	1.7	1.3	1.3	4.1	1.4	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(50%),veh/ln	7.1	0.0	2.3	2.4	0.0	0.6	1.2	7.3	7.5	2.1	6.6	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.3	0.0	44.9	54.5	0.0	50.7	57.9	18.8	18.8	60.1	17.8	17.9
LnGrp LOS	D	A	D	D	A	D	E	B	B	E	B	B
Approach Vol, veh/h		565			100			910			867	
Approach Delay, s/veh		50.3			53.7			20.5			21.1	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	2	3	4		6	7	8					
Phs Duration (G+Y+Rc), s	15.8	9.6	69.8		24.8	10.8	68.6					
Change Period (Y+Rc), s	4.6	4.5	5.0		4.7	4.5	5.0					
Max Green Setting (Gmax), s	30.4	12.5	27.0		31.3	12.5	27.0					
Max Q Clear Time (g_c+I1), s	7.0	4.6	18.3		17.5	6.5	20.0					
Green Ext Time (p_c), s	0.6	0.0	4.0		2.2	0.0	3.7					
Intersection Summary												
HCM 6th Ctrl Delay	29.0											
HCM 6th LOS	C											
Notes												
User approved pedestrian interval to be less than phase max green.												
User approved volume balancing among the lanes for turning movement.												

HCM 6th AWSC
3: N Wiget Ln & Shadelands Dr

11/12/2024

Intersection												
Intersection Delay, s/veh24.5												
Intersection LOS C												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	35	197	39	220	68	25	13	133	100	55	271	20
Future Vol, veh/h	35	197	39	220	68	25	13	133	100	55	271	20
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	39	219	43	244	76	28	14	148	111	61	301	22
Number of Lanes	0	1	1	0	1	1	0	1	1	0	1	1
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	2			2			2			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	2			2			2			2		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			2			2			2		
HCM Control Delay	19.7			28.2			14.3			32.2		
HCM LOS	C			D			B			D		
Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2				
Vol Left, %	9%	0%	15%	0%	76%	0%	17%	0%				
Vol Thru, %	91%	0%	85%	0%	24%	0%	83%	0%				
Vol Right, %	0%	100%	0%	100%	0%	100%	0%	100%				
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop				
Traffic Vol by Lane	146	100	232	39	288	25	326	20				
LT Vol	13	0	35	0	220	0	55	0				
Through Vol	133	0	197	0	68	0	271	0				
RT Vol	0	100	0	39	0	25	0	20				
Lane Flow Rate	162	111	258	43	320	28	362	22				
Geometry Grp	7	7	7	7	7	7	7	7				
Degree of Util (X)	0.368	0.228	0.575	0.087	0.727	0.055	0.785	0.043				
Departure Headway (Hd)	8.171	7.4	8.033	7.232	8.18	7.064	7.806	6.998				
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes				
Cap	440	484	449	495	445	508	464	513				
Service Time	5.927	5.156	5.786	4.984	5.902	4.787	5.527	4.719				
HCM Lane V/C Ratio	0.368	0.229	0.575	0.087	0.719	0.055	0.78	0.043				
HCM Control Delay	15.6	12.3	21.2	10.7	29.8	10.2	33.6	10				
HCM Lane LOS	C	B	C	B	D	B	D	A				
HCM 95th-tile Q	1.7	0.9	3.5	0.3	5.8	0.2	7	0.1				

HCM 6th TWSC
4: N Via Monte & Shadelands Dr

11/12/2024

Intersection						
Int Delay, s/veh	2.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↰	↰	↰
Traffic Vol, veh/h	412	59	53	143	36	72
Future Vol, veh/h	412	59	53	143	36	72
Conflicting Peds, #/hr	0	7	11	0	7	11
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	485	69	62	168	42	85

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	565
Stage 1	-	-	531
Stage 2	-	-	299
Critical Hdwy	-	4.12	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	2.218	3.318
Pot Cap-1 Maneuver	-	1007	340
Stage 1	-	-	590
Stage 2	-	-	752
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	998	312
Mov Cap-2 Maneuver	-	-	312
Stage 1	-	-	585
Stage 2	-	-	696

Approach	EB	WB	NB
HCM Control Delay, s	0	2.4	14.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	312	530	-	-	998	-
HCM Lane V/C Ratio	0.136	0.16	-	-	0.062	-
HCM Control Delay (s)	18.3	13.1	-	-	8.8	0
HCM Lane LOS	C	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	0.6	-	-	0.2	-

HCM 6th Signalized Intersection Summary
5: Oak Grove Rd & Shadelands Dr

11/12/2024

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	↰	↰	↰	↰	↰	↰
Lane Configurations	↰	↰	↰	↰	↰	↰
Traffic Volume (veh/h)	288	267	101	607	680	119
Future Volume (veh/h)	288	267	101	607	680	119
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No	No	No	No	No	No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	248	252	105	632	708	118
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	318	283	131	2620	1901	317
Arrive On Green	0.18	0.18	0.07	0.74	0.63	0.63
Sat Flow, veh/h	1781	1585	1781	3647	3128	505
Grp Volume(v), veh/h	248	252	105	632	414	412
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1777	1777	1764
Q Serve(g_s), s	15.9	18.6	7.0	6.8	13.6	13.7
Cycle Q Clear(g_c), s	15.9	18.6	7.0	6.8	13.6	13.7
Prop In Lane	1.00	1.00	1.00			0.29
Lane Grp Cap(c), veh/h	318	283	131	2620	1113	1105
V/C Ratio(X)	0.78	0.89	0.80	0.24	0.37	0.37
Avail Cap(c_a), veh/h	667	593	230	2620	1113	1105
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.95	0.95	0.88	0.88
Uniform Delay (d), s/veh	47.0	48.1	54.7	5.0	10.9	10.9
Incr Delay (d2), s/veh	1.6	3.8	10.4	0.2	0.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.2	7.6	3.4	2.2	5.2	5.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	48.6	52.0	65.1	5.2	11.8	11.8
LnGrp LOS	D	D	E	A	B	B
Approach Vol, veh/h	500			737	826	
Approach Delay, s/veh	50.3			13.8	11.8	
Approach LOS	D			B	B	

Timer - Assigned Phs	3	4	6	8
Phs Duration (G+Y+Rc), s	13.3	80.2	26.5	93.5
Change Period (Y+Rc), s	4.5	5.0	5.1	5.0
Max Green Setting (Gmax), s	15.5	45.0	44.9	65.0
Max Q Clear Time (g_c+I1), s	9.0	15.7	20.6	8.8
Green Ext Time (p_c), s	0.1	8.0	0.8	6.9

Intersection Summary				
HCM 6th Ctrl Delay	21.8			
HCM 6th LOS	C			

Notes				
User approved pedestrian interval to be less than phase max green.				
User approved volume balancing among the lanes for turning movement.				

HCM 6th Signalized Intersection Summary
6: Oak Grove Rd & Citrus Ave

11/12/2024

	←	↖	↗	→	↘	↙
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↖↗	↖↗	↖↗	↖↗	↖↗
Traffic Volume (veh/h)	197	72	625	156	78	861
Future Volume (veh/h)	197	72	625	156	78	861
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	201	21	638	153	80	879
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	287	132	2088	500	111	2977
Arrive On Green	0.08	0.08	0.74	0.74	0.12	1.00
Sat Flow, veh/h	3456	1585	2923	677	1781	3647
Grp Volume(v), veh/h	201	21	400	391	80	879
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1730	1781	1777
Q Serve(g_s), s	6.8	1.5	9.1	9.2	5.2	0.0
Cycle Q Clear(g_c), s	6.8	1.5	9.1	9.2	5.2	0.0
Prop In Lane	1.00	1.00		0.39	1.00	
Lane Grp Cap(c), veh/h	287	132	1311	1277	111	2977
V/C Ratio(X)	0.70	0.16	0.31	0.31	0.72	0.30
Avail Cap(c_a), veh/h	994	456	1311	1277	230	2977
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.85	0.85	0.93	0.93
Uniform Delay (d), s/veh	53.5	51.1	5.3	5.3	51.6	0.0
Incr Delay (d2), s/veh	4.3	0.8	0.5	0.5	8.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.6	3.0	2.9	2.4	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	57.9	51.9	5.8	5.8	59.6	0.2
LnGrp LOS	E	D	A	A	E	A
Approach Vol, veh/h	222		791		959	
Approach Delay, s/veh	57.3		5.8		5.2	
Approach LOS	E		A		A	
Timer - Assigned Phs	2		4		7	8
Phs Duration (G+Y+Rc), s	14.5		105.5		11.9	93.6
Change Period (Y+Rc), s	4.5		5.0		4.5	5.0
Max Green Setting (Gmax), s	34.5		76.0		15.5	56.0
Max Q Clear Time (g_c+I1), s	8.8		2.0		7.2	11.2
Green Ext Time (p_c), s	1.2		11.0		0.1	8.3
Intersection Summary						
HCM 6th Ctrl Delay			11.3			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary
7: Wiget Lane/N Wiget Lane & Ygnacio Valley Rd.

11/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						  	
Traffic Volume (veh/h)	152	2133	82	46	942	35	53	65	61	107	89	402
Future Volume (veh/h)	152	2133	82	46	942	35	53	65	61	107	89	402
Initial Q (Qb), veh	0	0	0	0	0	0	2	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	0.99		0.97	0.99		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	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	158	2222	81	48	981	18	55	68	24	111	93	177
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	0	0	0	0	0	0
Cap, veh/h	223	3095	112	73	3031	928	189	326	269	230	326	270
Arrive On Green	0.13	1.00	1.00	0.04	0.59	0.59	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	3456	5053	183	1781	5106	1563	1120	1900	1568	1314	1900	1572
Grp Volume(v), veh/h	158	1493	810	48	981	18	55	68	24	111	93	177
Grp Sat Flow(s),veh/h/ln	1728	1702	1833	1781	1702	1563	1120	1900	1568	1314	1900	1572
Q Serve(g_s), s	7.0	0.0	0.0	4.3	15.5	0.8	7.2	4.9	2.1	12.7	6.8	16.9
Cycle Q Clear(g_c), s	7.0	0.0	0.0	4.3	15.5	0.8	14.1	4.9	2.1	17.7	6.8	16.9
Prop In Lane	1.00		0.10	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	223	2085	1123	73	3031	928	189	326	269	230	326	270
V/C Ratio(X)	0.71	0.72	0.72	0.66	0.32	0.02	0.29	0.21	0.09	0.48	0.29	0.66
Avail Cap(c_a), veh/h	400	2085	1123	128	3031	928	284	487	402	341	487	403
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)	0.86	0.86	0.86	0.97	0.97	0.97	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	68.2	0.0	0.0	75.6	16.4	13.4	64.4	57.0	55.8	64.6	57.8	61.9
Incr Delay (d2), s/veh	3.5	1.8	3.5	3.7	0.3	0.0	0.3	0.1	0.1	0.6	0.2	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.5	1.1	2.0	6.0	0.3	2.5	2.4	0.8	4.3	3.3	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.7	1.8	3.5	79.3	16.6	13.4	65.8	57.1	55.8	65.1	57.9	62.9
LnGrp LOS	E	A	A	E	B	B	E	E	E	E	E	E
Approach Vol, veh/h		2461			1047			147			381	
Approach Delay, s/veh		6.9			19.4			60.1			62.4	
Approach LOS		A			B			E			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.8	98.0		30.0	10.8	101.0		30.0				
Change Period (Y+Rc), s	4.5	5.3		5.0	5.3	* 5.3		5.0				
Max Green Setting (Gmax), s	17.5	88.7		39.0	10.5	* 96		39.0				
Max Q Clear Time (g_c+I1), s	9.0	17.5		16.1	6.3	2.0		19.7				
Green Ext Time (p_c), s	0.3	42.4		0.3	0.0	92.4		0.9				
Intersection Summary												
HCM 6th Ctrl Delay				17.3								
HCM 6th LOS				B								
Notes												

HCM 6th Signalized Intersection Summary
8: S Via Monte/N Via Monte & Ygnacio Valley Rd.

11/12/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↰↱		↰↱	↰↱			↰	↱	↰	↱	
Traffic Volume (veh/h)	171	2109	25	41	922	23	15	26	19	61	32	89
Future Volume (veh/h)	171	2109	25	41	922	23	15	26	19	61	32	89
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	0.99		0.97	0.99		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	1627	1870	1870	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	180	2220	26	43	971	23	16	27	13	64	34	49
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, %	2	2	2	2	2	2	0	0	0	0	0	0
Cap, veh/h	240	3241	38	62	3045	72	105	165	258	212	114	164
Arrive On Green	0.14	1.00	1.00	0.04	0.59	0.59	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	3456	5202	61	1550	5129	121	448	998	1558	1368	688	992
Grp Volume(v), veh/h	180	1452	794	43	644	350	43	0	13	64	0	83
Grp Sat Flow(s),veh/h/ln	1728	1702	1859	1550	1702	1847	1446	0	1558	1368	0	1681
Q Serve(g_s), s	8.0	0.0	0.0	4.4	15.2	15.2	0.1	0.0	1.1	6.9	0.0	6.9
Cycle Q Clear(g_c), s	8.0	0.0	0.0	4.4	15.2	15.2	7.0	0.0	1.1	13.9	0.0	6.9
Prop In Lane	1.00		0.03	1.00		0.07	0.37		1.00	1.00		0.59
Lane Grp Cap(c), veh/h	240	2121	1158	62	2021	1096	271	0	258	212	0	279
V/C Ratio(X)	0.75	0.68	0.69	0.69	0.32	0.32	0.16	0.00	0.05	0.30	0.00	0.30
Avail Cap(c_a), veh/h	313	2121	1158	121	2021	1096	418	0	399	336	0	431
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)	0.76	0.76	0.76	0.87	0.87	0.87	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	67.5	0.0	0.0	75.8	16.3	16.3	57.0	0.0	56.1	64.7	0.0	58.6
Incr Delay (d2), s/veh	3.6	1.4	2.5	4.3	0.4	0.7	0.1	0.0	0.0	0.3	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(50%),veh/ln	3.4	0.4	0.8	1.8	5.9	6.5	1.5	0.0	0.4	2.4	0.0	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.1	1.4	2.5	80.1	16.6	17.0	57.1	0.0	56.2	65.0	0.0	58.8
LnGrp LOS	E	A	A	F	B	B	E	A	E	E	A	E
Approach Vol, veh/h	2426			1037			56			147		
Approach Delay, s/veh	6.9			19.4			56.9			61.5		
Approach LOS	A			B			E			E		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.6	98.0		29.5	10.0	102.7		29.5				
Change Period (Y+Rc), s	4.5	5.3		5.0	4.5	5.3		5.0				
Max Green Setting (Gmax), s	13.5	92.7		39.0	11.5	94.7		39.0				
Max Q Clear Time (g_c+I1), s	10.0	17.2		9.0	6.4	2.0		15.9				
Green Ext Time (p_c), s	0.1	43.5		0.1	0.0	91.5		0.3				
Intersection Summary												
HCM 6th Ctrl Delay	13.4											
HCM 6th LOS	B											

HCM Signalized Intersection Capacity Analysis
9: Oak Grove Rd & Ygnacio Valley Rd.

11/12/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↰↱↰↱		↰↱	↰↱	↰↱		↰↱	↰↱	↰↱	↰↱	↰↱
Traffic Volume (vph)	293	1766	109	178	610	192	197	355	187	433	442	196
Future Volume (vph)	293	1766	109	178	610	192	197	355	187	433	442	196
Ideal Flow (vphpl)	1824	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	2.7		3.5	2.7	2.7	3.5	3.0	4.0	3.5	3.0	2.0
Lane Util. Factor	0.97	0.91		1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.85	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3296	5037		1770	3539	1562	1787	3574	1575	3467	3198	1573
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3296	5037		1770	3539	1562	1787	3574	1575	3467	3198	1573
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	299	1802	111	182	622	196	201	362	191	442	451	200
RTOR Reduction (vph)	0	4	0	0	0	125	0	0	123	0	0	0
Lane Group Flow (vph)	299	1909	0	182	622	71	201	362	68	442	451	200
Confl. Peds. (#/hr)						1						14
Confl. Bikes (#/hr)	3										1	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Free
Protected Phases	1	6		5	2		3	8		7	15	4
Permitted Phases				2			8			Free		
Actuated Green, G (s)	32.5	72.4		15.5	55.4	55.4	21.1	21.6	21.6	27.0	32.0	160.0
Effective Green, g (s)	33.5	74.7		16.5	57.7	57.7	22.1	23.6	22.6	29.0	34.0	160.0
Actuated g/C Ratio	0.21	0.47		0.10	0.36	0.36	0.14	0.15	0.14	0.18	0.21	1.00
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0		5.0	
Vehicle Extension (s)	3.0	6.0		4.0	6.0	6.0	2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)	690	2351		182	1276	563	246	527	222	628	679	1573
v/s Ratio Prot	0.09	c0.38		c0.10	0.18		c0.11	c0.10		0.13	c0.14	
v/s Ratio Perm					0.05			0.04				0.13
v/c Ratio	0.43	0.81		1.00	0.49	0.13	0.82	0.69	0.31	0.70	0.66	0.13
Uniform Delay, d1	55.0	36.6		71.8	39.7	34.3	67.0	64.7	61.7	61.5	57.8	0.0
Progression Factor	0.72	0.62		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	2.7		66.7	1.3	0.5	17.7	3.0	0.3	3.6	1.9	0.2
Delay (s)	40.1	25.5		138.5	41.0	34.7	84.7	67.7	62.0	65.1	59.7	0.2
Level of Service	D	C		F	D	C	F	E	E	E	E	A
Approach Delay (s)	27.5			57.5			70.8			51.0		
Approach LOS	C			E			E			D		
Intersection Summary												
HCM 2000 Control Delay	44.9			HCM 2000 Level of Service			D					
HCM 2000 Volume to Capacity ratio	0.83											
Actuated Cycle Length (s)	160.0			Sum of lost time (s)			16.2					
Intersection Capacity Utilization	88.0%			ICU Level of Service			E					
Analysis Period (min)	15											
c Critical Lane Group												

HCM 6th AWSC
1: N Wiget Ln & Mitchell Dr

04/01/2025

Intersection						
Intersection Delay, s/veh	16.8					
Intersection LOS	C					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		W		W	W
Traffic Vol, veh/h	315	178	74	200	31	23
Future Vol, veh/h	315	178	74	200	31	23
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	358	202	84	227	35	26
Number of Lanes	1	0	1	0	0	1
Approach	WB	NB		SB		
Opposing Approach		SB		NB		
Opposing Lanes	0	1		1		
Conflicting Approach Left	NB			WB		
Conflicting Lanes Left	1	0		1		
Conflicting Approach Right	SB	WB				
Conflicting Lanes Right	1	1		0		
HCM Control Delay	20.4	11.8		9.7		
HCM LOS	C	B		A		
Lane	NBLn1	WBLn1	SBLn1			
Vol Left, %	0%	64%	57%			
Vol Thru, %	27%	0%	43%			
Vol Right, %	73%	36%	0%			
Sign Control	Stop	Stop	Stop			
Traffic Vol by Lane	274	493	54			
LT Vol	0	315	31			
Through Vol	74	0	23			
RT Vol	200	178	0			
Lane Flow Rate	311	560	61			
Geometry Grp	1	1	1			
Degree of Util (X)	0.43	0.741	0.102			
Departure Headway (Hd)	4.97	4.764	6.007			
Convergence, Y/N	Yes	Yes	Yes			
Cap	716	751	600			
Service Time	3.068	2.854	4.007			
HCM Lane V/C Ratio	0.434	0.746	0.102			
HCM Control Delay	11.8	20.4	9.7			
HCM Lane LOS	B	C	A			
HCM 95th-tile Q	2.2	6.7	0.3			

HCM 6th Signalized Intersection Summary
2: Oak Grove Rd & Mitchell Dr/Peachwillow Ln

01/07/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	162	17	74	101	64	80	215	424	167	40	567	459
Future Volume (veh/h)	162	17	74	101	64	80	215	424	167	40	567	459
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	177	0	43	103	65	51	219	433	112	41	579	324
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	497	0	214	147	93	205	258	1286	329	90	796	445
Arrive On Green	0.14	0.00	0.14	0.13	0.13	0.13	0.15	0.46	0.46	0.05	0.37	0.37
Sat Flow, veh/h	3563	0	1534	1113	702	1549	1781	2786	714	1781	2169	1213
Grp Volume(v), veh/h	177	0	43	168	0	51	219	275	270	41	474	429
Grp Sat Flow(s),veh/h/ln	1781	0	1534	1815	0	1549	1781	1777	1722	1781	1777	1605
Q Serve(g_s), s	3.9	0.0	2.2	7.7	0.0	2.6	10.4	8.6	8.7	1.9	20.1	20.1
Cycle Q Clear(g_c), s	3.9	0.0	2.2	7.7	0.0	2.6	10.4	8.6	8.7	1.9	20.1	20.1
Prop In Lane	1.00		1.00	0.61		1.00	1.00		0.41	1.00		0.76
Lane Grp Cap(c), veh/h	497	0	214	240	0	205	258	820	795	90	652	589
V/C Ratio(X)	0.36	0.00	0.20	0.70	0.00	0.25	0.85	0.33	0.34	0.46	0.73	0.73
Avail Cap(c_a), veh/h	2044	0	880	687	0	587	613	1223	1186	613	1223	1105
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.9	0.0	33.2	36.1	0.0	33.9	36.3	14.9	15.0	40.2	23.8	23.8
Incr Delay (d2), s/veh	0.5	0.0	0.6	5.2	0.0	0.9	3.0	0.3	0.4	1.3	2.2	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	0.8	3.7	0.0	1.0	4.5	3.2	3.2	0.9	8.2	7.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.5	0.0	33.7	41.3	0.0	34.8	39.3	15.3	15.3	41.5	26.0	26.3
LnGrp LOS	C	A	C	D	A	C	D	B	B	D	C	C
Approach Vol, veh/h	220			219			764			944		
Approach Delay, s/veh	34.3			39.8			22.2			26.8		
Approach LOS	C			D			C			C		
Timer - Assigned Phs	2		3		4		6		7		8	
Phs Duration (G+Y+Rc), s	16.1		17.1		37.0		16.9		8.9		45.2	
Change Period (Y+Rc), s	4.6		4.5		5.0		4.7		4.5		5.0	
Max Green Setting (Gmax), s	33.0		30.0		60.0		50.0		30.0		60.0	
Max Q Clear Time (g_c+I1), s	9.7		12.4		22.1		5.9		3.9		10.7	
Green Ext Time (p_c), s	1.6		0.3		9.9		1.0		0.0		5.2	

Intersection Summary												
HCM 6th Ctrl Delay	27.3											
HCM 6th LOS	C											

Notes
User approved volume balancing among the lanes for turning movement.

HCM 6th AWSC
3: N Wiget Ln & Shadelands Dr

04/01/2025

Intersection												
Intersection Delay, s/veh	40.9											
Intersection LOS	E											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	34	129	21	166	194	76	11	282	116	19	228	27
Future Vol, veh/h	34	129	21	166	194	76	11	282	116	19	228	27
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	137	22	177	206	81	12	300	123	20	243	29
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	18.3			56.9			45.2			24.2		
HCM LOS	C			F			E			C		
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	3%	18%	38%	7%								
Vol Thru, %	69%	70%	44%	83%								
Vol Right, %	28%	11%	17%	10%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	409	184	436	274								
LT Vol	11	34	166	19								
Through Vol	282	129	194	228								
RT Vol	116	21	76	27								
Lane Flow Rate	435	196	464	291								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.888	0.455	0.951	0.641								
Departure Headway (Hd)	7.348	8.364	7.379	7.92								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	492	429	492	455								
Service Time	5.415	6.451	5.44	5.998								
HCM Lane V/C Ratio	0.884	0.457	0.943	0.64								
HCM Control Delay	45.2	18.3	56.9	24.2								
HCM Lane LOS	E	C	F	C								
HCM 95th-tile Q	9.8	2.3	11.7	4.4								

HCM 6th TWSC
4: N Via Monte & Shadelands Dr

01/07/2025

Intersection												
Int Delay, s/veh	4.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Vol, veh/h	0	86	31	147	543	0	56	0	59	0	0	0
Future Vol, veh/h	0	86	31	147	543	0	56	0	59	0	0	0
Conflicting Peds, #/hr	0	0	13	31	0	0	13	0	31	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	100	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	93	93	93	93	90	93	90	93	90	90	90
Heavy Vehicles, %	1	2	2	2	2	1	2	1	2	1	1	1
Mvmt Flow	0	92	33	158	584	0	60	0	63	0	0	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	584	0	0	156	0	0	1053	1040	171	1071	1056	597
Stage 1	-	-	-	-	-	-	140	140	-	900	900	-
Stage 2	-	-	-	-	-	-	913	900	-	171	156	-
Critical Hdwy	4.11	-	-	4.12	-	-	7.12	6.51	6.22	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.218	-	-	3.518	4.009	3.318	3.509	4.009	3.309
Pot Cap-1 Maneuver	996	-	-	1424	-	-	204	231	873	199	226	505
Stage 1	-	-	-	-	-	-	863	783	-	334	359	-
Stage 2	-	-	-	-	-	-	328	359	-	833	770	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	996	-	-	1387	-	-	171	187	828	156	183	500
Mov Cap-2 Maneuver	-	-	-	-	-	-	171	187	-	156	183	-
Stage 1	-	-	-	-	-	-	841	763	-	334	298	-
Stage 2	-	-	-	-	-	-	270	298	-	749	750	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1.7			23			0		
HCM LOS							C			A		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	171	828	996	-	-	1387	-	-	-			
HCM Lane V/C Ratio	0.352	0.077	-	-	-	0.114	-	-	-			
HCM Control Delay (s)	37.1	9.7	0	-	-	7.9	0	-	0			
HCM Lane LOS	E	A	A	-	-	A	A	-	A			
HCM 95th %tile Q(veh)	1.5	0.2	0	-	-	0.4	-	-	-			

HCM Signalized Intersection Capacity Analysis
5: Oak Grove Rd & Shadelands Dr

01/07/2025

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	89	54	606	720	518	174
Future Volume (vph)	89	54	606	720	518	174
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1		4.5	5.0	5.0	
Lane Util. Factor	0.97		1.00	0.95	0.95	
Frpb, ped/bikes	0.99		1.00	1.00	0.99	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.94		1.00	1.00	0.96	
Flt Protected	0.97		0.95	1.00	1.00	
Satd. Flow (prot)	3265		1770	3539	3371	
Flt Permitted	0.97		0.95	1.00	1.00	
Satd. Flow (perm)	3265		1770	3539	3371	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	92	56	625	742	534	179
RTOR Reduction (vph)	51	0	0	0	21	0
Lane Group Flow (vph)	97	0	625	742	692	0
Confl. Peds. (#/hr)		5			7	
Confl. Bikes (#/hr)					4	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	6		3 11	8	4	
Permitted Phases						
Actuated Green, G (s)	11.3		50.6	108.6	49.0	
Effective Green, g (s)	11.3		50.6	108.6	49.0	
Actuated g/C Ratio	0.09		0.39	0.84	0.38	
Clearance Time (s)	5.1			5.0	5.0	
Vehicle Extension (s)	2.0			4.0	4.0	
Lane Grp Cap (vph)	283		688	2956	1270	
v/s Ratio Prot	c0.03		c0.35	0.21	c0.21	
v/s Ratio Perm						
v/c Ratio	0.34		0.91	0.25	0.55	
Uniform Delay, d1	55.9		37.5	2.2	31.8	
Progression Factor	1.00		1.00	0.22	1.00	
Incremental Delay, d2	0.3		12.3	0.1	1.7	
Delay (s)	56.1		49.6	0.6	33.4	
Level of Service	E		D	A	C	
Approach Delay (s)	56.1			23.0	33.4	
Approach LOS	E			C	C	
Intersection Summary						
HCM 2000 Control Delay			28.6		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.69			
Actuated Cycle Length (s)			130.0		Sum of lost time (s)	19.1
Intersection Capacity Utilization			76.4%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM 6th Signalized Intersection Summary
6: Oak Grove Rd & Citrus Ave

01/07/2025

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	381	58	1263	205	68	507
Future Volume (veh/h)	381	58	1263	205	68	507
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	410	36	1358	204	73	545
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	511	234	1786	265	102	2378
Arrive On Green	0.15	0.15	0.58	0.58	0.06	0.67
Sat Flow, veh/h	3456	1585	3186	460	1781	3647
Grp Volume(v), veh/h	410	36	774	788	73	545
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1775	1781	1777
Q Serve(g_s), s	14.9	2.6	42.4	43.9	5.2	7.8
Cycle Q Clear(g_c), s	14.9	2.6	42.4	43.9	5.2	7.8
Prop In Lane	1.00	1.00		0.26	1.00	
Lane Grp Cap(c), veh/h	511	234	1026	1025	102	2378
V/C Ratio(X)	0.80	0.15	0.75	0.77	0.72	0.23
Avail Cap(c_a), veh/h	891	408	1026	1025	158	2378
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.45	0.45	0.81	0.81
Uniform Delay (d), s/veh	53.6	48.3	20.6	20.9	60.3	8.4
Incr Delay (d2), s/veh	4.2	0.4	2.4	2.6	7.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.8	1.1	17.0	17.6	2.5	2.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	57.8	48.7	22.9	23.4	67.7	8.6
LnGrp LOS	E	D	C	C	E	A
Approach Vol, veh/h	446		1562			618
Approach Delay, s/veh	57.0		23.2			15.6
Approach LOS	E		C			B
Timer - Assigned Phs						
	2		4		7	8
Phs Duration (G+Y+Rc), s	23.7		92.0		11.9	80.1
Change Period (Y+Rc), s	4.5		5.0		4.5	5.0
Max Green Setting (Gmax), s	33.5		87.0		11.5	71.0
Max Q Clear Time (g_c+I), s	16.9		9.8		7.2	45.9
Green Ext Time (p_c), s	2.3		5.8		0.0	16.6
Intersection Summary						
HCM 6th Ctrl Delay			27.1			
HCM 6th LOS			C			

HCM 6th Signalized Intersection Summary
7: Wiget Ln/N Wiget Ln & Ygnacio Valley Rd.

01/07/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↰↱	↰	↰↱	↰↱	↰	↰	↰	↰	↰↱	↰↱	↰
Traffic Volume (veh/h)	331	769	96	63	1574	32	98	123	85	27	124	270
Future Volume (veh/h)	331	769	96	63	1574	32	98	123	85	27	124	270
Initial Q (Qb), veh	0	0	0	0	0	0	2	0	0	0	0	0
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	1969	1969	1969	1969	1969	1969	2000	2000	2000	2000	2000	2000
Adj Flow Rate, veh/h	341	793	85	65	1623	22	101	127	32	28	128	157
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, %	2	2	2	2	2	2	0	0	0	0	0	0
Cap, veh/h	419	2663	284	96	2669	781	194	374	311	212	374	310
Arrive On Green	0.23	1.00	1.00	0.05	0.48	0.48	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	3638	4931	526	1875	5611	1643	1109	2000	1661	1244	2000	1659
Grp Volume(v), veh/h	341	575	303	65	1623	22	101	127	32	28	128	157
Grp Sat Flow(s), veh/h/ln	1819	1792	1873	1875	1870	1643	1109	2000	1661	1244	2000	1659
Q Serve(g_s), s	13.3	0.0	0.0	5.1	32.0	1.1	13.1	8.3	2.4	3.0	8.4	12.8
Cycle Q Clear(g_c), s	13.3	0.0	0.0	5.1	32.0	1.1	21.5	8.3	2.4	11.3	8.4	12.8
Prop In Lane	1.00		0.28	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	419	1935	1011	96	2669	781	194	374	311	212	374	310
V/C Ratio(X)	0.81	0.30	0.30	0.68	0.61	0.03	0.52	0.34	0.10	0.13	0.34	0.51
Avail Cap(c_a), veh/h	618	1935	1011	131	2669	781	348	653	543	385	653	542
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)	0.99	0.99	0.99	0.90	0.90	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.2	0.0	0.0	70.0	29.0	20.9	62.7	53.0	50.6	57.9	53.0	54.8
Incr Delay (d2), s/veh	5.2	0.4	0.8	2.8	0.9	0.1	0.8	0.2	0.1	0.1	0.2	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	5.7	0.1	0.2	2.5	14.2	0.4	4.2	4.3	1.0	1.0	4.3	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	61.3	0.4	0.8	72.8	29.9	21.0	65.2	53.2	50.6	58.0	53.2	55.3
LnGrp LOS	E	A	A	E	C	C	E	D	D	E	D	E
Approach Vol, veh/h		1219			1710			260			313	
Approach Delay, s/veh		17.5			31.5			57.5			54.7	
Approach LOS		B			C			E			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	20.8	74.4		30.4	11.2	84.0		30.4				
Change Period (Y+Rc), s	4.5	5.3		5.0	4.5	5.3		5.0				
Max Green Setting (Gmax), s	24.5	63.7		47.0	9.5	78.7		47.0				
Max Q Clear Time (g_c+1), s	15.3	34.0		23.5	7.1	2.0		14.8				
Green Ext Time (p_c), s		1.0	28.4		0.7	0.0	37.6		0.7			
Intersection Summary												
HCM 6th Ctrl Delay				30.6								
HCM 6th LOS				C								

HCM 6th Signalized Intersection Summary
8: S Via Monte/N Via Monte & Ygnacio Valley Rd.

01/07/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↰↱	↰	↰↱	↰↱	↰	↰	↰	↰	↰↱	↰↱	↰
Traffic Volume (veh/h)	106	711	27	41	1520	22	48	27	60	29	83	81
Future Volume (veh/h)	106	711	27	41	1520	22	48	27	60	29	83	81
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	0.97		0.95	0.97		0.94
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	1969	1969	1969	1890	1969	1969	2000	2000	2000	2000	2000	2000
Adj Flow Rate, veh/h	109	733	23	42	1567	20	49	28	23	30	86	47
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, %	2	2	2	2	2	2	0	0	0	0	0	0
Cap, veh/h	179	3193	100	66	3105	40	197	106	375	231	276	151
Arrive On Green	0.10	1.00	1.00	0.04	0.57	0.56	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	3638	5506	172	1800	5469	70	681	455	1615	1340	1186	648
Grp Volume(v), veh/h	109	497	259	42	1027	560	77	0	23	30	0	133
Grp Sat Flow(s), veh/h/ln	1819	1870	1937	1800	1792	1955	1135	0	1615	1340	0	1834
Q Serve(g_s), s	4.3	0.0	0.0	3.5	26.0	26.1	5.3	0.0	1.7	3.0	0.0	9.0
Cycle Q Clear(g_c), s	4.3	0.0	0.0	3.5	26.0	26.1	14.3	0.0	1.7	17.3	0.0	9.0
Prop In Lane	1.00		0.09	1.00		0.04	0.64		1.00	1.00		0.35
Lane Grp Cap(c), veh/h	179	2170	1124	66	2034	1110	303	0	375	231	0	426
V/C Ratio(X)	0.61	0.23	0.23	0.63	0.50	0.50	0.25	0.00	0.06	0.13	0.00	0.31
Avail Cap(c_a), veh/h	376	2170	1124	150	2034	1110	362	0	441	286	0	501
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)	0.98	0.98	0.98	0.75	0.75	0.75	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	66.3	0.0	0.0	71.2	19.6	19.7	51.4	0.0	44.8	57.2	0.0	47.7
Incr Delay (d2), s/veh	1.2	0.2	0.5	2.8	0.7	1.2	0.2	0.0	0.0	0.1	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(50%), veh/ln	1.9	0.1	0.1	1.6	10.6	11.7	2.6	0.0	0.7	1.0	0.0	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	67.5	0.2	0.5	74.0	20.3	20.9	51.6	0.0	44.9	57.3	0.0	47.8
LnGrp LOS	E	A	A	E	C	C	D	A	D	E	A	D
Approach Vol, veh/h		865			1629		100			163		
Approach Delay, s/veh		8.8			21.9		50.0			49.5		
Approach LOS		A			C		D			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.9	88.2		37.8	9.0	90.0		37.8				
Change Period (Y+Rc), s	4.5	5.3		5.0	4.5	5.3		5.0				
Max Green Setting (Gmax), s	14.5	81.7		39.0	11.5	84.7		39.0				
Max Q Clear Time (g_c+1), s	6.3	28.1		16.3	5.5	2.0		19.3				
Green Ext Time (p_c), s		0.1	49.1		0.2	0.0	33.8		0.3			
Intersection Summary												
HCM 6th Ctrl Delay				20.4								
HCM 6th LOS				C								

HCM Signalized Intersection Capacity Analysis
9: Oak Grove Rd & Ygnacio Valley Rd.

01/07/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	176	434	61	248	1127	988	169	341	233	114	445	330
Future Volume (vph)	176	434	61	248	1127	988	169	341	233	114	445	330
Ideal Flow (vphpl)	1940	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Total Lost time (s)	3.5	2.7		3.5	2.7	2.7	3.5	3.0	4.0	3.5	3.0	2.0
Lane Util. Factor	0.97	0.91		1.00	0.97	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3505	5242		1863	3804	1641	1881	3762	1650	3650	3762	1659
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3505	5242		1863	3804	1641	1881	3762	1650	3650	3762	1659
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	183	452	64	258	1174	1029	176	355	243	119	464	344
RTOR Reduction (vph)	0	11	0	0	0	274	0	0	147	0	0	0
Lane Group Flow (vph)	183	505	0	258	1174	755	176	355	96	119	464	344
Confl. Peds. (#/hr)			1			2			5			8
Confl. Bikes (#/hr)			5			1			1			
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Free
Protected Phases	1	6		5	13	2	3	8		7	4	
Permitted Phases						2			8			Free
Actuated Green, G (s)	13.2	41.5		28.6	61.4	61.4	18.4	44.2	44.2	12.2	38.0	150.0
Effective Green, g (s)	14.2	43.8		30.6	63.7	63.7	19.4	46.2	45.2	13.2	40.0	150.0
Actuated g/C Ratio	0.09	0.29		0.20	0.42	0.42	0.13	0.31	0.30	0.09	0.27	1.00
Clearance Time (s)	4.5	5.0			5.0	5.0	4.5	5.0	5.0	4.5	5.0	
Vehicle Extension (s)	3.0	6.0			6.0	6.0	2.0	2.0	2.0	3.0	2.0	
Lane Grp Cap (vph)	331	1530		380	1615	696	243	1158	497	321	1003	1659
v/s Ratio Prot	0.05	0.10		c0.14	0.31		c0.09	0.09		0.03	c0.12	
v/s Ratio Perm					c0.46				0.06			c0.21
v/c Ratio	0.55	0.33		0.68	0.73	1.08	0.72	0.31	0.19	0.37	0.46	0.21
Uniform Delay, d1	64.9	41.6		55.2	35.9	43.1	62.7	39.7	38.9	64.5	46.0	0.0
Progression Factor	1.13	1.26		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	0.6		5.2	2.9	59.2	8.7	0.7	0.9	0.7	1.5	0.3
Delay (s)	75.3	53.0		60.4	38.8	102.3	71.5	40.3	39.7	65.2	47.5	0.3
Level of Service	E	D		E	D	F	E	D	D	E	D	A
Approach Delay (s)	58.8			67.6				47.2			32.3	
Approach LOS	E			E				D			C	
Intersection Summary												
HCM 2000 Control Delay	56.4			HCM 2000 Level of Service					E			
HCM 2000 Volume to Capacity ratio	0.84											
Actuated Cycle Length (s)	150.0			Sum of lost time (s)				16.2				
Intersection Capacity Utilization	99.2%			ICU Level of Service				F				
Analysis Period (min)	15											
c Critical Lane Group												

HCM 6th Roundabout
1: N Wiget Ln & Mitchell Dr

06/19/2025

Intersection			
Intersection Delay, s/veh	6.4		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	560	311	61
Demand Flow Rate, veh/h	571	318	63
Vehicles Circulating, veh/h	86	36	365
Vehicles Exiting, veh/h	268	392	292
Ped Vol Crossing Leg, #/h	17	11	17
Ped Cap Adj	0.998	0.998	0.998
Approach Delay, s/veh	7.6	4.8	4.5
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	571	318	63
Cap Entry Lane, veh/h	1264	1330	951
Entry HV Adj Factor	0.981	0.979	0.976
Flow Entry, veh/h	560	311	61
Cap Entry, veh/h	1237	1300	926
V/C Ratio	0.453	0.239	0.066
Control Delay, s/veh	7.6	4.8	4.5
LOS	A	A	A
95th %tile Queue, veh	2	1	0

HCM 6th Roundabout
3: N Wiget Ln & Shadelands Dr

04/02/2025

Intersection				
Intersection Delay, s/veh	8.1			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	195	464	435	292
Demand Flow Rate, veh/h	199	474	443	298
Vehicles Circulating, veh/h	449	355	197	403
Vehicles Exiting, veh/h	252	285	451	426
Ped Vol Crossing Leg, #/h	2	2	2	2
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	6.6	10.0	7.3	7.6
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	199	474	443	298
Cap Entry Lane, veh/h	873	961	1129	915
Entry HV Adj Factor	0.981	0.979	0.982	0.980
Flow Entry, veh/h	195	464	435	292
Cap Entry, veh/h	856	940	1108	897
V/C Ratio	0.228	0.494	0.393	0.326
Control Delay, s/veh	6.6	10.0	7.3	7.6
LOS	A	A	A	A
95th %tile Queue, veh	1	3	2	1

HCM 6th Signalized Intersection Summary
3: N Wiget Ln & Shadelands Dr

04/02/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	34	129	21	166	194	76	11	282	116	19	228	27
Future Volume (veh/h)	34	129	21	166	194	76	11	282	116	19	228	27
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	36	137	22	177	206	81	12	300	123	20	243	29
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	181	549	78	327	310	106	107	431	172	123	542	62
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	164	1391	198	483	785	268	17	1239	495	51	1559	177
Grp Volume(v), veh/h	195	0	0	464	0	0	435	0	0	292	0	0
Grp Sat Flow(s),veh/h/ln	1753	0	0	1536	0	0	1752	0	0	1787	0	0
Q Serve(g_s), s	0.0	0.0	0.0	6.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.6	0.0	0.0	9.3	0.0	0.0	7.8	0.0	0.0	4.5	0.0	0.0
Prop In Lane	0.18		0.11	0.38		0.17	0.03		0.28	0.07		0.10
Lane Grp Cap(c), veh/h	809	0	0	743	0	0	711	0	0	727	0	0
V/C Ratio(X)	0.24	0.00	0.00	0.62	0.00	0.00	0.61	0.00	0.00	0.40	0.00	0.00
Avail Cap(c_a), veh/h	1416	0	0	1302	0	0	1401	0	0	1410	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	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.5	0.0	0.0	9.3	0.0	0.0	10.3	0.0	0.0	9.2	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.9	0.0	0.0	0.9	0.0	0.0	0.4	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(50%),veh/ln	0.7	0.0	0.0	2.3	0.0	0.0	2.3	0.0	0.0	1.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.6	0.0	0.0	10.2	0.0	0.0	11.2	0.0	0.0	9.6	0.0	0.0
LnGrp LOS	A	A	A	B	A	A	B	A	A	A	A	A
Approach Vol, veh/h	195			464			435			292		
Approach Delay, s/veh	7.6			10.2			11.2			9.6		
Approach LOS	A			B			B			A		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	17.4			19.1			17.4			19.1		
Change Period (Y+Rc), s	* 4.7			* 4.7			* 4.7			* 4.7		
Max Green Setting (Gmax), s	* 27			* 28			* 27			* 28		
Max Q Clear Time (g_c+I1), s	9.8			4.6			6.5			11.3		
Green Ext Time (p_c), s	2.6			1.1			1.7			2.9		

Intersection Summary												
HCM 6th Ctrl Delay	10.0											
HCM 6th LOS	B											

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th AWSC
1: N Wiget Ln & Mitchell Dr

04/01/2025

Intersection	
Intersection Delay, s/veh	11.4
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↱		↰	↱
Traffic Vol, veh/h	202	32	30	263	175	73
Future Vol, veh/h	202	32	30	263	175	73
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	224	36	33	292	194	81
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	12	10.6	11.8
HCM LOS	B	B	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	86%	71%
Vol Thru, %	10%	0%	29%
Vol Right, %	90%	14%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	293	234	248
LT Vol	0	202	175
Through Vol	30	0	73
RT Vol	263	32	0
Lane Flow Rate	326	260	276
Geometry Grp	1	1	1
Degree of Util (X)	0.404	0.396	0.403
Departure Headway (Hd)	4.574	5.478	5.263
Convergence, Y/N	Yes	Yes	Yes
Cap	791	660	689
Service Time	2.574	3.491	3.263
HCM Lane V/C Ratio	0.412	0.394	0.401
HCM Control Delay	10.6	12	11.8
HCM Lane LOS	B	B	B
HCM 95th-tile Q	2	1.9	2

HCM 6th Signalized Intersection Summary
2: Oak Grove Rd & Mitchell Dr/Peachwillow Ln

01/07/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (veh/h)	438	39	180	50	23	51	58	780	57	63	615	197
Future Volume (veh/h)	438	39	180	50	23	51	58	780	57	63	615	197
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	0.95	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No				No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	501	0	112	54	25	21	62	839	57	68	661	182
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	622	0	276	115	53	141	91	1764	120	93	1435	395
Arrive On Green	0.17	0.00	0.17	0.09	0.09	0.09	0.05	0.52	0.52	0.05	0.52	0.52
Sat Flow, veh/h	3563	0	1580	1236	572	1510	1781	3371	229	1781	2735	752
Grp Volume(v), veh/h	501	0	112	79	0	21	62	442	454	68	429	414
Grp Sat Flow(s),veh/h/ln	1781	0	1580	1809	0	1510	1781	1777	1823	1781	1777	1711
Q Serve(g_s), s	16.2	0.0	7.6	5.0	0.0	1.5	4.1	19.0	19.0	4.5	18.2	18.2
Cycle Q Clear(g_c), s	16.2	0.0	7.6	5.0	0.0	1.5	4.1	19.0	19.0	4.5	18.2	18.2
Prop In Lane	1.00		1.00	0.68		1.00	1.00		0.13	1.00		0.44
Lane Grp Cap(c), veh/h	622	0	276	168	0	141	91	930	954	93	932	898
V/C Ratio(X)	0.81	0.00	0.41	0.47	0.00	0.15	0.68	0.48	0.48	0.73	0.46	0.46
Avail Cap(c_a), veh/h	929	0	412	458	0	383	186	930	954	186	932	898
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.84	0.84	0.84	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.6	0.0	44.0	51.6	0.0	50.0	56.0	18.2	18.2	56.0	17.9	17.9
Incr Delay (d2), s/veh	3.7	0.0	1.2	2.9	0.0	0.7	2.8	1.5	1.4	4.1	1.6	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(50%),veh/ln	7.5	0.0	3.0	2.4	0.0	0.6	1.9	7.8	8.0	2.1	7.5	7.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.2	0.0	45.1	54.5	0.0	50.7	58.8	19.6	19.6	60.1	19.5	19.6
LnGrp LOS	D	A	D	D	A	D	E	B	B	E	B	B
Approach Vol, veh/h	613				100			958			911	
Approach Delay, s/veh	50.1				53.7			22.1			22.6	
Approach LOS	D				D			C			C	

Intersection Summary												
HCM 6th Ctrl Delay	30.2											
HCM 6th LOS	C											
Notes												
User approved pedestrian interval to be less than phase max green.												
User approved volume balancing among the lanes for turning movement.												

HCM 6th AWSC
3: N Wiget Ln & Shadelands Dr

04/01/2025

Intersection												
Intersection Delay, s/veh	33.4											
Intersection LOS	D											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	35	197	39	220	68	25	13	162	100	55	300	20
Future Vol, veh/h	35	197	39	220	68	25	13	162	100	55	300	20
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	39	219	43	244	76	28	14	180	111	61	333	22
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	25.9			33			25.1			45.3		
HCM LOS	D			D			D			E		
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	5%	13%	70%	15%								
Vol Thru, %	59%	73%	22%	80%								
Vol Right, %	36%	14%	8%	5%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	275	271	313	375								
LT Vol	13	35	220	55								
Through Vol	162	197	68	300								
RT Vol	100	39	25	20								
Lane Flow Rate	306	301	348	417								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.663	0.669	0.768	0.881								
Departure Headway (Hd)	7.812	7.995	7.952	7.612								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	461	449	452	475								
Service Time	5.9	6.082	6.036	5.688								
HCM Lane V/C Ratio	0.664	0.67	0.77	0.878								
HCM Control Delay	25.1	25.9	33	45.3								
HCM Lane LOS	D	D	D	E								
HCM 95th-tile Q	4.7	4.8	6.6	9.4								

HCM 6th TWSC
4: N Via Monte & Shadelands Dr

01/07/2025

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	412	59	53	143	0	36	0	72	0	0	0
Future Vol, veh/h	0	412	59	53	143	0	36	0	72	0	0	0
Conflicting Peds, #/hr	0	0	7	11	0	0	7	0	11	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	100	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	85	85	85	85	90	85	90	85	90	90	90
Heavy Vehicles, %	1	2	2	2	2	1	2	1	2	1	1	1
Mvmt Flow	0	485	69	62	168	0	42	0	85	0	0	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	168	0	0	565	0	0	830	823	542	865	857	175
Stage 1	-	-	-	-	-	-	531	531	-	292	292	-
Stage 2	-	-	-	-	-	-	299	292	-	573	565	-
Critical Hdwy	4.11	-	-	4.12	-	-	7.12	6.51	6.22	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.218	-	-	3.518	4.009	3.318	3.509	4.009	3.309
Pot Cap-1 Maneuver	1416	-	-	1007	-	-	289	310	540	275	296	871
Stage 1	-	-	-	-	-	-	532	528	-	718	673	-
Stage 2	-	-	-	-	-	-	710	673	-	506	510	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1416	-	-	998	-	-	270	286	530	217	273	866
Mov Cap-2 Maneuver	-	-	-	-	-	-	270	286	-	217	273	-
Stage 1	-	-	-	-	-	-	527	523	-	718	627	-
Stage 2	-	-	-	-	-	-	657	627	-	421	505	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			2.4			15.7			0		
HCM LOS							C			A		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	270	530	1416	-	-	998	-	-	-			
HCM Lane V/C Ratio	0.157	0.16	-	-	-	0.062	-	-	-			
HCM Control Delay (s)	20.8	13.1	0	-	-	8.8	0	-	0			
HCM Lane LOS	C	B	A	-	-	A	A	-	A			
HCM 95th %tile Q(veh)	0.5	0.6	0	-	-	0.2	-	-	-			

HCM 6th Signalized Intersection Summary
5: Oak Grove Rd & Shadelands Dr

01/07/2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	288	274	108	640	713	119
Future Volume (veh/h)	288	274	108	640	713	119
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No	No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	251	255	112	667	743	118
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	322	286	138	2613	1897	301
Arrive On Green	0.18	0.18	0.08	0.74	0.62	0.62
Sat Flow, veh/h	1781	1585	1781	3647	3152	486
Grp Volume(v), veh/h	251	255	112	667	431	430
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1777	1777	1768
Q Serve(g_s), s	16.1	18.9	7.4	7.3	14.6	14.6
Cycle Q Clear(g_c), s	16.1	18.9	7.4	7.3	14.6	14.6
Prop In Lane	1.00	1.00	1.00			0.27
Lane Grp Cap(c), veh/h	322	286	138	2613	1102	1096
V/C Ratio(X)	0.78	0.89	0.81	0.26	0.39	0.39
Avail Cap(c_a), veh/h	667	593	230	2613	1102	1096
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.93	0.93	0.83	0.83
Uniform Delay (d), s/veh	46.9	48.0	54.5	5.2	11.4	11.4
Incr Delay (d2), s/veh	1.6	3.8	10.0	0.2	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	7.7	3.7	2.3	5.6	5.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	48.5	51.9	64.5	5.4	12.3	12.3
LnGrp LOS	D	D	E	A	B	B
Approach Vol, veh/h	506			779	861	
Approach Delay, s/veh	50.2			13.9	12.3	
Approach LOS	D			B	B	
Timer - Assigned Phs			3	4	6	8
Phs Duration (G+Y+Rc), s			13.8	79.4	26.8	93.2
Change Period (Y+Rc), s			4.5	5.0	5.1	5.0
Max Green Setting (Gmax), s			15.5	45.0	44.9	65.0
Max Q Clear Time (g_c+I1), s			9.4	16.6	20.9	9.3
Green Ext Time (p_c), s			0.1	8.3	0.8	7.4
Intersection Summary						
HCM 6th Ctrl Delay			21.8			
HCM 6th LOS			C			
Notes						
User approved pedestrian interval to be less than phase max green.						
User approved volume balancing among the lanes for turning movement.						

HCM 6th Signalized Intersection Summary
6: Oak Grove Rd & Citrus Ave

01/07/2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	235	74	662	172	97	882
Future Volume (veh/h)	235	74	662	172	97	882
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	240	24	676	170	99	900
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	332	152	2010	505	123	2931
Arrive On Green	0.10	0.10	0.72	0.72	0.14	1.00
Sat Flow, veh/h	3456	1585	2892	703	1781	3647
Grp Volume(v), veh/h	240	24	429	417	99	900
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1724	1781	1777
Q Serve(g_s), s	8.1	1.7	10.8	10.8	6.5	0.0
Cycle Q Clear(g_c), s	8.1	1.7	10.8	10.8	6.5	0.0
Prop In Lane	1.00	1.00		0.41	1.00	
Lane Grp Cap(c), veh/h	332	152	1277	1239	123	2931
V/C Ratio(X)	0.72	0.16	0.34	0.34	0.81	0.31
Avail Cap(c_a), veh/h	994	456	1277	1239	230	2931
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.84	0.84	0.92	0.92
Uniform Delay (d), s/veh	52.7	49.8	6.3	6.3	51.0	0.0
Incr Delay (d2), s/veh	4.2	0.7	0.6	0.6	10.9	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.7	3.6	3.5	3.0	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	56.9	50.5	6.9	6.9	61.8	0.3
LnGrp LOS	E	D	A	A	E	A
Approach Vol, veh/h	264		846			999
Approach Delay, s/veh	56.3		6.9			6.4
Approach LOS	E		A			A
Timer - Assigned Phs		2		4		7 8
Phs Duration (G+Y+Rc), s		16.0		104.0		12.8 91.2
Change Period (Y+Rc), s		4.5		5.0		4.5 5.0
Max Green Setting (Gmax), s		34.5		76.0		15.5 56.0
Max Q Clear Time (g_c+I1), s		10.1		2.0		8.5 12.8
Green Ext Time (p_c), s		1.4		11.4		0.1 9.1
Intersection Summary						
HCM 6th Ctrl Delay			12.8			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary
7: Wiget Lane/N Wiget Lane & Ygnacio Valley Rd.

01/07/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	184	2153	82	46	962	35	53	65	61	107	89	433
Future Volume (veh/h)	184	2153	82	46	962	35	53	65	61	107	89	433
Initial Q (Qb), veh	0	0	0	0	0	0	2	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	0.99		0.97	0.99		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	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	192	2243	81	48	1002	18	55	68	24	111	93	209
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	0	0	0	0	0	0
Cap, veh/h	257	3096	111	73	2981	913	198	348	287	246	348	288
Arrive On Green	0.15	1.00	1.00	0.04	0.58	0.58	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	3456	5055	182	1781	5106	1563	1088	1900	1569	1314	1900	1573
Grp Volume(v), veh/h	192	1507	817	48	1002	18	55	68	24	111	93	209
Grp Sat Flow(s), veh/h/ln	1728	1702	1833	1781	1702	1563	1088	1900	1569	1314	1900	1573
Q Serve(g_s), s	8.5	0.0	0.0	4.3	16.3	0.8	7.3	4.9	2.0	12.5	6.8	20.1
Cycle Q Clear(g_c), s	8.5	0.0	0.0	4.3	16.3	0.8	14.1	4.9	2.0	17.4	6.8	20.1
Prop In Lane	1.00		0.10	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	257	2085	1123	73	2981	913	198	348	287	246	348	288
V/C Ratio(X)	0.75	0.72	0.73	0.66	0.34	0.02	0.28	0.20	0.08	0.45	0.27	0.73
Avail Cap(c_a), veh/h	400	2085	1123	128	2981	913	278	487	402	342	487	403
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)	0.86	0.86	0.86	0.97	0.97	0.97	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	66.7	0.0	0.0	75.6	17.2	14.0	62.7	55.4	54.3	62.8	56.2	61.6
Incr Delay (d2), s/veh	3.7	1.9	3.6	3.7	0.3	0.0	0.3	0.1	0.0	0.5	0.2	1.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	3.6	0.6	1.1	2.0	6.3	0.3	2.5	2.4	0.8	4.2	3.3	8.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	70.4	1.9	3.6	79.3	17.5	14.1	64.0	55.5	54.3	63.2	56.3	63.5
LnGrp LOS	E	A	A	E	B	B	E	E	D	E	E	E
Approach Vol, veh/h	2516			1068			147			413		
Approach Delay, s/veh	7.7			20.2			58.5			61.8		
Approach LOS	A			C			E			E		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.4	96.4		31.8	10.8	101.0		31.8				
Change Period (Y+Rc), s	4.5	5.3		5.0	5.3	* 5.3		5.0				
Max Green Setting (Gmax), s	17.5	88.7		39.0	10.5	* 96		39.0				
Max Q Clear Time (g_c+I1), s	10.5	18.3		16.1	6.3	2.0		22.1				
Green Ext Time (p_c), s	0.4	43.1		0.3	0.0	92.5		0.9				

Intersection Summary

HCM 6th Ctrl Delay	18.1
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
8: S Via Monte/N Via Monte & Ygnacio Valley Rd.

01/07/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	171	2129	25	41	942	23	15	26	19	61	32	89
Future Volume (veh/h)	171	2129	25	41	942	23	15	26	19	61	32	89
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	0.99		0.97	0.99		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	1627	1870	1870	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	180	2241	26	43	992	23	16	27	13	64	34	49
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, %	2	2	2	2	2	2	0	0	0	0	0	0
Cap, veh/h	240	3242	38	62	3047	71	105	165	258	212	114	164
Arrive On Green	0.14	1.00	1.00	0.04	0.59	0.59	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	3456	5203	60	1550	5132	119	448	998	1558	1368	688	992
Grp Volume(v), veh/h	180	1465	802	43	658	357	43	0	13	64	0	83
Grp Sat Flow(s), veh/h/ln	1728	1702	1859	1550	1702	1847	1446	0	1558	1368	0	1681
Q Serve(g_s), s	8.0	0.0	0.0	4.4	15.6	15.6	0.1	0.0	1.1	6.9	0.0	6.9
Cycle Q Clear(g_c), s	8.0	0.0	0.0	4.4	15.6	15.6	7.0	0.0	1.1	13.9	0.0	6.9
Prop In Lane	1.00		0.03	1.00		0.06	0.37		1.00	1.00		0.59
Lane Grp Cap(c), veh/h	240	2121	1158	62	2021	1097	271	0	258	212	0	279
V/C Ratio(X)	0.75	0.69	0.69	0.69	0.33	0.33	0.16	0.00	0.05	0.30	0.00	0.30
Avail Cap(c_a), veh/h	313	2121	1158	121	2021	1097	418	0	399	336	0	431
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)	0.74	0.74	0.74	0.87	0.87	0.87	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	67.5	0.0	0.0	75.8	16.4	16.4	57.0	0.0	56.1	64.7	0.0	58.6
Incr Delay (d2), s/veh	3.5	1.4	2.5	4.3	0.4	0.7	0.1	0.0	0.0	0.3	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(50%), veh/ln	3.4	0.4	0.8	1.8	6.0	6.6	1.5	0.0	0.4	2.4	0.0	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	71.0	1.4	2.5	80.1	16.7	17.1	57.1	0.0	56.2	65.0	0.0	58.8
LnGrp LOS	E	A	A	F	B	B	E	A	E	E	A	E
Approach Vol, veh/h	2447			1058			56			147		
Approach Delay, s/veh	6.9			19.4			56.9			61.5		
Approach LOS	A			B			E			E		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.6	98.0		29.5	10.0	102.7		29.5				
Change Period (Y+Rc), s	4.5	5.3		5.0	4.5	5.3		5.0				
Max Green Setting (Gmax), s	13.5	92.7		39.0	11.5	94.7		39.0				
Max Q Clear Time (g_c+I1), s	10.0	17.6		9.0	6.4	2.0		15.9				
Green Ext Time (p_c), s	0.1	44.5		0.1	0.0	91.6		0.3				

Intersection Summary

HCM 6th Ctrl Delay	13.4
HCM 6th LOS	B

HCM Signalized Intersection Capacity Analysis
9: Oak Grove Rd & Ygnacio Valley Rd.

01/07/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	306	1773	109	178	615	218	197	369	187	461	458	211
Future Volume (vph)	306	1773	109	178	615	218	197	369	187	461	458	211
Ideal Flow (vphpl)	1824	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	2.7		3.5	2.7	2.7	3.5	3.0	4.0	3.5	3.0	2.0
Lane Util. Factor	0.97	0.91		1.00	0.95	1.00	1.00	0.95	1.00	0.97	*0.85	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3296	5037		1770	3539	1562	1787	3574	1575	3467	3198	1573
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3296	5037		1770	3539	1562	1787	3574	1575	3467	3198	1573
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	312	1809	111	182	628	222	201	377	191	470	467	215
RTOR Reduction (vph)	0	4	0	0	0	142	0	0	122	0	0	0
Lane Group Flow (vph)	312	1916	0	182	628	80	201	377	69	470	467	215
Confl. Peds. (#/hr)						1			1			14
Confl. Bikes (#/hr)			3						1			1
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Free
Protected Phases	1	6		5	2		3	8		7	15	4
Permitted Phases					2				8			Free
Actuated Green, G (s)	32.5	72.0		15.5	55.0	55.0	21.1	22.2	22.2	26.8	32.4	160.0
Effective Green, g (s)	33.5	74.3		16.5	57.3	57.3	22.1	24.2	23.2	28.8	34.4	160.0
Actuated g/C Ratio	0.21	0.46		0.10	0.36	0.36	0.14	0.15	0.14	0.18	0.21	1.00
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	6.0		4.0	6.0	6.0	2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	690	2339		182	1267	559	246	540	228	624	687	1573
v/s Ratio Prot	0.09	c0.38		c0.10	0.18		c0.11	c0.11		0.14	c0.15	
v/s Ratio Perm					0.05				0.04			0.14
v/c Ratio	0.45	0.82		1.00	0.50	0.14	0.82	0.70	0.30	0.75	0.68	0.14
Uniform Delay, d1	55.2	37.0		71.8	40.1	34.7	67.0	64.4	61.2	62.2	57.7	0.0
Progression Factor	0.72	0.62		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	2.8		66.7	1.4	0.5	17.7	3.2	0.3	5.1	2.1	0.2
Delay (s)	40.3	25.7		138.5	41.5	35.3	84.7	67.6	61.4	67.4	59.9	0.2
Level of Service	D	C		F	D	D	F	E	E	E	E	A
Approach Delay (s)		27.8			57.2			70.5			51.8	
Approach LOS		C			E			E			D	
Intersection Summary												
HCM 2000 Control Delay		45.3										D
HCM 2000 Volume to Capacity ratio		0.84										
Actuated Cycle Length (s)		160.0										16.2
Intersection Capacity Utilization		88.4%										E
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th Roundabout
1: N Wiget Ln & Mitchell Dr

06/19/2025

Intersection			
Intersection Delay, s/veh	5.5		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	260	325	275
Demand Flow Rate, veh/h	265	332	281
Vehicles Circulating, veh/h	34	198	228
Vehicles Exiting, veh/h	496	311	71
Ped Vol Crossing Leg, #/h	1	1	1
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.4	6.1	5.8
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	265	332	281
Cap Entry Lane, veh/h	1333	1128	1094
Entry HV Adj Factor	0.981	0.980	0.980
Flow Entry, veh/h	260	325	275
Cap Entry, veh/h	1307	1105	1072
V/C Ratio	0.199	0.294	0.257
Control Delay, s/veh	4.4	6.1	5.8
LOS	A	A	A
95th %tile Queue, veh	1	1	1

HCM 6th Roundabout
3: N Wiget Ln & Shadelands Dr

04/02/2025

Intersection				
Intersection Delay, s/veh	8.4			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	301	348	305	416
Demand Flow Rate, veh/h	307	356	311	424
Vehicles Circulating, veh/h	651	238	325	341
Vehicles Exiting, veh/h	114	398	633	253
Ped Vol Crossing Leg, #/h	0	4	4	4
Ped Cap Adj	1.000	0.999	0.999	0.999
Approach Delay, s/veh	11.2	6.7	7.0	8.8
Approach LOS	B	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	307	356	311	424
Cap Entry Lane, veh/h	710	1082	991	975
Entry HV Adj Factor	0.979	0.979	0.982	0.982
Flow Entry, veh/h	301	348	305	416
Cap Entry, veh/h	696	1059	972	956
V/C Ratio	0.432	0.329	0.314	0.435
Control Delay, s/veh	11.2	6.7	7.0	8.8
LOS	B	A	A	A
95th %tile Queue, veh	2	1	1	2

HCM 6th Signalized Intersection Summary
3: N Wiget Ln & Shadelands Dr

04/02/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	35	197	39	220	68	25	13	162	100	55	300	20
Future Volume (veh/h)	35	197	39	220	68	25	13	162	100	55	300	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.97	1.00		0.99
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	39	219	43	244	76	28	14	180	111	61	333	22
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	175	461	84	519	131	39	135	382	225	190	541	33
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	123	1397	253	962	399	119	29	1059	623	151	1500	92
Grp Volume(v), veh/h	301	0	0	348	0	0	305	0	0	416	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	0	1480	0	0	1711	0	0	1744	0	0
Q Serve(g_s), s	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0
Cycle Q Clear(g_c), s	4.0	0.0	0.0	5.3	0.0	0.0	4.1	0.0	0.0	5.8	0.0	0.0
Prop In Lane	0.13		0.14	0.70		0.08	0.05		0.36	0.15		0.05
Lane Grp Cap(c), veh/h	719	0	0	690	0	0	741	0	0	765	0	0
V/C Ratio(X)	0.42	0.00	0.00	0.50	0.00	0.00	0.41	0.00	0.00	0.54	0.00	0.00
Avail Cap(c_a), veh/h	1752	0	0	1445	0	0	1642	0	0	1666	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	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.2	0.0	0.0	8.5	0.0	0.0	7.5	0.0	0.0	8.0	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.6	0.0	0.0	0.4	0.0	0.0	0.6	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(50%),veh/ln	1.1	0.0	0.0	1.3	0.0	0.0	1.0	0.0	0.0	1.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.6	0.0	0.0	9.0	0.0	0.0	7.9	0.0	0.0	8.6	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h	301			348			305			416		
Approach Delay, s/veh	8.6			9.0			7.9			8.6		
Approach LOS	A			A			A			A		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	15.7			14.7			15.7			14.7		
Change Period (Y+Rc), s	* 4.7			* 4.7			* 4.7			* 4.7		
Max Green Setting (Gmax), s	* 27			* 28			* 27			* 28		
Max Q Clear Time (g_c+I1), s	6.1			6.0			7.8			7.3		
Green Ext Time (p_c), s	1.9			1.8			2.6			2.5		

Intersection Summary	
HCM 6th Ctrl Delay	8.6
HCM 6th LOS	A
Notes	

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th AWSC
1: N Wiget Ln & Mitchell Dr

04/01/2025

Intersection						
Intersection Delay, s/veh	14.3					
Intersection LOS	B					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	W	T	T	T	T
Traffic Vol, veh/h	328	185	77	208	32	24
Future Vol, veh/h	328	185	77	208	32	24
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	328	185	77	208	32	24
Number of Lanes	1	0	1	0	0	1
Approach	WB	NB		SB		
Opposing Approach		SB		NB		
Opposing Lanes	0	1		1		
Conflicting Approach Left	NB			WB		
Conflicting Lanes Left	1	0		1		
Conflicting Approach Right	SB	WB				
Conflicting Lanes Right	1	1		0		
HCM Control Delay	16.7	10.9		9.4		
HCM LOS	C	B		A		

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	64%	57%
Vol Thru, %	27%	0%	43%
Vol Right, %	73%	36%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	285	513	56
LT Vol	0	328	32
Through Vol	77	0	24
RT Vol	208	185	0
Lane Flow Rate	285	513	56
Geometry Grp	1	1	1
Degree of Util (X)	0.382	0.666	0.09
Departure Headway (Hd)	4.825	4.671	5.791
Convergence, Y/N	Yes	Yes	Yes
Cap	738	764	623
Service Time	2.905	2.743	3.791
HCM Lane V/C Ratio	0.386	0.671	0.09
HCM Control Delay	10.9	16.7	9.4
HCM Lane LOS	B	C	A
HCM 95th-tile Q	1.8	5.1	0.3

HCM 6th Signalized Intersection Summary
2: Oak Grove Rd & Mitchell Dr/Peachwillow Ln

01/13/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	169	18	77	105	67	83	224	443	174	42	593	478
Future Volume (veh/h)	169	18	77	105	67	83	224	443	174	42	593	478
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	182	0	45	105	67	53	224	443	117	42	593	337
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	485	0	209	148	95	207	262	1304	341	90	806	458
Arrive On Green	0.14	0.00	0.14	0.13	0.13	0.13	0.15	0.47	0.47	0.05	0.37	0.37
Sat Flow, veh/h	3563	0	1533	1108	707	1549	1781	2772	725	1781	2155	1225
Grp Volume(v), veh/h	182	0	45	172	0	53	224	283	277	42	489	441
Grp Sat Flow(s),veh/h/ln	1781	0	1533	1815	0	1549	1781	1777	1720	1781	1777	1603
Q Serve(g_s), s	4.2	0.0	2.4	8.2	0.0	2.8	11.0	9.0	9.2	2.1	21.4	21.4
Cycle Q Clear(g_c), s	4.2	0.0	2.4	8.2	0.0	2.8	11.0	9.0	9.2	2.1	21.4	21.4
Prop In Lane	1.00		1.00	0.61		1.00	1.00		0.42	1.00		0.76
Lane Grp Cap(c), veh/h	485	0	209	243	0	207	262	836	809	90	664	599
V/C Ratio(X)	0.38	0.00	0.22	0.71	0.00	0.26	0.85	0.34	0.34	0.47	0.74	0.74
Avail Cap(c_a), veh/h	1980	0	852	666	0	568	594	1185	1147	594	1185	1069
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.4	0.0	34.6	37.3	0.0	34.9	37.4	15.0	15.0	41.5	24.3	24.3
Incr Delay (d2), s/veh	0.6	0.0	0.6	5.3	0.0	0.9	3.1	0.3	0.4	1.4	2.3	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	0.9	4.0	0.0	1.1	4.8	3.4	3.4	0.9	8.7	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.0	0.0	35.2	42.6	0.0	35.9	40.5	15.3	15.4	42.9	26.6	26.9
LnGrp LOS	D	A	D	D	A	D	D	B	B	D	C	C
Approach Vol, veh/h	227			225			784			972		
Approach Delay, s/veh	35.8			41.0			22.5			27.4		
Approach LOS	D			D			C			C		
Timer - Assigned Phs	2		3	4		6		7		8		
Phs Duration (G+Y+Rc), s	16.6		17.7	38.6		16.9		9.0		47.3		
Change Period (Y+Rc), s	4.6		4.5	5.0		4.7		4.5		5.0		
Max Green Setting (Gmax), s	33.0		30.0	60.0		50.0		30.0		60.0		
Max Q Clear Time (g_c+I1), s	10.2		13.0	23.4		6.2		4.1		11.2		
Green Ext Time (p_c), s	1.7		0.3	10.2		1.0		0.0		5.4		

Intersection Summary												
HCM 6th Ctrl Delay				27.9								
HCM 6th LOS				C								

Notes
User approved volume balancing among the lanes for turning movement.

HCM 6th AWSC
3: N Wiget Ln & Shadelands Dr

04/01/2025

Intersection												
Intersection Delay, s/veh	35.4											
Intersection LOS	E											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	35	134	22	173	202	79	11	293	121	20	237	28
Future Vol, veh/h	35	134	22	173	202	79	11	293	121	20	237	28
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	35	134	22	173	202	79	11	293	121	20	237	28
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	17.2			48.3			38.6			22.1		
HCM LOS	C			E			E			C		
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	3%	18%	38%	7%								
Vol Thru, %	69%	70%	44%	83%								
Vol Right, %	28%	12%	17%	10%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	425	191	454	285								
LT Vol	11	35	173	20								
Through Vol	293	134	202	237								
RT Vol	121	22	79	28								
Lane Flow Rate	425	191	454	285								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.848	0.43	0.911	0.609								
Departure Headway (Hd)	7.184	8.107	7.222	7.694								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	506	443	504	467								
Service Time	5.214	6.189	5.249	5.767								
HCM Lane V/C Ratio	0.84	0.431	0.901	0.61								
HCM Control Delay	38.6	17.2	48.3	22.1								
HCM Lane LOS	E	C	E	C								
HCM 95th-tile Q	8.7	2.1	10.6	4								

HCM 6th TWSC
4: N Via Monte & Shadelands Dr

01/13/2025

Intersection												
Int Delay, s/veh	3.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	90	32	153	565	0	58	0	61	0	0	0
Future Vol, veh/h	0	90	32	153	565	0	58	0	61	0	0	0
Conflicting Peds, #/hr	0	0	13	31	0	0	13	0	31	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	100	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	1	2	2	2	2	1	2	1	2	1	1	1
Mvmt Flow	0	90	32	153	565	0	58	0	61	0	0	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	565	0	0	153	0	0	1021	1008	168	1039	1024	578
Stage 1	-	-	-	-	-	-	137	137	-	871	871	-
Stage 2	-	-	-	-	-	-	884	871	-	168	153	-
Critical Hdwy	4.11	-	-	4.12	-	-	7.12	6.51	6.22	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.218	-	-	3.518	4.009	3.318	3.509	4.009	3.309
Pot Cap-1 Maneuver	1012	-	-	1428	-	-	215	241	876	210	236	517
Stage 1	-	-	-	-	-	-	866	785	-	347	370	-
Stage 2	-	-	-	-	-	-	340	370	-	836	773	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1012	-	-	1391	-	-	182	197	831	166	193	511
Mov Cap-2 Maneuver	-	-	-	-	-	-	182	197	-	166	193	-
Stage 1	-	-	-	-	-	-	843	765	-	347	311	-
Stage 2	-	-	-	-	-	-	283	311	-	755	753	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1.7			21.4			0		
HCM LOS							C			A		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	182	831	1012	-	-	1391	-	-	-			
HCM Lane V/C Ratio	0.319	0.073	-	-	-	0.11	-	-	-			
HCM Control Delay (s)	33.8	9.7	0	-	-	7.9	0	-	0			
HCM Lane LOS	D	A	A	-	-	A	A	-	A			
HCM 95th %tile Q(veh)	1.3	0.2	0	-	-	0.4	-	-	-			

HCM Signalized Intersection Capacity Analysis
5: Oak Grove Rd & Shadelands Dr

01/13/2025

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W	W	W	W	W	W
Traffic Volume (vph)	93	56	631	751	542	181
Future Volume (vph)	93	56	631	751	542	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1		4.5	5.0	5.0	
Lane Util. Factor	0.97		1.00	0.95	0.95	
Frpb, ped/bikes	0.99		1.00	1.00	0.99	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.94		1.00	1.00	0.96	
Flt Protected	0.97		0.95	1.00	1.00	
Satd. Flow (prot)	3266		1770	3539	3372	
Flt Permitted	0.97		0.95	1.00	1.00	
Satd. Flow (perm)	3266		1770	3539	3372	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	93	56	631	751	542	181
RTOR Reduction (vph)	51	0	0	0	21	0
Lane Group Flow (vph)	98	0	631	751	702	0
Confl. Peds. (#/hr)		5				7
Confl. Bikes (#/hr)						4
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	6		3 11	8	4	
Permitted Phases						
Actuated Green, G (s)	11.3		51.0	108.6	48.6	
Effective Green, g (s)	11.3		51.0	108.6	48.6	
Actuated g/C Ratio	0.09		0.39	0.84	0.37	
Clearance Time (s)	5.1			5.0	5.0	
Vehicle Extension (s)	2.0			4.0	4.0	
Lane Grp Cap (vph)	283		694	2956	1260	
v/s Ratio Prot	c0.03		c0.36	0.21	c0.21	
v/s Ratio Perm						
v/c Ratio	0.35		0.91	0.25	0.56	
Uniform Delay, d1	55.9		37.3	2.2	32.2	
Progression Factor	1.00		0.95	0.23	1.00	
Incremental Delay, d2	0.3		12.6	0.2	1.8	
Delay (s)	56.1		47.9	0.7	34.0	
Level of Service	E		D	A	C	
Approach Delay (s)	56.1			22.2	34.0	
Approach LOS	E			C	C	
Intersection Summary						
HCM 2000 Control Delay			28.2		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.70			
Actuated Cycle Length (s)			130.0		Sum of lost time (s)	19.1
Intersection Capacity Utilization			77.7%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM 6th Signalized Intersection Summary
6: Oak Grove Rd & Citrus Ave

01/13/2025

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	W	W	W	W	W
Traffic Volume (veh/h)	399	60	1319	214	74	528
Future Volume (veh/h)	399	60	1319	214	74	528
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	399	36	1319	199	74	528
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	499	229	1784	267	102	2378
Arrive On Green	0.14	0.14	0.58	0.58	0.06	0.67
Sat Flow, veh/h	3456	1585	3183	462	1781	3647
Grp Volume(v), veh/h	399	36	753	765	74	528
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1774	1781	1777
Q Serve(g_s), s	14.5	2.6	40.4	41.6	5.3	7.5
Cycle Q Clear(g_c), s	14.5	2.6	40.4	41.6	5.3	7.5
Prop In Lane	1.00	1.00		0.26	1.00	
Lane Grp Cap(c), veh/h	499	229	1026	1024	102	2378
V/C Ratio(X)	0.80	0.16	0.73	0.75	0.73	0.22
Avail Cap(c_a), veh/h	891	408	1026	1024	158	2378
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.43	0.43	0.80	0.80
Uniform Delay (d), s/veh	53.8	48.7	20.2	20.4	60.3	8.4
Incr Delay (d2), s/veh	4.2	0.5	2.1	2.2	7.6	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	1.1	16.2	16.7	2.6	2.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	58.0	49.1	22.2	22.6	67.9	8.5
LnGrp LOS	E	D	C	C	E	A
Approach Vol, veh/h	435		1518			602
Approach Delay, s/veh	57.3		22.4			15.8
Approach LOS	E		C			B
Timer - Assigned Phs						
	2		4		7	8
Phs Duration (G+Y+Rc), s	23.3		92.0		11.9	80.1
Change Period (Y+Rc), s	4.5		5.0		4.5	5.0
Max Green Setting (Gmax), s	33.5		87.0		11.5	71.0
Max Q Clear Time (g_c+I1), s	16.5		9.5		7.3	43.6
Green Ext Time (p_c), s	2.3		5.6		0.0	17.0
Intersection Summary						
HCM 6th Ctrl Delay			26.8			
HCM 6th LOS			C			

HCM 6th Signalized Intersection Summary
7: Wiget Ln/N Wiget Ln & Ygnacio Valley Rd.

01/13/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (veh/h)	344	803	100	66	1638	33	102	128	88	28	129	281
Future Volume (veh/h)	344	803	100	66	1638	33	102	128	88	28	129	281
Initial Q (Qb), veh	0	0	0	0	0	0	2	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1969	1969	1969	1969	1969	1969	2000	2000	2000	2000	2000	2000
Adj Flow Rate, veh/h	344	803	86	66	1638	22	102	128	34	28	129	164
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	0	0	0	0	0	0
Cap, veh/h	372	2429	259	97	1941	561	147	366	304	62	276	228
Arrive On Green	0.40	0.99	0.97	0.05	0.35	0.35	0.08	0.18	0.18	0.03	0.14	0.14
Sat Flow, veh/h	1875	4931	525	1875	5611	1622	1905	2000	1661	1905	2000	1654
Grp Volume(v), veh/h	344	582	307	66	1638	22	102	128	34	28	129	164
Grp Sat Flow(s),veh/h/ln	1875	1792	1873	1875	1870	1622	1905	2000	1661	1905	2000	1654
Q Serve(g_s), s	26.2	0.5	0.7	5.2	40.4	1.3	7.8	8.4	2.6	2.2	8.9	14.2
Cycle Q Clear(g_c), s	26.2	0.5	0.7	5.2	40.4	1.3	7.8	8.4	2.6	2.2	8.9	14.2
Prop In Lane	1.00		0.28	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	372	1765	923	97	1941	561	147	366	304	62	276	228
V/C Ratio(X)	0.92	0.33	0.33	0.68	0.84	0.04	0.69	0.35	0.11	0.45	0.47	0.72
Avail Cap(c_a), veh/h	419	1765	923	144	1941	561	147	617	513	80	547	452
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)	0.99	0.99	0.99	0.82	0.82	0.82	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.2	0.6	0.7	69.9	45.3	32.5	67.8	53.5	51.1	71.3	59.6	61.9
Incr Delay (d2), s/veh	24.6	0.5	1.0	2.6	3.9	0.1	13.0	0.2	0.1	5.1	0.5	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.3	0.3	0.5	2.5	19.0	0.6	4.9	4.3	1.1	1.2	4.6	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.8	1.1	1.7	72.5	49.2	32.6	85.1	53.7	51.2	76.4	60.0	63.5
LnGrp LOS	E	A	A	E	D	C	F	D	D	E	E	E
Approach Vol, veh/h	1233			1726			264			321		
Approach Delay, s/veh	20.1			49.9			65.5			63.2		
Approach LOS	C			D			E			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	33.3	54.9	7.4	30.4	11.2	76.9	14.1	23.7				
Change Period (Y+Rc), s	4.5	5.3	4.5	5.0	4.5	5.3	4.5	5.0				
Max Green Setting (Gmax), s	32.5	49.6	4.3	44.3	10.5	71.6	9.6	39.0				
Max Q Clear Time (g_c+I1), s	28.2	42.4	4.2	10.4	7.2	2.7	9.8	16.2				
Green Ext Time (p_c), s	0.5	7.0	0.0	0.4	0.0	36.2	0.0	0.7				
Intersection Summary												
HCM 6th Ctrl Delay	41.9											
HCM 6th LOS	D											

HCM 6th Signalized Intersection Summary
8: S Via Monte/N Via Monte & Ygnacio Valley Rd.

01/13/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (veh/h)	110	743	28	43	1582	23	50	28	62	30	86	84
Future Volume (veh/h)	110	743	28	43	1582	23	50	28	62	30	86	84
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.95	1.00		0.94
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	1969	1969	1969	1890	1969	1969	2000	2000	2000	2000	2000	2000
Adj Flow Rate, veh/h	110	743	23	43	1582	20	50	28	24	30	86	48
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	0	0	0	0	0	0
Cap, veh/h	178	2873	89	67	2789	35	0	424	341	65	309	173
Arrive On Green	0.10	1.00	1.00	0.04	0.51	0.50	0.00	0.21	0.21	0.03	0.26	0.26
Sat Flow, veh/h	3638	5508	170	1800	5469	69	0	2000	1609	1905	1179	658
Grp Volume(v), veh/h	110	504	262	43	1036	566	0	28	24	30	0	134
Grp Sat Flow(s),veh/h/ln	1819	1870	1938	1800	1792	1955	0	2000	1609	1905	0	1836
Q Serve(g_s), s	4.4	0.0	0.0	3.5	29.9	29.9	0.0	1.7	1.8	2.3	0.0	8.7
Cycle Q Clear(g_c), s	4.4	0.0	0.0	3.5	29.9	29.9	0.0	1.7	1.8	2.3	0.0	8.7
Prop In Lane	1.00		0.09	1.00		0.04	0.00		1.00	1.00		0.36
Lane Grp Cap(c), veh/h	178	1951	1010	67	1827	997	0	424	341	65	0	482
V/C Ratio(X)	0.62	0.26	0.26	0.64	0.57	0.57	0.00	0.07	0.07	0.46	0.00	0.28
Avail Cap(c_a), veh/h	255	1951	1010	126	1827	997	0	567	456	108	0	551
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)	0.98	0.98	0.98	0.82	0.82	0.82	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	66.3	0.0	0.0	71.2	25.3	25.4	0.0	47.2	47.3	71.1	0.0	44.0
Incr Delay (d2), s/veh	1.3	0.3	0.6	3.0	1.1	1.9	0.0	0.0	0.0	5.1	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.1	0.2	1.7	12.6	13.9	0.0	0.9	0.7	1.2	0.0	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.6	0.3	0.6	74.2	26.4	27.3	0.0	47.3	47.3	76.2	0.0	44.1
LnGrp LOS	E	A	A	E	C	C	A	D	D	E	A	D
Approach Vol, veh/h	876			1645			52			164		
Approach Delay, s/veh	8.8			27.9			47.3			50.0		
Approach LOS	A			C			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.8	79.5	7.6	34.8	9.1	81.2	0.0	42.4				
Change Period (Y+Rc), s	4.5	5.3	4.5	5.0	4.5	5.3	4.5	5.0				
Max Green Setting (Gmax), s	9.5	74.2	6.5	40.5	9.5	74.2	4.0	43.0				
Max Q Clear Time (g_c+I1), s	6.4	31.9	4.3	3.8	5.5	2.0	0.0	10.7				
Green Ext Time (p_c), s	0.1	39.5	0.0	0.1	0.0	32.6	0.0	0.3				
Intersection Summary												
HCM 6th Ctrl Delay	23.5											
HCM 6th LOS	C											

HCM Signalized Intersection Capacity Analysis
9: Oak Grove Rd & Ygnacio Valley Rd.

01/13/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	186	452	63	258	1173	1030	176	356	242	120	464	343
Future Volume (vph)	186	452	63	258	1173	1030	176	356	242	120	464	343
Ideal Flow (vphpl)	1940	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Total Lost time (s)	3.5	2.7		3.5	2.7	2.7	3.5	3.0	4.0	3.5	3.0	2.0
Lane Util. Factor	0.97	0.91		1.00	0.97	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3505	5244		1863	3804	1641	1881	3762	1649	3650	3762	1659
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3505	5244		1863	3804	1641	1881	3762	1649	3650	3762	1659
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	186	452	63	258	1173	1030	176	356	242	120	464	343
RTOR Reduction (vph)	0	12	0	0	0	159	0	0	155	0	0	0
Lane Group Flow (vph)	186	503	0	258	1173	871	176	356	87	120	464	343
Confl. Peds. (#/hr)			1			2			5			8
Confl. Bikes (#/hr)			5			1			1			
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Free
Protected Phases	1	6		5	13	2	3	8		7	4	
Permitted Phases						2			8			Free
Actuated Green, G (s)	9.5	55.6		26.4	77.0	77.0	13.5	32.4	32.4	12.1	31.0	150.0
Effective Green, g (s)	10.5	57.9		28.4	79.3	79.3	14.5	34.4	33.4	13.1	33.0	150.0
Actuated g/C Ratio	0.07	0.39		0.19	0.53	0.53	0.10	0.23	0.22	0.09	0.22	1.00
Clearance Time (s)	4.5	5.0			5.0	5.0	4.5	5.0	5.0	4.5	5.0	
Vehicle Extension (s)	3.0	6.0			6.0	6.0	2.0	2.0	2.0	3.0	2.0	
Lane Grp Cap (vph)	245	2024		352	2011	867	181	862	367	318	827	1659
v/s Ratio Prot	0.05	0.10		c0.14	0.31		c0.09	0.09		0.03	c0.12	
v/s Ratio Perm						c0.53			0.05			c0.21
v/c Ratio	0.76	0.25		0.73	0.58	1.00	0.97	0.41	0.24	0.38	0.56	0.21
Uniform Delay, d1	68.5	31.3		57.2	24.1	35.4	67.6	49.2	47.9	64.6	52.1	0.0
Progression Factor	1.08	1.08		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.5	0.3		8.2	1.2	31.6	58.2	1.5	1.5	0.8	2.7	0.3
Delay (s)	86.3	34.0		65.4	25.3	67.0	125.8	50.7	49.4	65.4	54.8	0.3
Level of Service	F	C		E	C	E	F	D	D	E	D	A
Approach Delay (s)	47.9			47.0			67.3			36.0		
Approach LOS	D			D			E			D		
Intersection Summary												
HCM 2000 Control Delay		48.2										D
HCM 2000 Volume to Capacity ratio		0.90										
Actuated Cycle Length (s)		150.0										16.2
Intersection Capacity Utilization		101.8%										G
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th Roundabout
1: N Wiget Ln & Mitchell Dr

06/19/2025

Intersection			
Intersection Delay, s/veh	6.0		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	513	285	56
Demand Flow Rate, veh/h	524	291	57
Vehicles Circulating, veh/h	79	33	335
Vehicles Exiting, veh/h	245	359	268
Ped Vol Crossing Leg, #/h	17	11	17
Ped Cap Adj	0.998	0.998	0.998
Approach Delay, s/veh	7.0	4.6	4.3
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	524	291	57
Cap Entry Lane, veh/h	1273	1334	981
Entry HV Adj Factor	0.979	0.981	0.974
Flow Entry, veh/h	513	285	56
Cap Entry, veh/h	1243	1307	953
V/C Ratio	0.413	0.218	0.058
Control Delay, s/veh	7.0	4.6	4.3
LOS	A	A	A
95th %tile Queue, veh	2	1	0

HCM 6th Roundabout
3: N Wiget Ln & Shadelands Dr

01/15/2025

Intersection				
Intersection Delay, s/veh	7.9			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	191	454	425	285
Demand Flow Rate, veh/h	195	463	433	291
Vehicles Circulating, veh/h	438	346	193	393
Vehicles Exiting, veh/h	246	280	440	416
Ped Vol Crossing Leg, #/h	2	2	2	2
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	6.4	9.6	7.1	7.4
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	195	463	433	291
Cap Entry Lane, veh/h	883	970	1133	924
Entry HV Adj Factor	0.981	0.980	0.982	0.980
Flow Entry, veh/h	191	454	425	285
Cap Entry, veh/h	866	950	1112	906
V/C Ratio	0.221	0.478	0.382	0.315
Control Delay, s/veh	6.4	9.6	7.1	7.4
LOS	A	A	A	A
95th %tile Queue, veh	1	3	2	1

HCM 6th Signalized Intersection Summary
3: N Wiget Ln & Shadelands Dr

01/15/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	35	134	22	173	202	79	11	293	121	20	237	28
Future Volume (veh/h)	35	134	22	173	202	79	11	293	121	20	237	28
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	35	134	22	173	202	79	11	293	121	20	237	28
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	182	544	79	327	309	105	109	427	172	126	537	61
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	158	1391	202	479	791	268	16	1238	499	52	1558	175
Grp Volume(v), veh/h	191	0	0	454	0	0	425	0	0	285	0	0
Grp Sat Flow(s),veh/h/ln	1751	0	0	1538	0	0	1753	0	0	1785	0	0
Q Serve(g_s), s	0.0	0.0	0.0	6.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.5	0.0	0.0	8.8	0.0	0.0	7.4	0.0	0.0	4.3	0.0	0.0
Prop In Lane	0.18		0.12	0.38		0.17	0.03		0.28	0.07		0.10
Lane Grp Cap(c), veh/h	804	0	0	741	0	0	708	0	0	724	0	0
V/C Ratio(X)	0.24	0.00	0.00	0.61	0.00	0.00	0.60	0.00	0.00	0.39	0.00	0.00
Avail Cap(c_a), veh/h	1453	0	0	1339	0	0	1440	0	0	1448	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	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.4	0.0	0.0	9.1	0.0	0.0	10.1	0.0	0.0	9.0	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.3	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(50%),veh/ln	0.7	0.0	0.0	2.1	0.0	0.0	2.2	0.0	0.0	1.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.5	0.0	0.0	9.9	0.0	0.0	10.9	0.0	0.0	9.4	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	A	A	A
Approach Vol, veh/h	191			454			425			285		
Approach Delay, s/veh	7.5			9.9			10.9			9.4		
Approach LOS	A			A			B			A		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	17.0			18.6			17.0			18.6		
Change Period (Y+Rc), s	* 4.7			* 4.7			* 4.7			* 4.7		
Max Green Setting (Gmax), s	* 27			* 28			* 27			* 28		
Max Q Clear Time (g_c+I1), s	9.4			4.5			6.3			10.8		
Green Ext Time (p_c), s	2.6			1.1			1.7			2.9		

Intersection Summary	
HCM 6th Ctrl Delay	9.8
HCM 6th LOS	A
Notes	

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th AWSC
1: N Wiget Ln & Mitchell Dr

04/04/2025

Intersection						
Intersection Delay, s/veh	10.6					
Intersection LOS	B					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		W		W	W
Traffic Vol, veh/h	207	33	31	269	179	75
Future Vol, veh/h	207	33	31	269	179	75
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	207	33	31	269	179	75
Number of Lanes	1	0	1	0	0	1
Approach	WB	NB		SB		
Opposing Approach		SB		NB		
Opposing Lanes	0	1		1		
Conflicting Approach Left	NB			WB		
Conflicting Lanes Left	1	0		1		
Conflicting Approach Right	SB	WB				
Conflicting Lanes Right	1	1		0		
HCM Control Delay	11.2	9.9		10.9		
HCM LOS	B	A		B		
Lane	NBLn1	WBLn1	SBLn1			
Vol Left, %	0%	86%	70%			
Vol Thru, %	10%	0%	30%			
Vol Right, %	90%	14%	0%			
Sign Control	Stop	Stop	Stop			
Traffic Vol by Lane	300	240	254			
LT Vol	0	207	179			
Through Vol	31	0	75			
RT Vol	269	33	0			
Lane Flow Rate	300	240	254			
Geometry Grp	1	1	1			
Degree of Util (X)	0.364	0.35	0.357			
Departure Headway (Hd)	4.368	5.257	5.054			
Convergence, Y/N	Yes	Yes	Yes			
Cap	816	677	706			
Service Time	2.432	3.345	3.124			
HCM Lane V/C Ratio	0.368	0.355	0.36			
HCM Control Delay	9.9	11.2	10.9			
HCM Lane LOS	A	B	B			
HCM 95th-tile Q	1.7	1.6	1.6			

HCM 6th Signalized Intersection Summary
2: Oak Grove Rd & Mitchell Dr/Peachwillow Ln

01/07/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	←	→	↘	←	→	↘	←	→	↘	←	→	↘
Lane Configurations	↰	↱	↱		↰	↱	↰	↱↰		↰	↱↰	
Traffic Volume (veh/h)	449	40	184	51	24	52	59	806	58	65	637	202
Future Volume (veh/h)	449	40	184	51	24	52	59	806	58	65	637	202
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.95	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No				No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	478	0	108	51	24	20	59	806	54	65	637	174
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	599	0	266	115	54	141	89	1790	120	92	1458	398
Arrive On Green	0.17	0.00	0.17	0.09	0.09	0.09	0.05	0.53	0.53	0.05	0.53	0.53
Sat Flow, veh/h	3563	0	1579	1230	579	1510	1781	3374	226	1781	2741	748
Grp Volume(v), veh/h	478	0	108	75	0	20	59	424	436	65	413	398
Grp Sat Flow(s),veh/h/ln	1781	0	1579	1809	0	1510	1781	1777	1824	1781	1777	1712
Q Serve(g_s), s	15.5	0.0	7.3	4.7	0.0	1.5	3.9	17.7	17.7	4.3	17.0	17.0
Cycle Q Clear(g_c), s	15.5	0.0	7.3	4.7	0.0	1.5	3.9	17.7	17.7	4.3	17.0	17.0
Prop In Lane	1.00		1.00	0.68		1.00	1.00		0.12	1.00		0.44
Lane Grp Cap(c), veh/h	599	0	266	168	0	141	89	942	967	92	945	911
V/C Ratio(X)	0.80	0.00	0.41	0.45	0.00	0.14	0.66	0.45	0.45	0.71	0.44	0.44
Avail Cap(c_a), veh/h	929	0	412	458	0	383	186	942	967	186	945	911
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.84	0.84	0.84	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.0	0.0	44.6	51.5	0.0	50.0	56.0	17.4	17.4	56.0	17.1	17.1
Incr Delay (d2), s/veh	3.2	0.0	1.2	2.6	0.0	0.7	2.6	1.3	1.3	3.7	1.5	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.1	0.0	2.9	2.3	0.0	0.6	1.8	7.2	7.4	2.0	7.0	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.2	0.0	45.8	54.1	0.0	50.7	58.6	18.7	18.7	59.7	18.6	18.7
LnGrp LOS	D	A	D	D	A	D	E	B	B	E	B	B
Approach Vol, veh/h	586			95			919			876		
Approach Delay, s/veh	50.2			53.4			21.2			21.7		
Approach LOS	D			D			C			C		
Timer - Assigned Phs	2		3		4		6		7		8	
Phs Duration (G+Y+Rc), s	15.8		10.5		68.8		24.9		10.7		68.6	
Change Period (Y+Rc), s	4.6		4.5		5.0		4.7		4.5		5.0	
Max Green Setting (Gmax), s	30.4		12.5		27.0		31.3		12.5		27.0	
Max Q Clear Time (g_c+I1), s	6.7		5.9		19.0		17.5		6.3		19.7	
Green Ext Time (p_c), s	0.6		0.0		3.8		2.3		0.0		3.8	
Intersection Summary												
HCM 6th Ctrl Delay	29.5											
HCM 6th LOS	C											
Notes												
User approved pedestrian interval to be less than phase max green.												
User approved volume balancing among the lanes for turning movement.												

HCM 6th AWSC
3: N Wiget Ln & Shadelands Dr

04/04/2025

Intersection												
Intersection Delay, s/veh		21.9										
Intersection LOS		C										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	36	202	40	225	70	26	13	166	102	56	307	20
Future Vol, veh/h	36	202	40	225	70	26	13	166	102	56	307	20
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	202	40	225	70	26	13	166	102	56	307	20
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach		EB		WB		NB		SB				
Opposing Approach		WB		EB		SB		NB				
Opposing Lanes		1		1		1		1				
Conflicting Approach Left		SB		NB		EB		WB				
Conflicting Lanes Left		1		1		1		1				
Conflicting Approach Right		NB		SB		WB		EB				
Conflicting Lanes Right		1		1		1		1				
HCM Control Delay		18.8		22.2		18.2		26.7				
HCM LOS		C		C		C		D				
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	5%	13%	70%	15%								
Vol Thru, %	59%	73%	22%	80%								
Vol Right, %	36%	14%	8%	5%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	281	278	321	383								
LT Vol	13	36	225	56								
Through Vol	166	202	70	307								
RT Vol	102	40	26	20								
Lane Flow Rate	281	278	321	383								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.545	0.553	0.64	0.733								
Departure Headway (Hd)	6.983	7.165	7.173	6.886								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	514	500	501	525								
Service Time	5.055	5.237	5.239	4.949								
HCM Lane V/C Ratio	0.547	0.556	0.641	0.73								
HCM Control Delay	18.2	18.8	22.2	26.7								
HCM Lane LOS	C	C	C	D								
HCM 95th-tile Q	3.2	3.3	4.4	6.1								

HCM 6th TWSC
4: N Via Monte & Shadelands Dr

01/07/2025

Intersection												
Int Delay, s/veh		2.5										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	422	60	54	146	0	37	0	74	0	0	0
Future Vol, veh/h	0	422	60	54	146	0	37	0	74	0	0	0
Conflicting Peds, #/hr	0	0	7	11	0	0	7	0	11	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	100	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	1	2	2	2	2	1	2	1	2	1	1	1
Mvmt Flow	0	422	60	54	146	0	37	0	74	0	0	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	146	0	0	493	0	0	724	717	474	754	747	153
Stage 1	-	-	-	-	-	-	463	463	-	254	254	-
Stage 2	-	-	-	-	-	-	261	254	-	500	493	-
Critical Hdwy	4.11	-	-	4.12	-	-	7.12	6.51	6.22	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.218	-	-	3.518	4.009	3.318	3.509	4.009	3.309
Pot Cap-1 Maneuver	1442	-	-	1071	-	-	341	357	590	327	343	896
Stage 1	-	-	-	-	-	-	579	566	-	753	699	-
Stage 2	-	-	-	-	-	-	744	699	-	555	549	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1442	-	-	1061	-	-	322	334	579	271	321	891
Mov Cap-2 Maneuver	-	-	-	-	-	-	322	334	-	271	321	-
Stage 1	-	-	-	-	-	-	574	561	-	753	661	-
Stage 2	-	-	-	-	-	-	699	661	-	480	544	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			2.3			13.9			0		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	322	579	1442	-	-	1061	-	-	-			
HCM Lane V/C Ratio	0.115	0.128	-	-	-	0.051	-	-	-			
HCM Control Delay (s)	17.6	12.1	0	-	-	8.6	0	-	0			
HCM Lane LOS	C	B	A	-	-	A	A	-	A			
HCM 95th %tile Q(veh)	0.4	0.4	0	-	-	0.2	-	-	-			

HCM 6th Signalized Intersection Summary
5: Oak Grove Rd & Shadelands Dr

01/07/2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	295	281	111	663	737	122
Future Volume (veh/h)	295	281	111	663	737	122
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No	No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	248	252	111	663	737	116
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	318	283	137	2620	1908	300
Arrive On Green	0.18	0.18	0.08	0.74	0.62	0.62
Sat Flow, veh/h	1781	1585	1781	3647	3157	482
Grp Volume(v), veh/h	248	252	111	663	427	426
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1777	1777	1768
Q Serve(g_s), s	15.9	18.6	7.4	7.2	14.3	14.4
Cycle Q Clear(g_c), s	15.9	18.6	7.4	7.2	14.3	14.4
Prop In Lane	1.00	1.00	1.00			0.27
Lane Grp Cap(c), veh/h	318	283	137	2620	1107	1101
V/C Ratio(X)	0.78	0.89	0.81	0.25	0.39	0.39
Avail Cap(c_a), veh/h	667	593	230	2620	1107	1101
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.92	0.92	0.86	0.86
Uniform Delay (d), s/veh	47.0	48.1	54.5	5.1	11.2	11.2
Incr Delay (d2), s/veh	1.6	3.8	9.9	0.2	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.2	7.6	3.6	2.3	5.5	5.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	48.6	52.0	64.4	5.3	12.1	12.1
LnGrp LOS	D	D	E	A	B	B
Approach Vol, veh/h	500			774	853	
Approach Delay, s/veh	50.3			13.8	12.1	
Approach LOS	D			B	B	
Timer - Assigned Phs			3	4	6	8
Phs Duration (G+Y+Rc), s			13.7	79.7	26.5	93.5
Change Period (Y+Rc), s			4.5	5.0	5.1	5.0
Max Green Setting (Gmax), s			15.5	45.0	44.9	65.0
Max Q Clear Time (g_c+I1), s			9.4	16.4	20.6	9.2
Green Ext Time (p_c), s			0.1	8.2	0.8	7.3
Intersection Summary						
HCM 6th Ctrl Delay			21.7			
HCM 6th LOS			C			
Notes						
User approved pedestrian interval to be less than phase max green.						
User approved volume balancing among the lanes for turning movement.						

HCM 6th Signalized Intersection Summary
6: Oak Grove Rd & Citrus Ave

01/07/2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	255	76	690	178	106	903
Future Volume (veh/h)	255	76	690	178	106	903
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	255	25	690	172	106	903
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	349	160	1989	495	130	2913
Arrive On Green	0.10	0.10	0.71	0.71	0.15	1.00
Sat Flow, veh/h	3456	1585	2897	698	1781	3647
Grp Volume(v), veh/h	255	25	437	425	106	903
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1725	1781	1777
Q Serve(g_s), s	8.6	1.7	11.4	11.4	6.9	0.0
Cycle Q Clear(g_c), s	8.6	1.7	11.4	11.4	6.9	0.0
Prop In Lane	1.00	1.00		0.40	1.00	
Lane Grp Cap(c), veh/h	349	160	1260	1224	130	2913
V/C Ratio(X)	0.73	0.16	0.35	0.35	0.81	0.31
Avail Cap(c_a), veh/h	994	456	1260	1224	230	2913
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.84	0.84	0.92	0.92
Uniform Delay (d), s/veh	52.4	49.3	6.7	6.7	50.4	0.0
Incr Delay (d2), s/veh	4.2	0.6	0.6	0.7	10.7	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.7	3.9	3.8	3.2	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	56.5	49.9	7.4	7.4	61.1	0.3
LnGrp LOS	E	D	A	A	E	A
Approach Vol, veh/h	280		862			1009
Approach Delay, s/veh	55.9		7.4			6.7
Approach LOS	E		A			A
Timer - Assigned Phs		2		4		7 8
Phs Duration (G+Y+Rc), s		16.6		103.4		13.3 90.1
Change Period (Y+Rc), s		4.5		5.0		4.5 5.0
Max Green Setting (Gmax), s		34.5		76.0		15.5 56.0
Max Q Clear Time (g_c+I1), s		10.6		2.0		8.9 13.4
Green Ext Time (p_c), s		1.5		11.4		0.1 9.3
Intersection Summary						
HCM 6th Ctrl Delay			13.4			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary
7: Wiget Lane/N Wiget Lane & Ygnacio Valley Rd.

01/07/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↰	↰	↰	↰↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (veh/h)	188	2212	84	47	992	36	54	67	62	110	91	444
Future Volume (veh/h)	188	2212	84	47	992	36	54	67	62	110	91	444
Initial Q (Qb), veh	0	0	0	0	0	0	2	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	188	2212	80	47	992	19	54	67	24	110	91	212
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	0	0	0	0	0	0
Cap, veh/h	218	2648	95	71	2280	691	95	283	233	152	343	284
Arrive On Green	0.24	1.00	1.00	0.04	0.45	0.45	0.05	0.15	0.15	0.08	0.18	0.18
Sat Flow, veh/h	1781	5055	182	1781	5106	1547	1810	1900	1564	1810	1900	1573
Grp Volume(v), veh/h	188	1486	806	47	992	19	54	67	24	110	91	212
Grp Sat Flow(s),veh/h/ln	1781	1702	1833	1781	1702	1547	1810	1900	1564	1810	1900	1573
Q Serve(g_s), s	16.2	0.0	0.0	4.2	21.4	1.1	4.7	5.0	1.5	9.5	6.6	20.4
Cycle Q Clear(g_c), s	16.2	0.0	0.0	4.2	21.4	1.1	4.7	5.0	1.5	9.5	6.6	20.4
Prop In Lane	1.00		0.10	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	218	1783	960	71	2280	691	95	283	233	152	343	284
V/C Ratio(X)	0.86	0.83	0.84	0.66	0.44	0.03	0.57	0.24	0.10	0.72	0.27	0.75
Avail Cap(c_a), veh/h	317	1783	960	95	2280	691	119	487	401	166	537	444
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)	0.86	0.86	0.86	0.94	0.94	0.94	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.1	0.0	0.0	75.7	30.4	24.8	74.4	60.0	30.9	71.5	56.4	62.1
Incr Delay (d2), s/veh	13.3	4.1	7.6	3.6	0.6	0.1	5.3	0.2	0.1	13.2	0.2	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	7.4	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.1	1.0	2.0	2.0	8.7	0.4	2.9	2.5	0.9	5.0	3.2	8.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.4	4.1	7.6	79.3	31.0	24.9	87.1	60.2	31.0	84.7	56.6	63.5
LnGrp LOS	E	A	A	E	C	C	F	E	C	F	E	E
Approach Vol, veh/h	2480			1058			145			413		
Approach Delay, s/veh	10.4			33.0			65.4			67.6		
Approach LOS	B			C			E			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	23.1	74.4	15.9	26.6	10.7	86.8	10.6	31.9				
Change Period (Y+Rc), s	4.5	5.3	4.5	5.0	5.3	* 5.3	4.5	5.0				
Max Green Setting (Gmax), s	27.5	61.5	12.7	39.0	7.5	* 82	8.5	43.2				
Max Q Clear Time (g_c+I1), s	18.2	23.4	11.5	7.0	6.2	2.0	6.7	22.4				
Green Ext Time (p_c), s	0.4	27.9	0.0	0.2	0.0	78.5	0.0	0.7				

Intersection Summary

HCM 6th Ctrl Delay	24.0
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
8: S Via Monte/N Via Monte & Ygnacio Valley Rd.

01/07/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↰	↰	↰	↰↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (veh/h)	175	2188	26	42	972	24	15	27	19	62	33	91
Future Volume (veh/h)	175	2188	26	42	972	24	15	27	19	62	33	91
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.96	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	1627	1870	1870	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	175	2188	26	42	972	23	15	27	12	62	33	48
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	0	0	0	0	0	0
Cap, veh/h	235	2788	33	61	2603	62	0	268	219	101	146	212
Arrive On Green	0.14	1.00	1.00	0.04	0.51	0.50	0.00	0.14	0.14	0.06	0.21	0.21
Sat Flow, veh/h	3456	5201	62	1550	5129	121	0	1900	1552	1810	687	999
Grp Volume(v), veh/h	175	1431	783	42	645	350	0	27	12	62	0	81
Grp Sat Flow(s),veh/h/ln	1728	1702	1859	1550	1702	1847	0	1900	1552	1810	0	1685
Q Serve(g_s), s	7.8	0.0	0.0	4.3	18.4	18.5	0.0	2.0	1.1	5.4	0.0	6.4
Cycle Q Clear(g_c), s	7.8	0.0	0.0	4.3	18.4	18.5	0.0	2.0	1.1	5.4	0.0	6.4
Prop In Lane	1.00		0.03	1.00		0.07	0.00		1.00	1.00		0.59
Lane Grp Cap(c), veh/h	235	1825	997	61	1728	937	0	268	219	101	0	358
V/C Ratio(X)	0.74	0.78	0.79	0.69	0.37	0.37	0.00	0.10	0.05	0.61	0.00	0.23
Avail Cap(c_a), veh/h	292	1825	997	92	1728	937	0	487	398	139	0	498
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)	0.70	0.70	0.70	0.87	0.87	0.87	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	67.8	0.0	0.0	75.9	23.9	24.0	0.0	59.9	59.5	73.9	0.0	52.1
Incr Delay (d2), s/veh	4.0	2.4	4.4	4.4	0.5	1.0	0.0	0.1	0.0	5.9	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.6	1.2	1.8	7.4	8.2	0.0	1.0	0.4	2.7	0.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.8	2.4	4.4	80.2	24.5	25.0	0.0	59.9	59.5	79.8	0.0	52.3
LnGrp LOS	E	A	A	F	C	C	A	E	E	E	A	D
Approach Vol, veh/h	2389			1037			39			143		
Approach Delay, s/veh	8.2			26.9			59.8			64.2		
Approach LOS	A			C			E			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.4	84.2	11.4	25.6	9.8	88.8	0.0	37.0				
Change Period (Y+Rc), s	4.5	5.3	4.5	5.0	4.5	5.3	4.5	5.0				
Max Green Setting (Gmax), s	12.5	78.9	10.3	39.0	8.5	82.9	4.0	45.3				
Max Q Clear Time (g_c+I1), s	9.8	20.5	7.4	4.0	6.3	2.0	0.0	8.4				
Green Ext Time (p_c), s	0.1	37.3	0.0	0.1	0.0	79.9	0.0	0.2				

Intersection Summary

HCM 6th Ctrl Delay	16.3
HCM 6th LOS	B

HCM Signalized Intersection Capacity Analysis
9: Oak Grove Rd & Ygnacio Valley Rd.

01/07/2025

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	320	1816	112	182	630	228	202	380	192	477	471	223	
Future Volume (vph)	320	1816	112	182	630	228	202	380	192	477	471	223	
Ideal Flow (vphpl)	1824	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.5	2.7		3.5	2.7	2.7	3.5	3.0	4.0	3.5	3.0	2.0	
Lane Util. Factor	0.97	0.91		1.00	0.95	1.00	1.00	0.95	1.00	0.97	*0.85	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3296	5037		1770	3539	1562	1787	3574	1575	3467	3198	1573	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3296	5037		1770	3539	1562	1787	3574	1575	3467	3198	1573	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	320	1816	112	182	630	228	202	380	192	477	471	223	
RTOR Reduction (vph)	0	4	0	0	0	146	0	0	122	0	0	0	
Lane Group Flow (vph)	320	1924	0	182	630	82	202	380	70	477	471	223	
Conf. Peds. (#/hr)						1			1			14	
Conf. Bikes (#/hr)			3						1			1	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Free	
Protected Phases	1	6		5	2		3	8		7	15	4	
Permitted Phases						2			8			Free	
Actuated Green, G (s)	32.5	71.9		15.5	54.9	54.9	21.1	22.3	22.3	26.8	32.5	160.0	
Effective Green, g (s)	33.5	74.2		16.5	57.2	57.2	22.1	24.3	23.3	28.8	34.5	160.0	
Actuated g/C Ratio	0.21	0.46		0.10	0.36	0.36	0.14	0.15	0.15	0.18	0.22	1.00	
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	6.0		4.0	6.0	6.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	690	2335		182	1265	558	246	542	229	624	689	1573	
v/s Ratio Prot	0.10	c0.38		c0.10	0.18		c0.11	c0.11		0.14	c0.15		
v/s Ratio Perm						0.05			0.04			0.14	
v/c Ratio	0.46	0.82		1.00	0.50	0.15	0.82	0.70	0.30	0.76	0.68	0.14	
Uniform Delay, d1	55.4	37.2		71.8	40.2	34.8	67.0	64.4	61.1	62.4	57.7	0.0	
Progression Factor	0.59	0.43		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	2.4		66.7	1.4	0.6	18.5	3.3	0.3	5.6	2.2	0.2	
Delay (s)	33.2	18.3		138.5	41.6	35.4	85.5	67.7	61.4	67.9	60.0	0.2	
Level of Service	C	B		F	D	D	F	E	E	E	E	A	
Approach Delay (s)	20.4			57.2			70.8			51.8			
Approach LOS	C			E			E			D			
Intersection Summary													
HCM 2000 Control Delay			42.2		HCM 2000 Level of Service					D			
HCM 2000 Volume to Capacity ratio			0.84										
Actuated Cycle Length (s)			160.0		Sum of lost time (s)					16.2			
Intersection Capacity Utilization			90.0%		ICU Level of Service					E			
Analysis Period (min)			15										
c Critical Lane Group													

HCM 6th Roundabout
1: N Wiget Ln & Mitchell Dr

06/19/2025

Intersection			
Intersection Delay, s/veh	5.2		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	240	300	254
Demand Flow Rate, veh/h	245	306	259
Vehicles Circulating, veh/h	32	183	211
Vehicles Exiting, veh/h	457	287	66
Ped Vol Crossing Leg, #/h	1	1	1
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.3	5.7	5.5
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	245	306	259
Cap Entry Lane, veh/h	1336	1145	1113
Entry HV Adj Factor	0.980	0.982	0.979
Flow Entry, veh/h	240	300	254
Cap Entry, veh/h	1308	1124	1089
V/C Ratio	0.183	0.267	0.233
Control Delay, s/veh	4.3	5.7	5.5
LOS	A	A	A
95th %tile Queue, veh	1	1	1

HCM 6th Roundabout
3: N Wiget Ln & Shadelands Dr

01/15/2025

Intersection				
Intersection Delay, s/veh	7.6			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	278	321	281	383
Demand Flow Rate, veh/h	284	328	286	390
Vehicles Circulating, veh/h	599	219	300	313
Vehicles Exiting, veh/h	104	367	583	233
Ped Vol Crossing Leg, #/h	0	4	4	4
Ped Cap Adj	1.000	0.999	0.999	0.999
Approach Delay, s/veh	9.8	6.2	6.4	7.9
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	284	328	286	390
Cap Entry Lane, veh/h	749	1104	1016	1003
Entry HV Adj Factor	0.979	0.977	0.981	0.982
Flow Entry, veh/h	278	321	281	383
Cap Entry, veh/h	733	1078	997	984
V/C Ratio	0.379	0.297	0.282	0.389
Control Delay, s/veh	9.8	6.2	6.4	7.9
LOS	A	A	A	A
95th %tile Queue, veh	2	1	1	2

HCM 6th Signalized Intersection Summary
3: N Wiget Ln & Shadelands Dr

01/15/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	36	202	40	225	70	26	13	166	102	56	307	20
Future Volume (veh/h)	36	202	40	225	70	26	13	166	102	56	307	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.97	1.00		0.99
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	36	202	40	225	70	26	13	166	102	56	307	20
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	183	442	81	519	131	38	144	370	217	199	526	32
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.32	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	122	1394	255	950	413	120	30	1061	622	149	1511	91
Grp Volume(v), veh/h	278	0	0	321	0	0	281	0	0	383	0	0
Grp Sat Flow(s),veh/h/ln	1771	0	0	1483	0	0	1712	0	0	1751	0	0
Q Serve(g_s), s	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Cycle Q Clear(g_c), s	3.5	0.0	0.0	4.5	0.0	0.0	3.5	0.0	0.0	4.9	0.0	0.0
Prop In Lane	0.13		0.14	0.70		0.08	0.05		0.36	0.15		0.05
Lane Grp Cap(c), veh/h	706	0	0	688	0	0	731	0	0	757	0	0
V/C Ratio(X)	0.39	0.00	0.00	0.47	0.00	0.00	0.38	0.00	0.00	0.51	0.00	0.00
Avail Cap(c_a), veh/h	1891	0	0	1565	0	0	1774	0	0	1804	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	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.7	0.0	0.0	8.0	0.0	0.0	7.1	0.0	0.0	7.5	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.5	0.0	0.0	0.3	0.0	0.0	0.5	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(50%),veh/ln	0.9	0.0	0.0	1.1	0.0	0.0	0.8	0.0	0.0	1.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.1	0.0	0.0	8.5	0.0	0.0	7.5	0.0	0.0	8.1	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h	278			321			281			383		
Approach Delay, s/veh	8.1			8.5			7.5			8.1		
Approach LOS	A			A			A			A		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	14.5			13.6			14.5			13.6		
Change Period (Y+Rc), s	* 4.7			* 4.7			* 4.7			* 4.7		
Max Green Setting (Gmax), s	* 27			* 28			* 27			* 28		
Max Q Clear Time (g_c+I1), s	5.5			5.5			6.9			6.5		
Green Ext Time (p_c), s	1.7			1.7			2.4			2.2		

Intersection Summary	
HCM 6th Ctrl Delay	8.0
HCM 6th LOS	A
Notes	

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th AWSC
1: N Wiget Ln & Mitchell Dr

01/07/2025

Intersection						
Intersection Delay, s/veh	13.3					
Intersection LOS	B					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↑	↱	↰	↑
Traffic Vol, veh/h	339	171	72	160	26	20
Future Vol, veh/h	339	171	72	160	26	20
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	385	194	82	182	30	23
Number of Lanes	1	1	1	1	0	1
Approach	WB	NB		SB		
Opposing Approach		SB		NB		
Opposing Lanes	0	1		2		
Conflicting Approach Left	NB			WB		
Conflicting Lanes Left	2	0		2		
Conflicting Approach Right	SB	WB				
Conflicting Lanes Right	1	2		0		
HCM Control Delay	15	10.1		9.9		
HCM LOS	B	B		A		

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	0%	57%
Vol Thru, %	100%	0%	0%	0%	43%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	72	160	339	171	46
LT Vol	0	0	339	0	26
Through Vol	72	0	0	0	20
RT Vol	0	160	0	171	0
Lane Flow Rate	82	182	385	194	52
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.138	0.271	0.626	0.251	0.091
Departure Headway (Hd)	6.074	5.366	5.852	4.646	6.297
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	586	664	613	764	572
Service Time	3.857	3.149	3.638	2.432	4.297
HCM Lane V/C Ratio	0.14	0.274	0.628	0.254	0.091
HCM Control Delay	9.8	10.2	18.1	9	9.9
HCM Lane LOS	A	B	C	A	A
HCM 95th-tile Q	0.5	1.1	4.4	1	0.3

HCM 6th Signalized Intersection Summary
2: Oak Grove Rd & Mitchell Dr/Peachwillow Ln

01/07/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations												
Traffic Volume (veh/h)	156	17	62	90	57	80	140	420	167	40	507	417
Future Volume (veh/h)	156	17	62	90	57	80	140	420	167	40	507	417
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No		No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	171	0	30	92	58	51	143	429	112	41	517	282
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	574	0	248	142	90	198	182	1104	285	97	767	417
Arrive On Green	0.16	0.00	0.16	0.13	0.13	0.13	0.10	0.40	0.40	0.05	0.35	0.35
Sat Flow, veh/h	3563	0	1538	1113	702	1549	1781	2780	718	1781	2194	1192
Grp Volume(v), veh/h	171	0	30	150	0	51	143	273	268	41	418	381
Grp Sat Flow(s),veh/h/ln	1781	0	1538	1815	0	1549	1781	1777	1721	1781	1777	1609
Q Serve(g_s), s	3.1	0.0	1.2	5.7	0.0	2.2	5.7	7.9	8.1	1.6	14.5	14.6
Cycle Q Clear(g_c), s	3.1	0.0	1.2	5.7	0.0	2.2	5.7	7.9	8.1	1.6	14.5	14.6
Prop In Lane	1.00		1.00	0.61		1.00	1.00		0.42	1.00		0.74
Lane Grp Cap(c), veh/h	574	0	248	232	0	198	182	706	684	97	621	562
V/C Ratio(X)	0.30	0.00	0.12	0.65	0.00	0.26	0.79	0.39	0.39	0.42	0.67	0.68
Avail Cap(c_a), veh/h	2456	0	1060	826	0	705	737	1470	1424	737	1470	1331
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.8	0.0	26.0	30.1	0.0	28.5	31.8	15.6	15.6	33.2	20.1	20.1
Incr Delay (d2), s/veh	0.3	0.0	0.3	4.2	0.0	1.0	2.8	0.5	0.5	1.1	1.8	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.4	2.7	0.0	0.8	2.4	2.9	2.9	0.7	5.6	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.1	0.0	26.3	34.3	0.0	29.5	34.6	16.1	16.1	34.3	21.9	22.1
LnGrp LOS	C	A	C	C	A	C	C	B	B	C	C	C
Approach Vol, veh/h	201			201			684			840		
Approach Delay, s/veh	27.0			33.1			20.0			22.6		
Approach LOS	C			C			B			C		
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	13.9		11.9	30.3		16.4		8.4	33.8			
Change Period (Y+Rc), s	4.6		4.5	5.0		4.7		4.5	5.0			
Max Green Setting (Gmax), s	33.0		30.0	60.0		50.0		30.0	60.0			
Max Q Clear Time (g_c+I1), s	7.7		7.7	16.6		5.1		3.6	10.1			
Green Ext Time (p_c), s	1.5		0.2	8.6		0.9		0.0	5.2			
Intersection Summary												
HCM 6th Ctrl Delay				23.2								
HCM 6th LOS	C											
Notes												

HCM 6th AWSC
3: N Wiget Ln & Shadelands Dr

01/07/2025

Intersection												
Intersection Delay, s/veh23.6												
Intersection LOS C												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔	↔		↔	↔		↔	↔
Traffic Vol, veh/h	34	129	21	172	194	76	11	240	72	19	249	27
Future Vol, veh/h	34	129	21	172	194	76	11	240	72	19	249	27
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	137	22	183	206	81	12	255	77	20	265	29
Number of Lanes	0	1	1	0	1	1	0	1	1	0	1	1
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	2			2			2			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	2			2			2			2		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			2			2			2		
HCM Control Delay	15.4			32.4			18.4			21.2		
HCM LOS	C			D			C			C		

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	4%	0%	21%	0%	47%	0%	7%	0%
Vol Thru, %	96%	0%	79%	0%	53%	0%	93%	0%
Vol Right, %	0%	100%	0%	100%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	251	72	163	21	366	76	268	27
LT Vol	11	0	34	0	172	0	19	0
Through Vol	240	0	129	0	194	0	249	0
RT Vol	0	72	0	21	0	76	0	27
Lane Flow Rate	267	77	173	22	389	81	285	29
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.573	0.149	0.391	0.045	0.821	0.149	0.615	0.056
Departure Headway (Hd)	7.728	6.984	8.127	7.296	7.594	6.635	7.76	7.003
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	465	510	440	487	475	538	465	509
Service Time	5.512	4.768	5.926	5.094	5.371	4.411	5.542	4.784
HCM Lane V/C Ratio	0.574	0.151	0.393	0.045	0.819	0.151	0.613	0.057
HCM Control Delay	20.5	11	16.1	10.4	36.9	10.6	22.3	10.2
HCM Lane LOS	C	B	C	B	E	B	C	B
HCM 95th-tile Q	3.5	0.5	1.8	0.1	7.9	0.5	4	0.2

HCM 6th TWSC
4: N Via Monte & Shadelands Dr

01/07/2025

Intersection												
Int Delay, s/veh 6.5												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Vol, veh/h	1	47	27	144	535	5	43	15	33	15	43	2
Future Vol, veh/h	1	47	27	144	535	5	43	15	33	15	43	2
Conflicting Peds, #/hr	0	0	13	31	0	0	13	0	31	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	100	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	93	93	93	93	90	93	90	93	90	90	90
Heavy Vehicles, %	1	2	2	2	2	1	2	1	2	1	1	1
Mvmt Flow	1	51	29	155	575	6	46	17	35	17	48	2

Major/Minor	Major1		Major2		Minor1		Minor2	
Conflicting Flow All	581	0	0	111	0	1025	990	128
Stage 1	-	-	-	-	-	99	99	-
Stage 2	-	-	-	-	-	926	891	-
Critical Hdwy	4.11	-	-	4.12	-	7.12	6.51	6.22
Critical Hdwy Stg 1	-	-	-	-	-	6.12	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	6.12	5.51	-
Follow-up Hdwy	2.209	-	-	2.218	-	3.518	4.009	3.309
Pot Cap-1 Maneuver	998	-	-	1479	-	213	247	922
Stage 1	-	-	-	-	-	907	815	-
Stage 2	-	-	-	-	-	322	362	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	998	-	-	1441	-	147	202	875
Mov Cap-2 Maneuver	-	-	-	-	-	147	202	-
Stage 1	-	-	-	-	-	883	793	-
Stage 2	-	-	-	-	-	225	304	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1.6	30.3	32.8
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	158	875	998	-	-	1441	-	-	195
HCM Lane V/C Ratio	0.398	0.041	0.001	-	-	0.107	-	-	0.342
HCM Control Delay (s)	42.1	9.3	8.6	0	-	7.8	0	-	32.8
HCM Lane LOS	E	A	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	1.7	0.1	0	-	-	0.4	-	-	1.4

HCM Signalized Intersection Capacity Analysis
5: Oak Grove Rd & Shadelands Dr

01/07/2025

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	95	48	544	621	500	121
Future Volume (vph)	95	48	544	621	500	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1		4.5	5.0	5.0	
Lane Util. Factor	0.97		1.00	0.95	0.95	
Frpb, ped/bikes	0.99		1.00	1.00	0.99	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.95		1.00	1.00	0.97	
Flt Protected	0.97		0.95	1.00	1.00	
Satd. Flow (prot)	3286		1770	3539	3409	
Flt Permitted	0.97		0.95	1.00	1.00	
Satd. Flow (perm)	3286		1770	3539	3409	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	98	49	561	640	515	125
RTOR Reduction (vph)	45	0	0	0	13	0
Lane Group Flow (vph)	102	0	561	640	627	0
Confl. Peds. (#/hr)		5			7	
Confl. Bikes (#/hr)					4	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	6		3 11	8	4	
Permitted Phases						
Actuated Green, G (s)	11.4		46.9	108.5	52.6	
Effective Green, g (s)	11.4		46.9	108.5	52.6	
Actuated g/C Ratio	0.09		0.36	0.83	0.40	
Clearance Time (s)	5.1			5.0	5.0	
Vehicle Extension (s)	2.0			4.0	4.0	
Lane Grp Cap (vph)	288		638	2953	1379	
v/s Ratio Prot	c0.03		c0.32	0.18	c0.18	
v/s Ratio Perm						
v/c Ratio	0.36		0.88	0.22	0.46	
Uniform Delay, d1	55.8		38.9	2.2	28.2	
Progression Factor	1.00		0.92	0.24	1.00	
Incremental Delay, d2	0.3		10.9	0.1	1.1	
Delay (s)	56.1		46.8	0.7	29.3	
Level of Service	E		D	A	C	
Approach Delay (s)	56.1			22.2	29.3	
Approach LOS	E			C	C	
Intersection Summary						
HCM 2000 Control Delay			27.0		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.62			
Actuated Cycle Length (s)			130.0		Sum of lost time (s)	19.1
Intersection Capacity Utilization			72.9%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

HCM 6th Signalized Intersection Summary
6: Oak Grove Rd & Citrus Ave

01/07/2025

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	365	39	1120	196	57	493
Future Volume (veh/h)	365	39	1120	196	57	493
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	392	16	1204	195	61	530
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	489	224	1771	285	98	2378
Arrive On Green	0.14	0.14	0.58	0.58	0.05	0.67
Sat Flow, veh/h	3456	1585	3147	492	1781	3647
Grp Volume(v), veh/h	392	16	698	701	61	530
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1768	1781	1777
Q Serve(g_s), s	14.3	1.1	35.3	35.9	4.4	7.5
Cycle Q Clear(g_c), s	14.3	1.1	35.3	35.9	4.4	7.5
Prop In Lane	1.00	1.00		0.28	1.00	
Lane Grp Cap(c), veh/h	489	224	1030	1025	98	2378
V/C Ratio(X)	0.80	0.07	0.68	0.68	0.63	0.22
Avail Cap(c_a), veh/h	891	408	1030	1025	158	2378
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.60	0.60	0.89	0.89
Uniform Delay (d), s/veh	54.0	48.4	18.9	19.0	60.1	8.4
Incr Delay (d2), s/veh	4.4	0.2	2.2	2.2	5.7	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	0.5	14.2	14.4	2.1	2.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	58.4	48.6	21.1	21.3	65.9	8.6
LnGrp LOS	E	D	C	C	E	A
Approach Vol, veh/h	408		1399			591
Approach Delay, s/veh	58.0		21.2			14.5
Approach LOS	E		C			B
Timer - Assigned Phs						
	2		4		7	8
Phs Duration (G+Y+Rc), s	22.9		92.0		11.6	80.4
Change Period (Y+Rc), s	4.5		5.0		4.5	5.0
Max Green Setting (Gmax), s	33.5		87.0		11.5	71.0
Max Q Clear Time (g_c+I), s	16.3		9.5		6.4	37.9
Green Ext Time (p_c), s	2.1		5.6		0.0	17.1
Intersection Summary						
HCM 6th Ctrl Delay			25.8			
HCM 6th LOS			C			

HCM 6th Signalized Intersection Summary
7: Wiget Ln/N Wiget Ln & Ygnacio Valley Rd.

01/07/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↰↱		↰	↰↱↱	↱	↰	↱	↰	↰	↱	↱
Traffic Volume (veh/h)	257	732	96	63	1592	31	98	111	84	28	128	288
Future Volume (veh/h)	257	732	96	63	1592	31	98	111	84	28	128	288
Initial Q (Qb), veh	0	0	0	0	0	0	2	0	0	0	0	0
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	1969	1969	1969	1969	1969	1969	2000	2000	2000	2000	2000	2000
Adj Flow Rate, veh/h	265	755	85	65	1641	21	101	114	31	29	132	176
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, %	2	2	2	2	2	2	0	0	0	0	0	0
Cap, veh/h	344	2648	296	96	2785	815	192	380	316	226	380	316
Arrive On Green	0.19	1.00	1.00	0.05	0.50	0.50	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	3638	4904	548	1875	5611	1643	1086	2000	1661	1260	2000	1659
Grp Volume(v), veh/h	265	550	290	65	1641	21	101	114	31	29	132	176
Grp Sat Flow(s), veh/h/ln	1819	1792	1869	1875	1870	1643	1086	2000	1661	1260	2000	1659
Q Serve(g_s), s	10.4	0.0	0.0	5.1	31.2	1.0	13.4	7.4	2.3	3.1	8.6	14.5
Cycle Q Clear(g_c), s	10.4	0.0	0.0	5.1	31.2	1.0	22.0	7.4	2.3	10.4	8.6	14.5
Prop In Lane	1.00		0.29	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	344	1935	1009	96	2785	815	192	380	316	226	380	316
V/C Ratio(X)	0.77	0.28	0.29	0.68	0.59	0.03	0.52	0.30	0.10	0.13	0.35	0.56
Avail Cap(c_a), veh/h	618	1935	1009	131	2785	815	340	653	543	398	653	542
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)	0.99	0.99	0.99	0.90	0.90	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.2	0.0	0.0	70.0	26.9	19.3	62.7	52.2	50.2	56.7	52.7	55.1
Incr Delay (d2), s/veh	3.6	0.4	0.7	2.8	0.8	0.1	0.8	0.2	0.0	0.1	0.2	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	4.5	0.1	0.2	2.5	13.7	0.4	4.2	3.8	1.0	1.0	4.4	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	62.8	0.4	0.7	72.8	27.7	19.3	65.1	52.4	50.2	56.8	52.9	55.7
LnGrp LOS	E	A	A	E	C	B	E	D	D	E	D	E
Approach Vol, veh/h		1105			1727			246			337	
Approach Delay, s/veh		15.4			29.3			57.3			54.7	
Approach LOS		B			C			E			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	17.7	77.4		30.8	11.2	84.0		30.8				
Change Period (Y+Rc), s	4.5	5.3		5.0	4.5	5.3		5.0				
Max Green Setting (Gmax), s	24.5	63.7		47.0	9.5	78.7		47.0				
Max Q Clear Time (g_c+I1), s	12.4	33.2		24.0	7.1	2.0		16.5				
Green Ext Time (p_c), s	0.8	29.2		0.6	0.0	35.4		0.8				
Intersection Summary												
HCM 6th Ctrl Delay		29.3										
HCM 6th LOS		C										

HCM 6th Signalized Intersection Summary
8: S Via Monte/N Via Monte & Ygnacio Valley Rd.

01/07/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↰↱		↰	↰↱↱	↱	↰	↱	↰	↰	↱	↱
Traffic Volume (veh/h)	98	681	28	42	1506	12	47	20	55	31	85	113
Future Volume (veh/h)	98	681	28	42	1506	12	47	20	55	31	85	113
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	0.98		0.95	0.98		0.94
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	1969	1969	1969	1890	1969	1969	2000	2000	2000	2000	2000	2000
Adj Flow Rate, veh/h	101	702	24	43	1553	9	48	21	18	32	88	79
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, %	2	2	2	2	2	2	0	0	0	0	0	0
Cap, veh/h	170	3183	109	68	3147	18	194	79	386	217	225	202
Arrive On Green	0.09	1.00	1.00	0.04	0.57	0.56	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	3638	5488	187	1800	5514	32	642	330	1617	1356	941	844
Grp Volume(v), veh/h	101	478	248	43	1009	553	69	0	18	32	0	167
Grp Sat Flow(s), veh/h/ln	1819	1870	1935	1800	1792	1963	972	0	1617	1356	0	1785
Q Serve(g_s), s	4.0	0.0	0.0	3.5	25.2	25.3	5.3	0.0	1.3	3.2	0.0	11.8
Cycle Q Clear(g_c), s	4.0	0.0	0.0	3.5	25.2	25.3	17.1	0.0	1.3	20.3	0.0	11.8
Prop In Lane	1.00		0.10	1.00		0.02	0.70		1.00	1.00		0.47
Lane Grp Cap(c), veh/h	170	2170	1122	68	2045	1120	273	0	386	217	0	426
V/C Ratio(X)	0.59	0.22	0.22	0.64	0.49	0.49	0.25	0.00	0.05	0.15	0.00	0.39
Avail Cap(c_a), veh/h	376	2170	1122	150	2045	1120	320	0	442	264	0	488
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)	0.98	0.98	0.98	0.77	0.77	0.77	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	66.6	0.0	0.0	71.2	19.2	19.2	52.8	0.0	43.9	58.8	0.0	47.9
Incr Delay (d2), s/veh	1.2	0.2	0.4	2.8	0.7	1.2	0.2	0.0	0.0	0.1	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(50%), veh/ln	1.8	0.1	0.1	1.7	10.3	11.4	2.3	0.0	0.5	1.1	0.0	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	67.8	0.2	0.4	74.0	19.9	20.4	52.9	0.0	44.0	59.0	0.0	48.2
LnGrp LOS	E	A	A	E	B	C	D	A	D	E	A	D
Approach Vol, veh/h		827			1605			87			199	
Approach Delay, s/veh		8.5			21.5			51.1			49.9	
Approach LOS		A			C			D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.5	88.6		38.8	9.1	90.0		38.8				
Change Period (Y+Rc), s	4.5	5.3		5.0	4.5	5.3		5.0				
Max Green Setting (Gmax), s	14.5	81.7		39.0	11.5	84.7		39.0				
Max Q Clear Time (g_c+I1), s	6.0	27.3		19.1	5.5	2.0		22.3				
Green Ext Time (p_c), s	0.1	49.5		0.2	0.0	32.0		0.4				
Intersection Summary												
HCM 6th Ctrl Delay		20.6										
HCM 6th LOS		C										

HCM Signalized Intersection Capacity Analysis
9: Oak Grove Rd & Ygnacio Valley Rd.

01/07/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	432	61	248	1110	893	169	315	233	97	439	324
Future Volume (vph)	145	432	61	248	1110	893	169	315	233	97	439	324
Ideal Flow (vphpl)	1940	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Total Lost time (s)	3.5	2.7		3.5	2.7	2.7	3.5	3.0	4.0	3.5	3.0	2.0
Lane Util. Factor	0.97	0.91		1.00	0.97	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3505	5241		1863	3804	1641	1881	3762	1650	3650	3762	1659
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3505	5241		1863	3804	1641	1881	3762	1650	3650	3762	1659
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	151	450	64	258	1156	930	176	328	243	101	457	338
RTOR Reduction (vph)	0	11	0	0	0	286	0	0	159	0	0	0
Lane Group Flow (vph)	151	503	0	258	1156	644	176	328	84	101	457	338
Confl. Peds. (#/hr)			1			2			5			8
Confl. Bikes (#/hr)			5			1			1			
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Free
Protected Phases	1	6		5	13	2	3	8	7	4		
Permitted Phases						2			8			Free
Actuated Green, G (s)	11.8	41.5		28.6	62.8	62.8	18.4	44.4	44.4	12.0	38.0	150.0
Effective Green, g (s)	12.8	43.8		30.6	65.1	65.1	19.4	46.4	45.4	13.0	40.0	150.0
Actuated g/C Ratio	0.09	0.29		0.20	0.43	0.43	0.13	0.31	0.30	0.09	0.27	1.00
Clearance Time (s)	4.5	5.0			5.0	5.0	4.5	5.0	5.0	4.5	5.0	
Vehicle Extension (s)	3.0	6.0			6.0	6.0	2.0	2.0	2.0	3.0	2.0	
Lane Grp Cap (vph)	299	1530		380	1650	712	243	1163	499	316	1003	1659
v/s Ratio Prot	0.04	0.10		c0.14	0.30		c0.09	0.09		0.03	c0.12	
v/s Ratio Perm						c0.39			0.05			c0.20
v/c Ratio	0.51	0.33		0.68	0.70	0.90	0.72	0.28	0.17	0.32	0.46	0.20
Uniform Delay, d1	65.6	41.6		55.2	34.5	39.5	62.7	39.2	38.4	64.3	45.9	0.0
Progression Factor	1.11	1.24		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	0.6		5.2	2.5	17.1	8.7	0.6	0.7	0.6	1.5	0.3
Delay (s)	74.1	52.0		60.4	37.0	56.6	71.5	39.8	39.2	64.9	47.4	0.3
Level of Service	E	D		E	D	E	E	D	D	E	D	A
Approach Delay (s)		57.0			47.4			47.1			31.6	
Approach LOS		E			D			D			C	
Intersection Summary												
HCM 2000 Control Delay		45.7										D
HCM 2000 Volume to Capacity ratio		0.75										
Actuated Cycle Length (s)		150.0				Sum of lost time (s)		16.2				
Intersection Capacity Utilization		93.6%				ICU Level of Service		F				
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th AWSC
1: N Wiget Ln & Mitchell Dr

01/07/2025

Intersection						
Intersection Delay, s/veh	11.7					
Intersection LOS	B					
Movement						
	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	170	24	27	275	167	71
Future Vol, veh/h	170	24	27	275	167	71
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	189	27	30	306	186	79
Number of Lanes	1	1	1	1	0	1
Approach						
	WB	NB	SB			
Opposing Approach		SB	NB			
Opposing Lanes	0	1	2			
Conflicting Approach Left	NB		WB			
Conflicting Lanes Left	2	0	2			
Conflicting Approach Right	SB	WB				
Conflicting Lanes Right	1	2	0			
HCM Control Delay	12.2	10.7	12.6			
HCM LOS	B	B	B			
Lane						
	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1	
Vol Left, %	0%	0%	100%	0%	70%	
Vol Thru, %	100%	0%	0%	0%	30%	
Vol Right, %	0%	100%	0%	100%	0%	
Sign Control	Stop	Stop	Stop	Stop	Stop	
Traffic Vol by Lane	27	275	170	24	238	
LT Vol	0	0	170	0	167	
Through Vol	27	0	0	0	71	
RT Vol	0	275	0	24	0	
Lane Flow Rate	30	306	189	27	264	
Geometry Grp	7	7	7	7	4	
Degree of Util (X)	0.046	0.407	0.345	0.04	0.414	
Departure Headway (Hd)	5.607	4.9	6.567	5.354	5.639	
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	
Cap	643	739	550	671	643	
Service Time	3.307	2.6	4.279	3.065	3.639	
HCM Lane V/C Ratio	0.047	0.414	0.344	0.04	0.411	
HCM Control Delay	8.6	10.9	12.7	8.3	12.6	
HCM Lane LOS	A	B	B	A	B	
HCM 95th-tile Q	0.1	2	1.5	0.1	2	

HCM 6th Signalized Intersection Summary
2: Oak Grove Rd & Mitchell Dr/Peachwillow Ln

01/07/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	394	33	104	49	23	51	36	718	48	63	597	182
Future Volume (veh/h)	394	33	104	49	23	51	36	718	48	63	597	182
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.95	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	449	0	30	53	25	21	39	772	48	68	642	166
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	562	0	249	114	54	141	76	1833	114	93	1528	395
Arrive On Green	0.16	0.00	0.16	0.09	0.09	0.09	0.04	0.54	0.54	0.05	0.55	0.55
Sat Flow, veh/h	3563	0	1579	1229	580	1510	1781	3393	211	1781	2778	717
Grp Volume(v), veh/h	449	0	30	78	0	21	39	404	416	68	410	398
Grp Sat Flow(s),veh/h/ln	1781	0	1579	1809	0	1510	1781	1777	1827	1781	1777	1719
Q Serve(g_s), s	14.6	0.0	2.0	4.9	0.0	1.5	2.6	16.2	16.3	4.5	16.2	16.3
Cycle Q Clear(g_c), s	14.6	0.0	2.0	4.9	0.0	1.5	2.6	16.2	16.3	4.5	16.2	16.3
Prop In Lane	1.00		1.00	0.68		1.00	1.00		0.12	1.00		0.42
Lane Grp Cap(c), veh/h	562	0	249	168	0	141	76	960	987	93	977	945
V/C Ratio(X)	0.80	0.00	0.12	0.46	0.00	0.15	0.52	0.42	0.42	0.73	0.42	0.42
Avail Cap(c_a), veh/h	929	0	412	458	0	383	186	960	987	186	977	945
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.88	0.88	0.88	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.7	0.0	43.4	51.6	0.0	50.0	56.2	16.4	16.4	56.0	15.8	15.8
Incr Delay (d2), s/veh	3.2	0.0	0.3	2.8	0.0	0.7	1.8	1.2	1.2	4.1	1.3	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(50%),veh/ln	6.7	0.0	0.8	2.4	0.0	0.6	1.2	6.6	6.8	2.1	6.6	6.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.9	0.0	43.7	54.4	0.0	50.7	58.0	17.6	17.6	60.1	17.1	17.2
LnGrp LOS	D	A	D	D	A	D	E	B	B	E	B	B
Approach Vol, veh/h		479			99			859			876	
Approach Delay, s/veh		51.4			53.6			19.4			20.5	
Approach LOS		D			D			B			C	
Timer - Assigned Phs	2	3	4		6	7	8					
Phs Duration (G+Y+Rc), s	15.8	9.6	71.0		23.6	10.8	69.8					
Change Period (Y+Rc), s	4.6	4.5	5.0		4.7	4.5	5.0					
Max Green Setting (Gmax), s	30.4	12.5	27.0		31.3	12.5	27.0					
Max Q Clear Time (g_c+1), s	6.9	4.6	18.3		16.6	6.5	18.3					
Green Ext Time (p_c), s	0.6	0.0	4.1		1.9	0.0	4.1					
Intersection Summary												
HCM 6th Ctrl Delay	27.9											
HCM 6th LOS	C											
Notes												
User approved pedestrian interval to be less than phase max green.												
User approved volume balancing among the lanes for turning movement.												

HCM 6th AWSC
3: N Wiget Ln & Shadelands Dr

01/07/2025

Intersection												
Intersection Delay, s/veh22.3												
Intersection LOS C												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱		↰	↱		↰	↱
Traffic Vol, veh/h	35	197	39	184	68	25	13	171	102	55	266	20
Future Vol, veh/h	35	197	39	184	68	25	13	171	102	55	266	20
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	39	219	43	204	76	28	14	190	113	61	296	22
Number of Lanes	0	1	1	0	1	1	0	1	1	0	1	1
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	2			2			2			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	2			2			2			2		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			2			2			2		
HCM Control Delay	19.5			23.3			15.3			29.7		
HCM LOS	C			C			C			D		
Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2				
Vol Left, %	7%	0%	15%	0%	73%	0%	17%	0%				
Vol Thru, %	93%	0%	85%	0%	27%	0%	83%	0%				
Vol Right, %	0%	100%	0%	100%	0%	100%	0%	100%				
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop				
Traffic Vol by Lane	184	102	232	39	252	25	321	20				
LT Vol	13	0	35	0	184	0	55	0				
Through Vol	171	0	197	0	68	0	266	0				
RT Vol	0	102	0	39	0	25	0	20				
Lane Flow Rate	204	113	258	43	280	28	357	22				
Geometry Grp	7	7	7	7	7	7	7	7				
Degree of Util (X)	0.452	0.227	0.574	0.087	0.641	0.055	0.757	0.042				
Departure Headway (Hd)	7.959	7.2	8.02	7.219	8.244	7.145	7.773	6.964				
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes				
Cap	454	500	451	498	440	503	467	517				
Service Time	5.693	4.934	5.733	4.932	5.957	4.858	5.473	4.664				
HCM Lane V/C Ratio	0.449	0.226	0.572	0.086	0.636	0.056	0.764	0.043				
HCM Control Delay	17.1	12	21	10.6	24.6	10.3	30.9	10				
HCM Lane LOS	C	B	C	B	C	B	D	A				
HCM 95th-tile Q	2.3	0.9	3.5	0.3	4.4	0.2	6.4	0.1				

HCM 6th TWSC
4: N Via Monte & Shadelands Dr

01/07/2025

Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	358	33	27	142	14	33	40	68	10	28	2
Future Vol, veh/h	2	358	33	27	142	14	33	40	68	10	28	2
Conflicting Peds, #/hr	0	0	7	11	0	0	7	0	11	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	100	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	85	85	85	85	90	85	90	85	90	90	90
Heavy Vehicles, %	1	2	2	2	2	1	2	1	2	1	1	1
Mvmt Flow	2	421	39	32	167	16	39	44	80	11	31	2

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	183	0	0	471
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.11	-	-	4.12
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.209	-	-	2.218
Pot Cap-1 Maneuver	1398	-	-	1091
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1398	-	-	1081
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.2	16	18.1
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	327	588	1398	-	-	1081	-	-	320
HCM Lane V/C Ratio	0.255	0.136	0.002	-	-	0.029	-	-	0.139
HCM Control Delay (s)	19.7	12.1	7.6	0	-	8.4	0	-	18.1
HCM Lane LOS	C	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1	0.5	0	-	-	0.1	-	-	0.5

HCM 6th Signalized Intersection Summary
5: Oak Grove Rd & Shadelands Dr

01/07/2025

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	240	220	95	603	627	122
Future Volume (veh/h)	240	220	95	603	627	122
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No	No	No	No	No	No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	198	202	99	628	653	121
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	261	232	124	2734	1973	365
Arrive On Green	0.15	0.15	0.07	0.77	0.66	0.66
Sat Flow, veh/h	1781	1585	1781	3647	3073	551
Grp Volume(v), veh/h	198	202	99	628	389	385
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1777	1777	1754
Q Serve(g_s), s	12.8	15.0	6.6	5.9	11.4	11.4
Cycle Q Clear(g_c), s	12.8	15.0	6.6	5.9	11.4	11.4
Prop In Lane	1.00	1.00	1.00			0.31
Lane Grp Cap(c), veh/h	261	232	124	2734	1177	1161
V/C Ratio(X)	0.76	0.87	0.80	0.23	0.33	0.33
Avail Cap(c_a), veh/h	667	593	230	2734	1177	1161
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.95	0.95	0.88	0.88
Uniform Delay (d), s/veh	49.2	50.1	55.0	3.9	8.8	8.8
Incr Delay (d2), s/veh	1.7	3.9	10.6	0.2	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	6.2	3.3	1.7	4.2	4.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	50.9	54.0	65.6	4.1	9.4	9.4
LnGrp LOS	D	D	E	A	A	A
Approach Vol, veh/h	400			727	774	
Approach Delay, s/veh	52.4			12.4	9.4	
Approach LOS	D			B	A	

Timer - Assigned Phs	3	4	6	8
Phs Duration (G+Y+Rc), s	12.9	84.5	22.7	97.3
Change Period (Y+Rc), s	4.5	5.0	5.1	5.0
Max Green Setting (Gmax), s	15.5	45.0	44.9	65.0
Max Q Clear Time (g_c+1), s	8.6	13.4	17.0	7.9
Green Ext Time (p_c), s	0.1	7.5	0.6	6.8

Intersection Summary	
HCM 6th Ctrl Delay	19.6
HCM 6th LOS	B

Notes	
User approved pedestrian interval to be less than phase max green.	
User approved volume balancing among the lanes for turning movement.	

HCM 6th Signalized Intersection Summary
6: Oak Grove Rd & Citrus Ave

01/07/2025

	←	↖	↗	→	↘	↙
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↖	↗↖	↗	↖	↗↖
Traffic Volume (veh/h)	197	71	616	156	63	775
Future Volume (veh/h)	197	71	616	156	63	775
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	201	20	629	153	64	791
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	287	132	2091	508	105	2977
Arrive On Green	0.08	0.08	0.74	0.74	0.12	1.00
Sat Flow, veh/h	3456	1585	2914	685	1781	3647
Grp Volume(v), veh/h	201	20	396	386	64	791
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1728	1781	1777
Q Serve(g_s), s	6.8	1.4	8.9	8.9	4.1	0.0
Cycle Q Clear(g_c), s	6.8	1.4	8.9	8.9	4.1	0.0
Prop In Lane	1.00	1.00		0.40	1.00	
Lane Grp Cap(c), veh/h	287	132	1317	1281	105	2977
V/C Ratio(X)	0.70	0.15	0.30	0.30	0.61	0.27
Avail Cap(c_a), veh/h	994	456	1317	1281	230	2977
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.85	0.85	0.95	0.95
Uniform Delay (d), s/veh	53.6	51.1	5.2	5.2	51.6	0.0
Incr Delay (d2), s/veh	4.4	0.8	0.5	0.5	5.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.6	2.9	2.8	1.9	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	57.9	51.8	5.7	5.7	57.0	0.2
LnGrp LOS	E	D	A	A	E	A
Approach Vol, veh/h	221		782		855	
Approach Delay, s/veh	57.4		5.7		4.5	
Approach LOS	E		A		A	
Timer - Assigned Phs	2		4		7	8
Phs Duration (G+Y+Rc), s	14.5		105.5		11.6	94.0
Change Period (Y+Rc), s	4.5		5.0		4.5	5.0
Max Green Setting (Gmax), s	34.5		76.0		15.5	56.0
Max Q Clear Time (g_c+I1), s	8.8		2.0		6.1	10.9
Green Ext Time (p_c), s	1.2		9.4		0.1	8.2
Intersection Summary						
HCM 6th Ctrl Delay			11.3			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary
7: Wiget Lane/N Wiget Lane & Ygnacio Valley Rd.

01/07/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  					  		
Traffic Volume (veh/h)	188	2159	82	46	932	36	53	68	61	107	79	371
Future Volume (veh/h)	188	2159	82	46	932	36	53	68	61	107	79	371
Initial Q (Qb), veh	0	0	0	0	0	0	2	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	0.99		0.97	0.99		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		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	196	2249	81	48	971	20	55	71	24	111	82	144
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	0	0	0	0	0	0
Cap, veh/h	261	3097	111	73	2976	911	202	327	270	228	327	270
Arrive On Green	0.15	1.00	1.00	0.04	0.58	0.58	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	3456	5056	181	1781	5106	1563	1165	1900	1568	1310	1900	1572
Grp Volume(v), veh/h	196	1511	819	48	971	20	55	71	24	111	82	144
Grp Sat Flow(s),veh/h/ln	1728	1702	1833	1781	1702	1563	1165	1900	1568	1310	1900	1572
Q Serve(g_s), s	8.7	0.0	0.0	4.3	15.7	0.9	6.9	5.2	2.1	12.8	6.0	13.4
Cycle Q Clear(g_c), s	8.7	0.0	0.0	4.3	15.7	0.9	12.9	5.2	2.1	17.9	6.0	13.4
Prop In Lane	1.00		0.10	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	261	2085	1123	73	2976	911	202	327	270	228	327	270
V/C Ratio(X)	0.75	0.72	0.73	0.66	0.33	0.02	0.27	0.22	0.09	0.49	0.25	0.53
Avail Cap(c_a), veh/h	400	2085	1123	128	2976	911	300	487	402	338	487	403
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)	0.85	0.85	0.85	0.97	0.97	0.97	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	66.5	0.0	0.0	75.6	17.2	14.1	63.4	57.0	55.7	64.7	57.3	60.4
Incr Delay (d2), s/veh	3.7	1.9	3.6	3.7	0.3	0.0	0.3	0.1	0.1	0.6	0.1	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.6	1.1	2.0	6.1	0.3	2.5	2.5	0.8	4.3	2.9	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.2	1.9	3.6	79.3	17.5	14.2	64.6	57.1	55.8	65.3	57.5	61.0
LnGrp LOS	E	A	A	E	B	B	E	E	E	E	E	E
Approach Vol, veh/h		2526			1039			150			337	
Approach Delay, s/veh		7.7			20.3			59.6			61.6	
Approach LOS		A			C			E			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.6	96.2		30.1	10.8	101.0		30.1				
Change Period (Y+Rc), s	4.5	5.3		5.0	5.3	* 5.3		5.0				
Max Green Setting (Gmax), s	17.5	88.7		39.0	10.5	* 96		39.0				
Max Q Clear Time (g_c+I1), s	10.7	17.7		14.9	6.3	2.0		19.9				
Green Ext Time (p_c), s	0.4	41.9		0.3	0.0	92.5		0.8				
Intersection Summary												
HCM 6th Ctrl Delay				17.4								
HCM 6th LOS				B								
Notes												

HCM 6th Signalized Intersection Summary
8: S Via Monte/N Via Monte & Ygnacio Valley Rd.

01/07/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	200	2106	25	37	913	26	16	27	20	44	26	88
Future Volume (veh/h)	200	2106	25	37	913	26	16	27	20	44	26	88
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00	1.00	0.99	0.98	0.97	0.98	0.96	0.97	0.98	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	No	No	No	No	No	No	No	No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1627	1870	1870	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	211	2217	26	39	961	26	17	28	14	46	27	48
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, %	2	2	2	2	2	2	0	0	0	0	0	0
Cap, veh/h	270	3302	39	57	3034	82	102	157	242	202	93	166
Arrive On Green	0.16	1.00	1.00	0.04	0.59	0.59	0.16	0.16	0.16	0.16	0.16	0.16
Sat Flow, veh/h	3456	5202	61	1550	5109	138	459	1006	1556	1364	599	1064
Grp Volume(v), veh/h	211	1450	793	39	640	347	45	0	14	46	0	75
Grp Sat Flow(s),veh/h/ln	1728	1702	1859	1550	1702	1843	1465	0	1556	1364	0	1663
Q Serve(g_s), s	9.4	0.0	0.0	4.0	15.0	15.1	0.1	0.0	1.2	4.9	0.0	6.4
Cycle Q Clear(g_c), s	9.4	0.0	0.0	4.0	15.0	15.1	6.5	0.0	1.2	11.4	0.0	6.4
Prop In Lane	1.00	0.03	1.00	0.07	0.38	1.00	1.00	1.00	0.00	1.00	0.00	1.00
Lane Grp Cap(c), veh/h	270	2161	1180	57	2021	1094	259	0	242	202	0	259
V/C Ratio(X)	0.78	0.67	0.67	0.68	0.32	0.32	0.17	0.00	0.06	0.23	0.00	0.29
Avail Cap(c_a), veh/h	313	2161	1180	121	2021	1094	423	0	399	339	0	426
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)	0.75	0.75	0.75	0.87	0.87	0.87	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	66.2	0.0	0.0	76.1	16.3	16.3	58.5	0.0	57.6	64.8	0.0	59.7
Incr Delay (d2), s/veh	6.7	1.3	2.3	4.5	0.4	0.7	0.1	0.0	0.0	0.2	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(50%),veh/ln	4.1	0.4	0.8	1.6	5.8	6.4	1.6	0.0	0.5	1.7	0.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.9	1.3	2.3	80.6	16.6	17.0	58.6	0.0	57.6	65.0	0.0	60.0
LnGrp LOS	E	A	A	F	B	B	E	A	E	E	A	E
Approach Vol, veh/h	2454			1026			59			121		
Approach Delay, s/veh	7.8			19.2			58.3			61.9		
Approach LOS	A			B			E			E		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.0	98.0		27.9	9.4	104.6		27.9				
Change Period (Y+Rc), s	4.5	5.3		5.0	4.5	5.3		5.0				
Max Green Setting (Gmax), s	13.5	92.7		39.0	11.5	94.7		39.0				
Max Q Clear Time (g_c+I), s	11.4	17.1		8.5	6.0	2.0		13.4				
Green Ext Time (p_c), s	0.1	43.2		0.1	0.0	91.5		0.2				
Intersection Summary												
HCM 6th Ctrl Delay	13.6											
HCM 6th LOS	B											

HCM Signalized Intersection Capacity Analysis
9: Oak Grove Rd & Ygnacio Valley Rd.

01/07/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↕↕↕		↔	↕↕	↕	↔	↕↕	↕	↔↔	↕↕	↕
Traffic Volume (vph)	290	1749	109	178	613	184	197	357	187	373	429	183
Future Volume (vph)	290	1749	109	178	613	184	197	357	187	373	429	183
Ideal Flow (vphpl)	1824	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	2.7		3.5	2.7	2.7	3.5	3.0	4.0	3.5	3.0	2.0
Lane Util. Factor	0.97	0.91		1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.85	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3296	5037		1770	3539	1562	1787	3574	1575	3467	3198	1573
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3296	5037		1770	3539	1562	1787	3574	1575	3467	3198	1573
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	296	1785	111	182	626	188	201	364	191	381	438	187
RTOR Reduction (vph)	0	4	0	0	0	120	0	0	123	0	0	0
Lane Group Flow (vph)	296	1892	0	182	626	68	201	364	68	381	438	187
Confl. Peds. (#/hr)				1			1			1		
Confl. Bikes (#/hr)	3						1			1		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Free
Protected Phases	1	6		5	2		3	8		7 15	4	
Permitted Phases				2			8			Free		
Actuated Green, G (s)	32.5	72.4		15.5	55.4	55.4	21.1	21.7	21.7	26.9	32.0	160.0
Effective Green, g (s)	33.5	74.7		16.5	57.7	57.7	22.1	23.7	22.7	28.9	34.0	160.0
Actuated g/C Ratio	0.21	0.47		0.10	0.36	0.36	0.14	0.15	0.14	0.18	0.21	1.00
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0		5.0	
Vehicle Extension (s)	3.0	6.0		4.0	6.0	6.0	2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)	690	2351		182	1276	563	246	529	223	626	679	1573
v/s Ratio Prot	0.09	c0.38		c0.10	0.18		c0.11	c0.10		0.11	c0.14	
v/s Ratio Perm						0.04			0.04			0.12
v/c Ratio	0.43	0.80		1.00	0.49	0.12	0.82	0.69	0.31	0.61	0.65	0.12
Uniform Delay, d1	54.9	36.4		71.8	39.7	34.2	67.0	64.6	61.6	60.3	57.5	0.0
Progression Factor	0.72	0.61		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	2.6		66.7	1.4	0.4	17.7	3.0	0.3	1.7	1.6	0.2
Delay (s)	39.9	24.8		138.5	41.1	34.6	84.7	67.6	61.9	62.0	59.1	0.2
Level of Service	D	C		F	D	C	F	E	E	E	E	A
Approach Delay (s)	26.8			57.7			70.7			49.2		
Approach LOS	C			E			E			D		
Intersection Summary												
HCM 2000 Control Delay	44.3			HCM 2000 Level of Service					D			
HCM 2000 Volume to Capacity ratio	0.82											
Actuated Cycle Length (s)	160.0			Sum of lost time (s)					16.2			
Intersection Capacity Utilization	87.4%			ICU Level of Service					E			
Analysis Period (min)	15											
c Critical Lane Group												

HCM 6th AWSC
1: N Wiget Ln & Mitchell Dr

04/01/2025

Intersection						
Intersection Delay, s/veh	20.7					
Intersection LOS	C					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	358	178	74	176	31	23
Future Vol, veh/h	358	178	74	176	31	23
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	407	202	84	200	35	26
Number of Lanes	1	0	1	0	0	1
Approach	WB	NB		SB		
Opposing Approach		SB		NB		
Opposing Lanes	0	1		1		
Conflicting Approach Left	NB			WB		
Conflicting Lanes Left	1	0		1		
Conflicting Approach Right	SB	WB				
Conflicting Lanes Right	1	1		0		
HCM Control Delay	25.9	11.9		9.9		
HCM LOS	D	B		A		
Lane	NBLn1	WBLn1	SBLn1			
Vol Left, %	0%	67%	57%			
Vol Thru, %	30%	0%	43%			
Vol Right, %	70%	33%	0%			
Sign Control	Stop	Stop	Stop			
Traffic Vol by Lane	250	536	54			
LT Vol	0	358	31			
Through Vol	74	0	23			
RT Vol	176	178	0			
Lane Flow Rate	284	609	61			
Geometry Grp	1	1	1			
Degree of Util (X)	0.411	0.82	0.104			
Departure Headway (Hd)	5.207	4.845	6.107			
Convergence, Y/N	Yes	Yes	Yes			
Cap	690	749	586			
Service Time	3.245	2.845	4.155			
HCM Lane V/C Ratio	0.412	0.813	0.104			
HCM Control Delay	11.9	25.9	9.9			
HCM Lane LOS	B	D	A			
HCM 95th-tile Q	2	8.9	0.3			

HCM 6th Signalized Intersection Summary
2: Oak Grove Rd & Mitchell Dr/Peachwillow Ln

01/07/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	170	17	78	90	57	80	153	430	167	40	518	429
Future Volume (veh/h)	170	17	78	90	57	80	153	430	167	40	518	429
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No		No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	185	0	47	92	58	51	156	439	112	41	529	294
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	563	0	243	141	89	196	196	1148	290	96	771	427
Arrive On Green	0.16	0.00	0.16	0.13	0.13	0.13	0.11	0.41	0.41	0.05	0.35	0.35
Sat Flow, veh/h	3563	0	1537	1113	702	1549	1781	2794	706	1781	2177	1206
Grp Volume(v), veh/h	185	0	47	150	0	51	156	278	273	41	432	391
Grp Sat Flow(s),veh/h/ln	1781	0	1537	1815	0	1549	1781	1777	1724	1781	1777	1606
Q Serve(g_s), s	3.5	0.0	2.0	5.9	0.0	2.2	6.4	8.2	8.3	1.7	15.5	15.6
Cycle Q Clear(g_c), s	3.5	0.0	2.0	5.9	0.0	2.2	6.4	8.2	8.3	1.7	15.5	15.6
Prop In Lane	1.00		1.00	0.61		1.00	1.00		0.41	1.00		0.75
Lane Grp Cap(c), veh/h	563	0	243	230	0	196	196	730	708	96	629	569
V/C Ratio(X)	0.33	0.00	0.19	0.65	0.00	0.26	0.80	0.38	0.39	0.43	0.69	0.69
Avail Cap(c_a), veh/h	2377	0	1026	799	0	682	713	1423	1380	713	1423	1286
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.0	0.0	27.4	31.1	0.0	29.5	32.5	15.4	15.5	34.3	20.6	20.7
Incr Delay (d2), s/veh	0.4	0.0	0.5	4.4	0.0	1.0	2.8	0.5	0.5	1.1	1.9	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	0.7	2.8	0.0	0.8	2.7	3.0	3.0	0.7	6.1	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.4	0.0	27.9	35.5	0.0	30.5	35.3	15.9	16.0	35.5	22.5	22.8
LnGrp LOS	C	A	C	D	A	C	D	B	B	D	C	C
Approach Vol, veh/h	232			201			707			864		
Approach Delay, s/veh	28.3			34.3			20.2			23.3		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	2		3	4		6	7		8			
Phs Duration (G+Y+Rc), s	14.1		12.7	31.5		16.5	8.5		35.8			
Change Period (Y+Rc), s	4.6		4.5	5.0		4.7	4.5		5.0			
Max Green Setting (Gmax), s	33.0		30.0	60.0		50.0	30.0		60.0			
Max Q Clear Time (g_c+I1), s	7.9		8.4	17.6		5.5	3.7		10.3			
Green Ext Time (p_c), s	1.5		0.2	8.9		1.1	0.0		5.3			

Intersection Summary	
HCM 6th Ctrl Delay	23.9
HCM 6th LOS	C
Notes	
User approved volume balancing among the lanes for turning movement.	

HCM 6th AWSC
3: N Wiget Ln & Shadelands Dr

04/01/2025

Intersection												
Intersection Delay, s/veh	37.4											
Intersection LOS	E											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	34	129	21	172	194	76	11	258	72	19	271	27
Future Vol, veh/h	34	129	21	172	194	76	11	258	72	19	271	27
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	137	22	183	206	81	12	274	77	20	288	29
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	17.9			57.4			30.7			28.2		
HCM LOS	C			F			D			D		
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	3%	18%	39%	6%								
Vol Thru, %	76%	70%	44%	85%								
Vol Right, %	21%	11%	17%	9%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	341	184	442	317								
LT Vol	11	34	172	19								
Through Vol	258	129	194	271								
RT Vol	72	21	76	27								
Lane Flow Rate	363	196	470	337								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.758	0.448	0.956	0.719								
Departure Headway (Hd)	7.524	8.241	7.323	7.677								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	479	435	498	469								
Service Time	5.601	6.332	5.323	5.757								
HCM Lane V/C Ratio	0.758	0.451	0.944	0.719								
HCM Control Delay	30.7	17.9	57.4	28.2								
HCM Lane LOS	D	C	F	D								
HCM 95th-tile Q	6.5	2.3	12	5.7								

HCM 6th TWSC
4: N Via Monte & Shadelands Dr

01/07/2025

Intersection												
Int Delay, s/veh	6.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Vol, veh/h	1	47	27	144	535	5	43	15	33	15	43	2
Future Vol, veh/h	1	47	27	144	535	5	43	15	33	15	43	2
Conflicting Peds, #/hr	0	0	13	31	0	0	13	0	31	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	100	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	93	93	93	93	90	93	90	93	90	90	90
Heavy Vehicles, %	1	2	2	2	2	1	2	1	2	1	1	1
Mvmt Flow	1	51	29	155	575	6	46	17	35	17	48	2
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	581	0	0	111	0	0	1025	990	128	1013	1001	591
Stage 1	-	-	-	-	-	-	99	99	-	888	888	-
Stage 2	-	-	-	-	-	-	926	891	-	125	113	-
Critical Hdwy	4.11	-	-	4.12	-	-	7.12	6.51	6.22	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.218	-	-	3.518	4.009	3.318	3.509	4.009	3.309
Pot Cap-1 Maneuver	998	-	-	1479	-	-	213	247	922	218	244	509
Stage 1	-	-	-	-	-	-	907	815	-	340	363	-
Stage 2	-	-	-	-	-	-	322	362	-	881	804	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	998	-	-	1441	-	-	147	202	875	168	200	503
Mov Cap-2 Maneuver	-	-	-	-	-	-	147	202	-	168	200	-
Stage 1	-	-	-	-	-	-	883	793	-	340	305	-
Stage 2	-	-	-	-	-	-	225	304	-	805	782	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			1.6			30.3			32.8		
HCM LOS							D			D		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	158	875	998	-	-	1441	-	-	195			
HCM Lane V/C Ratio	0.398	0.041	0.001	-	-	0.107	-	-	0.342			
HCM Control Delay (s)	42.1	9.3	8.6	0	-	7.8	0	-	32.8			
HCM Lane LOS	E	A	A	A	-	A	A	-	D			
HCM 95th %tile Q(veh)	1.7	0.1	0	-	-	0.4	-	-	1.4			

HCM Signalized Intersection Capacity Analysis
5: Oak Grove Rd & Shadelands Dr

01/07/2025

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	95	52	547	639	522	121
Future Volume (vph)	95	52	547	639	522	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1		4.5	5.0	5.0	
Lane Util. Factor	0.97		1.00	0.95	0.95	
Frpb, ped/bikes	0.99		1.00	1.00	0.99	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.95		1.00	1.00	0.97	
Flt Protected	0.97		0.95	1.00	1.00	
Satd. Flow (prot)	3276		1770	3539	3413	
Flt Permitted	0.97		0.95	1.00	1.00	
Satd. Flow (perm)	3276		1770	3539	3413	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	98	54	564	659	538	125
RTOR Reduction (vph)	49	0	0	0	12	0
Lane Group Flow (vph)	103	0	564	659	651	0
Confl. Peds. (#/hr)		5			7	
Confl. Bikes (#/hr)					4	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	6		3 11	8	4	
Permitted Phases						
Actuated Green, G (s)	11.4		47.1	108.5	52.4	
Effective Green, g (s)	11.4		47.1	108.5	52.4	
Actuated g/C Ratio	0.09		0.36	0.83	0.40	
Clearance Time (s)	5.1			5.0	5.0	
Vehicle Extension (s)	2.0			4.0	4.0	
Lane Grp Cap (vph)	287		641	2953	1375	
v/s Ratio Prot	c0.03		c0.32	0.19	c0.19	
v/s Ratio Perm						
v/c Ratio	0.36		0.88	0.22	0.47	
Uniform Delay, d1	55.9		38.8	2.2	28.6	
Progression Factor	1.00		1.00	0.22	1.00	
Incremental Delay, d2	0.3		10.6	0.1	1.2	
Delay (s)	56.1		49.5	0.6	29.8	
Level of Service	E		D	A	C	
Approach Delay (s)	56.1			23.2	29.8	
Approach LOS	E			C	C	
Intersection Summary						
HCM 2000 Control Delay			27.8		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.63			
Actuated Cycle Length (s)			130.0		Sum of lost time (s)	19.1
Intersection Capacity Utilization			73.1%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM 6th Signalized Intersection Summary
6: Oak Grove Rd & Citrus Ave

01/07/2025

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	381	40	1141	205	68	508
Future Volume (veh/h)	381	40	1141	205	68	508
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	410	17	1227	204	73	546
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	508	233	1756	290	102	2378
Arrive On Green	0.15	0.15	0.58	0.58	0.06	0.67
Sat Flow, veh/h	3456	1585	3134	502	1781	3647
Grp Volume(v), veh/h	410	17	713	718	73	546
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1766	1781	1777
Q Serve(g_s), s	14.9	1.2	36.8	37.6	5.2	7.8
Cycle Q Clear(g_c), s	14.9	1.2	36.8	37.6	5.2	7.8
Prop In Lane	1.00	1.00		0.28	1.00	
Lane Grp Cap(c), veh/h	508	233	1026	102	2378	
V/C Ratio(X)	0.81	0.07	0.70	0.70	0.72	0.23
Avail Cap(c_a), veh/h	891	408	1026	1020	158	2378
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.58	0.58	0.87	0.87
Uniform Delay (d), s/veh	53.6	47.8	19.4	19.5	60.3	8.4
Incr Delay (d2), s/veh	4.3	0.2	2.3	2.4	7.9	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.8	0.5	14.9	15.1	2.6	2.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	58.0	48.0	21.7	21.9	68.2	8.6
LnGrp LOS	E	D	C	C	E	A
Approach Vol, veh/h	427		1431			619
Approach Delay, s/veh	57.6		21.8			15.6
Approach LOS	E		C			B
Timer - Assigned Phs						
	2		4		7	8
Phs Duration (G+Y+Rc), s	23.6		92.0		11.9	80.1
Change Period (Y+Rc), s	4.5		5.0		4.5	5.0
Max Green Setting (Gmax), s	33.5		87.0		11.5	71.0
Max Q Clear Time (g_c+I), s	16.9		9.8		7.2	39.6
Green Ext Time (p_c), s	2.2		5.8		0.0	17.1
Intersection Summary						
HCM 6th Ctrl Delay			26.4			
HCM 6th LOS			C			

HCM 6th Signalized Intersection Summary
7: Wiget Ln/N Wiget Ln & Ygnacio Valley Rd.

01/07/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	276	743	96	63	1605	31	98	111	84	28	128	313
Future Volume (veh/h)	276	743	96	63	1605	31	98	111	84	28	128	313
Initial Q (Qb), veh	0	0	0	0	0	0	2	0	0	0	0	0
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	1969	1969	1969	1969	1969	1969	2000	2000	2000	2000	2000	2000
Adj Flow Rate, veh/h	285	766	85	65	1655	21	101	114	31	29	132	202
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, %	2	2	2	2	2	2	0	0	0	0	0	0
Cap, veh/h	364	2652	292	96	2754	806	191	384	319	229	384	319
Arrive On Green	0.20	1.00	1.00	0.05	0.49	0.49	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	3638	4912	542	1875	5611	1643	1061	2000	1661	1260	2000	1659
Grp Volume(v), veh/h	285	557	294	65	1655	21	101	114	31	29	132	202
Grp Sat Flow(s), veh/h/ln	1819	1792	1870	1875	1870	1643	1061	2000	1661	1260	2000	1659
Q Serve(g_s), s	11.1	0.0	0.0	5.1	32.0	1.0	13.7	7.4	2.3	3.0	8.6	16.9
Cycle Q Clear(g_c), s	11.1	0.0	0.0	5.1	32.0	1.0	22.3	7.4	2.3	10.4	8.6	16.9
Prop In Lane	1.00		0.29	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	364	1935	1010	96	2754	806	191	384	319	229	384	319
V/C Ratio(X)	0.78	0.29	0.29	0.68	0.60	0.03	0.53	0.30	0.10	0.13	0.34	0.63
Avail Cap(c_a), veh/h	618	1935	1010	131	2754	806	334	653	543	398	653	542
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)	0.99	0.99	0.99	0.90	0.90	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.4	0.0	0.0	70.0	27.6	19.7	62.5	52.0	49.9	56.4	52.5	55.8
Incr Delay (d2), s/veh	3.7	0.4	0.7	2.8	0.9	0.1	0.8	0.2	0.0	0.1	0.2	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	4.8	0.1	0.2	2.5	14.0	0.4	4.2	3.8	1.0	1.0	4.4	7.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	62.1	0.4	0.7	72.8	28.5	19.8	65.0	52.1	50.0	56.5	52.7	56.6
LnGrp LOS	E	A	A	E	C	B	E	D	D	E	D	E
Approach Vol, veh/h	1136			1741			246			363		
Approach Delay, s/veh	15.9			30.0			57.2			55.1		
Approach LOS	B			C			E			E		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	18.5	76.6		31.1	11.2	84.0		31.1				
Change Period (Y+Rc), s	4.5	5.3		5.0	4.5	5.3		5.0				
Max Green Setting (Gmax), s	24.5	63.7		47.0	9.5	78.7		47.0				
Max Q Clear Time (g_c+I1), s	13.1	34.0		24.3	7.1	2.0		18.9				
Green Ext Time (p_c), s	0.9	28.5		0.7	0.0	36.0		0.9				
Intersection Summary												
HCM 6th Ctrl Delay	30.0											
HCM 6th LOS	C											

HCM 6th Signalized Intersection Summary
8: S Via Monte/N Via Monte & Ygnacio Valley Rd.

01/07/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	98	692	28	42	1519	12	47	20	55	31	85	113
Future Volume (veh/h)	98	692	28	42	1519	12	47	20	55	31	85	113
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	0.98		0.95	0.98		0.94
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	1969	1969	1969	1890	1969	1969	2000	2000	2000	2000	2000	2000
Adj Flow Rate, veh/h	101	713	24	43	1566	9	48	21	18	32	88	79
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, %	2	2	2	2	2	2	0	0	0	0	0	0
Cap, veh/h	170	3185	107	68	3147	18	194	79	386	217	225	202
Arrive On Green	0.09	1.00	1.00	0.04	0.57	0.56	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	3638	5491	184	1800	5514	32	642	330	1617	1356	941	844
Grp Volume(v), veh/h	101	485	252	43	1018	557	69	0	18	32	0	167
Grp Sat Flow(s), veh/h/ln	1819	1870	1935	1800	1792	1963	972	0	1617	1356	0	1785
Q Serve(g_s), s	4.0	0.0	0.0	3.5	25.5	25.5	5.3	0.0	1.3	3.2	0.0	11.8
Cycle Q Clear(g_c), s	4.0	0.0	0.0	3.5	25.5	25.5	17.1	0.0	1.3	20.3	0.0	11.8
Prop In Lane	1.00		0.10	1.00		0.02	0.70		1.00	1.00		0.47
Lane Grp Cap(c), veh/h	170	2170	1122	68	2045	1120	273	0	386	217	0	426
V/C Ratio(X)	0.59	0.22	0.22	0.64	0.50	0.50	0.25	0.00	0.05	0.15	0.00	0.39
Avail Cap(c_a), veh/h	376	2170	1122	150	2045	1120	320	0	442	264	0	488
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)	0.98	0.98	0.98	0.76	0.76	0.76	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	66.6	0.0	0.0	71.2	19.3	19.3	52.8	0.0	43.9	58.8	0.0	47.9
Incr Delay (d2), s/veh	1.2	0.2	0.5	2.8	0.7	1.2	0.2	0.0	0.0	0.1	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(50%), veh/ln	1.8	0.1	0.1	1.7	10.3	11.5	2.3	0.0	0.5	1.1	0.0	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	67.8	0.2	0.5	74.0	20.0	20.5	52.9	0.0	44.0	59.0	0.0	48.2
LnGrp LOS	E	A	A	E	B	C	D	A	D	E	A	D
Approach Vol, veh/h	838			1618			87			199		
Approach Delay, s/veh	8.4			21.6			51.1			49.9		
Approach LOS	A			C			D			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.5	88.6		38.8	9.1	90.0		38.8				
Change Period (Y+Rc), s	4.5	5.3		5.0	4.5	5.3		5.0				
Max Green Setting (Gmax), s	14.5	81.7		39.0	11.5	84.7		39.0				
Max Q Clear Time (g_c+I1), s	6.0	27.5		19.1	5.5	2.0		22.3				
Green Ext Time (p_c), s	0.1	49.4		0.2	0.0	32.7		0.4				
Intersection Summary												
HCM 6th Ctrl Delay	20.6											
HCM 6th LOS	C											

HCM Signalized Intersection Capacity Analysis
9: Oak Grove Rd & Ygnacio Valley Rd.

01/07/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	152	436	61	248	1117	907	169	324	233	113	448	330
Future Volume (vph)	152	436	61	248	1117	907	169	324	233	113	448	330
Ideal Flow (vphpl)	1940	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Total Lost time (s)	3.5	2.7		3.5	2.7	2.7	3.5	3.0	4.0	3.5	3.0	2.0
Lane Util. Factor	0.97	0.91		1.00	0.97	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3505	5242		1863	3804	1641	1881	3762	1650	3650	3762	1659
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3505	5242		1863	3804	1641	1881	3762	1650	3650	3762	1659
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	158	454	64	258	1164	945	176	338	243	118	467	344
RTOR Reduction (vph)	0	11	0	0	0	282	0	0	154	0	0	0
Lane Group Flow (vph)	158	507	0	258	1164	663	176	338	89	118	467	344
Confl. Peds. (#/hr)			1			2			5			8
Confl. Bikes (#/hr)			5			1			1			
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Free
Protected Phases	1	6		5	13	2	3	8	7	4		
Permitted Phases						2			8			Free
Actuated Green, G (s)	12.1	41.5		28.6	62.5	62.5	18.4	44.2	44.2	12.2	38.0	150.0
Effective Green, g (s)	13.1	43.8		30.6	64.8	64.8	19.4	46.2	45.2	13.2	40.0	150.0
Actuated g/C Ratio	0.09	0.29		0.20	0.43	0.43	0.13	0.31	0.30	0.09	0.27	1.00
Clearance Time (s)	4.5	5.0			5.0	5.0	4.5	5.0	5.0	4.5	5.0	
Vehicle Extension (s)	3.0	6.0			6.0	6.0	2.0	2.0	2.0	3.0	2.0	
Lane Grp Cap (vph)	306	1530		380	1643	708	243	1158	497	321	1003	1659
v/s Ratio Prot	0.05	0.10		c0.14	0.31		c0.09	0.09		0.03	c0.12	
v/s Ratio Perm						c0.40			0.05			c0.21
v/c Ratio	0.52	0.33		0.68	0.71	0.94	0.72	0.29	0.18	0.37	0.47	0.21
Uniform Delay, d1	65.4	41.6		55.2	34.9	40.6	62.7	39.5	38.7	64.5	46.1	0.0
Progression Factor	1.12	1.24		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.5	0.6		5.2	2.6	21.4	8.7	0.6	0.8	0.7	1.6	0.3
Delay (s)	74.5	52.3		60.4	37.5	62.0	71.5	40.1	39.5	65.2	47.6	0.3
Level of Service	E	D		E	D	E	E	D	D	E	D	A
Approach Delay (s)	57.5			49.8			47.2			32.3		
Approach LOS	E			D			D			C		
Intersection Summary												
HCM 2000 Control Delay		47.0										D
HCM 2000 Volume to Capacity ratio		0.77										
Actuated Cycle Length (s)		150.0										16.2
Intersection Capacity Utilization		94.4%										F
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th Roundabout
1: N Wiget Ln & Mitchell Dr

06/19/2025

Intersection			
Intersection Delay, s/veh	6.9		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	609	284	61
Demand Flow Rate, veh/h	621	290	63
Vehicles Circulating, veh/h	86	36	415
Vehicles Exiting, veh/h	240	442	292
Ped Vol Crossing Leg, #/h	17	11	17
Ped Cap Adj	0.998	0.998	0.998
Approach Delay, s/veh	8.2	4.6	4.7
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	621	290	63
Cap Entry Lane, veh/h	1264	1330	904
Entry HV Adj Factor	0.981	0.980	0.976
Flow Entry, veh/h	609	284	61
Cap Entry, veh/h	1237	1302	880
V/C Ratio	0.492	0.218	0.070
Control Delay, s/veh	8.2	4.6	4.7
LOS	A	A	A
95th %tile Queue, veh	3	1	0

HCM 6th Roundabout
3: N Wiget Ln & Shadelands Dr

04/02/2025

Intersection				
Intersection Delay, s/veh	8.1			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	195	470	363	337
Demand Flow Rate, veh/h	199	480	370	344
Vehicles Circulating, veh/h	501	328	197	409
Vehicles Exiting, veh/h	252	239	503	399
Ped Vol Crossing Leg, #/h	2	2	2	2
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	7.0	9.6	6.5	8.4
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	199	480	370	344
Cap Entry Lane, veh/h	828	988	1129	909
Entry HV Adj Factor	0.981	0.979	0.980	0.980
Flow Entry, veh/h	195	470	363	337
Cap Entry, veh/h	812	966	1106	891
V/C Ratio	0.240	0.486	0.328	0.378
Control Delay, s/veh	7.0	9.6	6.5	8.4
LOS	A	A	A	A
95th %tile Queue, veh	1	3	1	2

HCM 6th Signalized Intersection Summary
3: N Wiget Ln & Shadelands Dr

04/02/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	34	129	21	172	194	76	11	258	72	19	271	27
Future Volume (veh/h)	34	129	21	172	194	76	11	258	72	19	271	27
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	36	137	22	183	206	81	12	274	77	20	288	29
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	192	570	81	349	319	108	118	425	116	128	494	48
Arrive On Green	0.41	0.41	0.41	0.41	0.41	0.41	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	158	1391	197	486	779	263	22	1373	376	47	1596	155
Grp Volume(v), veh/h	195	0	0	470	0	0	363	0	0	337	0	0
Grp Sat Flow(s),veh/h/ln	1746	0	0	1528	0	0	1771	0	0	1797	0	0
Q Serve(g_s), s	0.0	0.0	0.0	6.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.4	0.0	0.0	8.5	0.0	0.0	5.9	0.0	0.0	5.2	0.0	0.0
Prop In Lane	0.18		0.11	0.39		0.17	0.03		0.21	0.06		0.09
Lane Grp Cap(c), veh/h	843	0	0	776	0	0	659	0	0	670	0	0
V/C Ratio(X)	0.23	0.00	0.00	0.61	0.00	0.00	0.55	0.00	0.00	0.50	0.00	0.00
Avail Cap(c_a), veh/h	1538	0	0	1415	0	0	1540	0	0	1551	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	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.5	0.0	0.0	8.2	0.0	0.0	10.0	0.0	0.0	9.8	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.8	0.0	0.0	0.7	0.0	0.0	0.6	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(50%),veh/ln	0.6	0.0	0.0	1.9	0.0	0.0	1.7	0.0	0.0	1.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.7	0.0	0.0	9.0	0.0	0.0	10.7	0.0	0.0	10.4	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h	195			470			363			337		
Approach Delay, s/veh	6.7			9.0			10.7			10.4		
Approach LOS	A			A			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	15.1			18.4			15.1			18.4		
Change Period (Y+Rc), s	* 4.7			* 4.7			* 4.7			* 4.7		
Max Green Setting (Gmax), s	* 27			* 28			* 27			* 28		
Max Q Clear Time (g_c+I1), s	7.9			4.4			7.2			10.5		
Green Ext Time (p_c), s	2.2			1.1			2.0			3.0		

Intersection Summary	
HCM 6th Ctrl Delay	9.5
HCM 6th LOS	A
Notes	

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th AWSC
1: N Wiget Ln & Mitchell Dr

04/01/2025

Intersection						
Intersection Delay, s/veh	11.8					
Intersection LOS	B					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T		T	T
Traffic Vol, veh/h	197	32	30	301	175	73
Future Vol, veh/h	197	32	30	301	175	73
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	219	36	33	334	194	81
Number of Lanes	1	0	1	0	0	1
Approach	WB	NB		SB		
Opposing Approach		SB		NB		
Opposing Lanes	0	1		1		
Conflicting Approach Left	NB			WB		
Conflicting Lanes Left	1	0		1		
Conflicting Approach Right	SB	WB				
Conflicting Lanes Right	1	1		0		
HCM Control Delay	12.2	11.5		11.9		
HCM LOS	B	B		B		
Lane	NBLn1	WBLn1	SBLn1			
Vol Left, %	0%	86%	71%			
Vol Thru, %	9%	0%	29%			
Vol Right, %	91%	14%	0%			
Sign Control	Stop	Stop	Stop			
Traffic Vol by Lane	331	229	248			
LT Vol	0	197	175			
Through Vol	30	0	73			
RT Vol	301	32	0			
Lane Flow Rate	368	254	276			
Geometry Grp	1	1	1			
Degree of Util (X)	0.465	0.393	0.406			
Departure Headway (Hd)	4.556	5.566	5.307			
Convergence, Y/N	Yes	Yes	Yes			
Cap	794	646	681			
Service Time	2.563	3.596	3.318			
HCM Lane V/C Ratio	0.463	0.393	0.405			
HCM Control Delay	11.5	12.2	11.9			
HCM Lane LOS	B	B	B			
HCM 95th-tile Q	2.5	1.9	2			

HCM 6th Signalized Intersection Summary
2: Oak Grove Rd & Mitchell Dr/Peachwillow Ln

01/07/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	415	33	127	49	23	51	58	741	48	63	617	203	
Future Volume (veh/h)	415	33	127	49	23	51	58	741	48	63	617	203	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.95	1.00		0.98	1.00		0.97	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach	No			No			No			No			
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	
Adj Flow Rate, veh/h	471	0	55	53	25	21	62	797	48	68	663	188	
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, %	2	2	2	2	2	2	2	2	2	2	2	2	
Cap, veh/h	587	0	260	114	54	141	91	1813	109	93	1451	411	
Arrive On Green	0.16	0.00	0.16	0.09	0.09	0.09	0.05	0.53	0.53	0.05	0.53	0.53	
Sat Flow, veh/h	3563	0	1579	1229	580	1510	1781	3400	205	1781	2715	769	
Grp Volume(v), veh/h	471	0	55	78	0	21	62	416	429	68	434	417	
Grp Sat Flow(s),veh/h/ln	1781	0	1579	1809	0	1510	1781	1777	1828	1781	1777	1707	
Q Serve(g_s), s	15.3	0.0	3.6	4.9	0.0	1.5	4.1	17.1	17.2	4.5	18.0	18.1	
Cycle Q Clear(g_c), s	15.3	0.0	3.6	4.9	0.0	1.5	4.1	17.1	17.2	4.5	18.0	18.1	
Prop In Lane	1.00		1.00	0.68		1.00	1.00		0.11	1.00		0.45	
Lane Grp Cap(c), veh/h	587	0	260	168	0	141	91	947	975	93	950	913	
V/C Ratio(X)	0.80	0.00	0.21	0.46	0.00	0.15	0.68	0.44	0.44	0.73	0.46	0.46	
Avail Cap(c_a), veh/h	929	0	412	458	0	383	186	947	975	186	950	913	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.88	0.88	0.88	1.00	1.00	1.00	
Uniform Delay (d), s/veh	48.2	0.0	43.4	51.6	0.0	50.0	56.0	17.1	17.1	56.0	17.2	17.2	
Incr Delay (d2), s/veh	3.3	0.0	0.5	2.8	0.0	0.7	3.0	1.3	1.3	4.1	1.6	1.6	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	7.0	0.0	1.4	2.4	0.0	0.6	1.9	7.0	7.2	2.1	7.4	7.1	
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh	51.5	0.0	43.9	54.4	0.0	50.7	58.9	18.4	18.3	60.1	18.8	18.9	
LnGrp LOS	D	A	D	D	A	D	E	B	B	E	B	B	
Approach Vol, veh/h	526			99			907			919			
Approach Delay, s/veh	50.7			53.6			21.1			21.9			
Approach LOS	D			D			C			C			
Timer - Assigned Phs	2	3	4	6		7	8						
Phs Duration (G+Y+Rc), s	15.8	10.6	69.1	24.5		10.8	69.0						
Change Period (Y+Rc), s	4.6	4.5	5.0	4.7		4.5	5.0						
Max Green Setting (Gmax), s	30.4	12.5	27.0	31.3		12.5	27.0						
Max Q Clear Time (g_c+I1), s	6.9	6.1	20.1	17.3		6.5	19.2						
Green Ext Time (p_c), s	0.6	0.0	3.6	2.1		0.0	3.9						
Intersection Summary													
HCM 6th Ctrl Delay	29.1												
HCM 6th LOS	C												
Notes													
User approved pedestrian interval to be less than phase max green.													
User approved volume balancing among the lanes for turning movement.													

HCM 6th AWSC
3: N Wiget Ln & Shadelands Dr

04/01/2025

Intersection												
Intersection Delay, s/veh	32.3											
Intersection LOS	D											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	35	197	39	184	68	25	13	200	102	55	295	20
Future Vol, veh/h	35	197	39	184	68	25	13	200	102	55	295	20
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	39	219	43	204	76	28	14	222	113	61	328	22
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	25.8			27.4			29.6			42.9		
HCM LOS	D			D			D			E		
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	4%	13%	66%	15%								
Vol Thru, %	63%	73%	25%	80%								
Vol Right, %	32%	14%	9%	5%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	315	271	277	370								
LT Vol	13	35	184	55								
Through Vol	200	197	68	295								
RT Vol	102	39	25	20								
Lane Flow Rate	350	301	308	411								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.741	0.667	0.69	0.866								
Departure Headway (Hd)	7.619	7.976	8.073	7.58								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	473	452	446	477								
Service Time	5.7	6.061	6.156	5.657								
HCM Lane V/C Ratio	0.74	0.666	0.691	0.862								
HCM Control Delay	29.6	25.8	27.4	42.9								
HCM Lane LOS	D	D	D	E								
HCM 95th-tile Q	6.1	4.8	5.1	9								

HCM 6th TWSC
4: N Via Monte & Shadelands Dr

01/07/2025

Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	358	33	27	142	14	33	40	68	10	28	2
Future Vol, veh/h	2	358	33	27	142	14	33	40	68	10	28	2
Conflicting Peds, #/hr	0	0	7	11	0	0	7	0	11	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	100	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	85	85	85	85	90	85	90	85	90	90	90
Heavy Vehicles, %	1	2	2	2	2	1	2	1	2	1	1	1
Mvmt Flow	2	421	39	32	167	16	39	44	80	11	31	2
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	183	0	0	471	0	0	719	703	463	757	714	182
Stage 1	-	-	-	-	-	-	456	456	-	239	239	-
Stage 2	-	-	-	-	-	-	263	247	-	518	475	-
Critical Hdwy	4.11	-	-	4.12	-	-	7.12	6.51	6.22	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.218	-	-	3.518	4.009	3.318	3.509	4.009	3.309
Pot Cap-1 Maneuver	1398	-	-	1091	-	-	344	363	599	325	358	863
Stage 1	-	-	-	-	-	-	584	570	-	767	709	-
Stage 2	-	-	-	-	-	-	742	704	-	542	559	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1398	-	-	1081	-	-	306	347	588	244	342	858
Mov Cap-2 Maneuver	-	-	-	-	-	-	306	347	-	244	342	-
Stage 1	-	-	-	-	-	-	578	564	-	765	686	-
Stage 2	-	-	-	-	-	-	679	681	-	427	553	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1.2			16			18.1		
HCM LOS							C			C		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	327	588	1398	-	-	1081	-	-	320			
HCM Lane V/C Ratio	0.255	0.136	0.002	-	-	0.029	-	-	0.139			
HCM Control Delay (s)	19.7	12.1	7.6	0	-	8.4	0	-	18.1			
HCM Lane LOS	C	B	A	A	-	A	A	-	C			
HCM 95th %tile Q(veh)	1	0.5	0	-	-	0.1	-	-	0.5			

HCM 6th Signalized Intersection Summary
5: Oak Grove Rd & Shadelands Dr

01/07/2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	240	227	102	636	660	122
Future Volume (veh/h)	240	227	102	636	660	122
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No	No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	202	205	106	662	688	121
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	265	235	132	2727	1972	347
Arrive On Green	0.15	0.15	0.07	0.77	0.66	0.66
Sat Flow, veh/h	1781	1585	1781	3647	3101	528
Grp Volume(v), veh/h	202	205	106	662	406	403
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1777	1777	1759
Q Serve(g_s), s	13.1	15.2	7.0	6.4	12.2	12.3
Cycle Q Clear(g_c), s	13.1	15.2	7.0	6.4	12.2	12.3
Prop In Lane	1.00	1.00	1.00			0.30
Lane Grp Cap(c), veh/h	265	235	132	2727	1165	1154
V/C Ratio(X)	0.76	0.87	0.80	0.24	0.35	0.35
Avail Cap(c_a), veh/h	667	593	230	2727	1165	1154
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.94	0.94	0.84	0.84
Uniform Delay (d), s/veh	49.1	50.0	54.7	4.0	9.2	9.2
Incr Delay (d2), s/veh	1.7	3.9	10.2	0.2	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	6.3	3.5	1.9	4.5	4.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	50.8	53.8	65.0	4.2	9.9	9.9
LnGrp LOS	D	D	E	A	A	A
Approach Vol, veh/h	407			768	809	
Approach Delay, s/veh	52.3			12.6	9.9	
Approach LOS	D			B	A	
Timer - Assigned Phs			3	4	6	8
Phs Duration (G+Y+Rc), s			13.4	83.7	22.9	97.1
Change Period (Y+Rc), s			4.5	5.0	5.1	5.0
Max Green Setting (Gmax), s			15.5	45.0	44.9	65.0
Max Q Clear Time (g_c+I1), s			9.0	14.3	17.2	8.4
Green Ext Time (p_c), s			0.1	7.9	0.6	7.3
Intersection Summary						
HCM 6th Ctrl Delay			19.6			
HCM 6th LOS			B			
Notes						
User approved pedestrian interval to be less than phase max green.						
User approved volume balancing among the lanes for turning movement.						

HCM 6th Signalized Intersection Summary
6: Oak Grove Rd & Citrus Ave

01/07/2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	235	73	653	172	82	796
Future Volume (veh/h)	235	73	653	172	82	796
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	240	22	666	170	84	812
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	332	152	2021	515	112	2931
Arrive On Green	0.10	0.10	0.72	0.72	0.13	1.00
Sat Flow, veh/h	3456	1585	2882	711	1781	3647
Grp Volume(v), veh/h	240	22	424	412	84	812
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1723	1781	1777
Q Serve(g_s), s	8.1	1.5	10.4	10.4	5.5	0.0
Cycle Q Clear(g_c), s	8.1	1.5	10.4	10.4	5.5	0.0
Prop In Lane	1.00	1.00		0.41	1.00	
Lane Grp Cap(c), veh/h	332	152	1288	1249	112	2931
V/C Ratio(X)	0.72	0.14	0.33	0.33	0.75	0.28
Avail Cap(c_a), veh/h	994	456	1288	1249	230	2931
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.84	0.84	0.94	0.94
Uniform Delay (d), s/veh	52.7	49.7	6.0	6.0	51.6	0.0
Incr Delay (d2), s/veh	4.2	0.6	0.6	0.6	9.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.6	3.5	3.4	2.6	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	56.9	50.3	6.5	6.6	60.8	0.2
LnGrp LOS	E	D	A	A	E	A
Approach Vol, veh/h	262		836			896
Approach Delay, s/veh	56.4		6.6			5.9
Approach LOS	E		A			A
Timer - Assigned Phs		2		4		7 8
Phs Duration (G+Y+Rc), s		16.0		104.0		12.0 92.0
Change Period (Y+Rc), s		4.5		5.0		4.5 5.0
Max Green Setting (Gmax), s		34.5		76.0		15.5 56.0
Max Q Clear Time (g_c+I1), s		10.1		2.0		7.5 12.4
Green Ext Time (p_c), s		1.4		9.8		0.1 8.9
Intersection Summary						
HCM 6th Ctrl Delay			12.8			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary
7: Wiget Lane/N Wiget Lane & Ygnacio Valley Rd.

01/07/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						  	
Traffic Volume (veh/h)	220	2179	82	46	952	36	53	68	61	107	79	402
Future Volume (veh/h)	220	2179	82	46	952	36	53	68	61	107	79	402
Initial Q (Qb), veh	0	0	0	0	0	0	2	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	0.99		0.97	0.99		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	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	229	2270	81	48	992	20	55	71	24	111	82	177
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	0	0	0	0	0	0
Cap, veh/h	293	3098	110	73	2929	897	198	328	270	229	328	271
Arrive On Green	0.17	1.00	1.00	0.04	0.57	0.57	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	3456	5058	180	1781	5106	1563	1131	1900	1568	1310	1900	1572
Grp Volume(v), veh/h	229	1524	827	48	992	20	55	71	24	111	82	177
Grp Sat Flow(s),veh/h/ln	1728	1702	1834	1781	1702	1563	1131	1900	1568	1310	1900	1572
Q Serve(g_s), s	10.2	0.0	0.0	4.3	16.5	0.9	7.1	5.2	2.1	12.8	6.0	16.9
Cycle Q Clear(g_c), s	10.2	0.0	0.0	4.3	16.5	0.9	13.1	5.2	2.1	17.9	6.0	16.9
Prop In Lane	1.00		0.10	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	293	2085	1123	73	2929	897	198	328	270	229	328	271
V/C Ratio(X)	0.78	0.73	0.74	0.66	0.34	0.02	0.28	0.22	0.09	0.49	0.25	0.65
Avail Cap(c_a), veh/h	400	2085	1123	128	2929	897	292	487	402	339	487	403
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)	0.85	0.85	0.85	0.97	0.97	0.97	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.0	0.0	0.0	75.6	18.1	14.7	63.4	56.9	55.7	64.6	57.3	61.8
Incr Delay (d2), s/veh	5.9	2.0	3.7	3.7	0.3	0.0	0.3	0.1	0.1	0.6	0.1	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	0.6	1.2	2.0	6.4	0.3	2.5	2.5	0.8	4.3	2.9	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.9	2.0	3.7	79.3	18.4	14.8	64.7	57.1	55.7	65.2	57.4	62.8
LnGrp LOS	E	A	A	E	B	B	E	E	E	E	E	E
Approach Vol, veh/h	2580			1060			150			370		
Approach Delay, s/veh	8.6			21.1			59.6			62.3		
Approach LOS	A			C			E			E		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	17.1	94.8		30.1	10.8	101.0		30.1				
Change Period (Y+Rc), s	4.5	5.3		5.0	5.3	* 5.3		5.0				
Max Green Setting (G_max), s	17.5	88.7		39.0	10.5	* 96		39.0				
Max Q Clear Time (g_c+I1), s	12.2	18.5		15.1	6.3	2.0		19.9				
Green Ext Time (p_c), s	0.4	42.6		0.4	0.0	92.6		0.9				
Intersection Summary												
HCM 6th Ctrl Delay	18.4											
HCM 6th LOS	B											
Notes												

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
8: S Via Monte/N Via Monte & Ygnacio Valley Rd.

01/07/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	200	2126	25	37	933	26	16	27	20	44	26	88
Future Volume (veh/h)	200	2126	25	37	933	26	16	27	20	44	26	88
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	0.98		0.97	0.98		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	1870	1870	1870	1627	1870	1870	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	211	2238	26	39	982	26	17	28	14	46	27	48
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, %	2	2	2	2	2	2	0	0	0	0	0	0
Cap, veh/h	270	3303	38	57	3036	80	102	157	242	202	93	166
Arrive On Green	0.16	1.00	1.00	0.04	0.59	0.59	0.16	0.16	0.16	0.16	0.16	0.16
Sat Flow, veh/h	3456	5203	60	1550	5113	135	459	1006	1556	1364	599	1064
Grp Volume(v), veh/h	211	1463	801	39	654	354	45	0	14	46	0	75
Grp Sat Flow(s), veh/h/ln	1728	1702	1859	1550	1702	1844	1465	0	1556	1364	0	1663
Q Serve(g_s), s	9.4	0.0	0.0	4.0	15.4	15.5	0.1	0.0	1.2	4.9	0.0	6.4
Cycle Q Clear(g_c), s	9.4	0.0	0.0	4.0	15.4	15.5	6.5	0.0	1.2	11.4	0.0	6.4
Prop In Lane	1.00		0.03	1.00		0.07	0.38		1.00	1.00		0.64
Lane Grp Cap(c), veh/h	270	2161	1180	57	2021	1095	259	0	242	202	0	259
V/C Ratio(X)	0.78	0.68	0.68	0.68	0.32	0.32	0.17	0.00	0.06	0.23	0.00	0.29
Avail Cap(c_a), veh/h	313	2161	1180	121	2021	1095	423	0	399	339	0	426
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)	0.74	0.74	0.74	0.87	0.87	0.87	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	66.2	0.0	0.0	76.1	16.3	16.4	58.5	0.0	57.6	64.8	0.0	59.7
Incr Delay (d2), s/veh	6.6	1.3	2.3	4.5	0.4	0.7	0.1	0.0	0.0	0.2	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(50%), veh/ln	4.1	0.4	0.8	1.6	6.0	6.6	1.6	0.0	0.5	1.7	0.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	72.8	1.3	2.3	80.6	16.7	17.1	58.6	0.0	57.6	65.0	0.0	60.0
LnGrp LOS	E	A	A	F	B	B	E	A	E	E	A	E
Approach Vol, veh/h	2475			1047			59			121		
Approach Delay, s/veh	7.7			19.2			58.3			61.9		
Approach LOS	A			B			E			E		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.0	98.0		27.9	9.4	104.6		27.9				
Change Period (Y+Rc), s	4.5	5.3		5.0	4.5	5.3		5.0				
Max Green Setting (Gmax), s	13.5	92.7		39.0	11.5	94.7		39.0				
Max Q Clear Time (g_c+I1), s	11.4	17.5		8.5	6.0	2.0		13.4				
Green Ext Time (p_c), s	0.1	44.2		0.1	0.0	91.6		0.2				
Intersection Summary												
HCM 6th Ctrl Delay	13.5											
HCM 6th LOS	B											

HCM Signalized Intersection Capacity Analysis
9: Oak Grove Rd & Ygnacio Valley Rd.

01/07/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	303	1756	109	178	618	210	197	371	187	401	445	198
Future Volume (vph)	303	1756	109	178	618	210	197	371	187	401	445	198
Ideal Flow (vphpl)	1824	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	2.7		3.5	2.7	2.7	3.5	3.0	4.0	3.5	3.0	2.0
Lane Util. Factor	0.97	0.91		1.00	0.95	1.00	1.00	0.95	1.00	0.97	*0.85	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3296	5037		1770	3539	1562	1787	3574	1575	3467	3198	1573
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3296	5037		1770	3539	1562	1787	3574	1575	3467	3198	1573
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	309	1792	111	182	631	214	201	379	191	409	454	202
RTOR Reduction (vph)	0	4	0	0	0	137	0	0	122	0	0	0
Lane Group Flow (vph)	309	1899	0	182	631	77	201	379	69	409	454	202
Confl. Peds. (#/hr)						1			1			14
Confl. Bikes (#/hr)			3						1			1
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Free
Protected Phases	1	6		5	2		3	8		7	15	4
Permitted Phases						2			8			Free
Actuated Green, G (s)	32.5	71.9		15.5	54.9	54.9	21.1	22.2	22.2	26.9	32.5	160.0
Effective Green, g (s)	33.5	74.2		16.5	57.2	57.2	22.1	24.2	23.2	28.9	34.5	160.0
Actuated g/C Ratio	0.21	0.46		0.10	0.36	0.36	0.14	0.15	0.14	0.18	0.22	1.00
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	6.0		4.0	6.0	6.0	2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	690	2335		182	1265	558	246	540	228	626	689	1573
v/s Ratio Prot	0.09	c0.38		c0.10	0.18		c0.11	c0.11		0.12	c0.14	
v/s Ratio Perm					0.05				0.04			0.13
v/c Ratio	0.45	0.81		1.00	0.50	0.14	0.82	0.70	0.30	0.65	0.66	0.13
Uniform Delay, d1	55.2	36.9		71.8	40.2	34.7	67.0	64.5	61.2	60.9	57.4	0.0
Progression Factor	0.72	0.62		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	2.7		66.7	1.4	0.5	17.7	3.4	0.3	2.5	1.7	0.2
Delay (s)	40.2	25.5		138.5	41.6	35.2	84.7	67.8	61.4	63.4	59.1	0.2
Level of Service	D	C		F	D	D	F	E	E	E	E	A
Approach Delay (s)		27.5			57.4			70.6			49.6	
Approach LOS		C			E			E			D	
Intersection Summary												
HCM 2000 Control Delay		44.8										D
HCM 2000 Volume to Capacity ratio		0.83										
Actuated Cycle Length (s)		160.0										16.2
Intersection Capacity Utilization		87.8%										E
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th Roundabout
1: N Wiget Ln & Mitchell Dr

06/19/2025

Intersection			
Intersection Delay, s/veh	5.7		
Intersection LOS	A		
Approach			
	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	255	367	275
Demand Flow Rate, veh/h	260	375	281
Vehicles Circulating, veh/h	34	198	223
Vehicles Exiting, veh/h	539	306	71
Ped Vol Crossing Leg, #/h	1	1	1
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.4	6.5	5.8
Approach LOS	A	A	A
Lane			
	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	260	375	281
Cap Entry Lane, veh/h	1333	1128	1099
Entry HV Adj Factor	0.981	0.980	0.980
Flow Entry, veh/h	255	367	275
Cap Entry, veh/h	1307	1104	1077
V/C Ratio	0.195	0.333	0.256
Control Delay, s/veh	4.4	6.5	5.8
LOS	A	A	A
95th %tile Queue, veh	1	1	1

HCM 6th Roundabout
3: N Wiget Ln & Shadelands Dr

04/02/2025

Intersection				
Intersection Delay, s/veh	8.2			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	301	308	349	411
Demand Flow Rate, veh/h	307	315	355	419
Vehicles Circulating, veh/h	605	280	325	300
Vehicles Exiting, veh/h	114	400	587	295
Ped Vol Crossing Leg, #/h	0	4	4	4
Ped Cap Adj	1.000	0.999	0.999	0.999
Approach Delay, s/veh	10.4	6.6	7.6	8.2
Approach LOS	B	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	307	315	355	419
Cap Entry Lane, veh/h	744	1037	991	1016
Entry HV Adj Factor	0.979	0.979	0.982	0.982
Flow Entry, veh/h	301	308	349	411
Cap Entry, veh/h	729	1015	972	997
V/C Ratio	0.412	0.304	0.359	0.413
Control Delay, s/veh	10.4	6.6	7.6	8.2
LOS	B	A	A	A
95th %tile Queue, veh	2	1	2	2

HCM 6th Signalized Intersection Summary
3: N Wiget Ln & Shadelands Dr

04/02/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	35	197	39	184	68	25	13	200	102	55	295	20
Future Volume (veh/h)	35	197	39	184	68	25	13	200	102	55	295	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.97	1.00		0.99
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	39	219	43	204	76	28	14	222	113	61	328	22
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	183	416	76	487	142	42	143	418	205	202	548	34
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	128	1387	253	914	472	139	26	1142	560	152	1497	93
Grp Volume(v), veh/h	301	0	0	308	0	0	349	0	0	411	0	0
Grp Sat Flow(s),veh/h/ln	1768	0	0	1525	0	0	1728	0	0	1742	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0
Cycle Q Clear(g_c), s	3.9	0.0	0.0	4.1	0.0	0.0	4.5	0.0	0.0	5.2	0.0	0.0
Prop In Lane	0.13		0.14	0.66		0.09	0.04		0.32	0.15		0.05
Lane Grp Cap(c), veh/h	675	0	0	670	0	0	766	0	0	785	0	0
V/C Ratio(X)	0.45	0.00	0.00	0.46	0.00	0.00	0.46	0.00	0.00	0.52	0.00	0.00
Avail Cap(c_a), veh/h	1885	0	0	1568	0	0	1788	0	0	1784	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	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.3	0.0	0.0	8.3	0.0	0.0	7.1	0.0	0.0	7.3	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.5	0.0	0.0	0.4	0.0	0.0	0.5	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(50%),veh/ln	1.0	0.0	0.0	1.1	0.0	0.0	1.0	0.0	0.0	1.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.7	0.0	0.0	8.8	0.0	0.0	7.5	0.0	0.0	7.8	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h	301			308			349			411		
Approach Delay, s/veh	8.7			8.8			7.5			7.8		
Approach LOS	A			A			A			A		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	15.0			13.2			15.0			13.2		
Change Period (Y+Rc), s	* 4.7			* 4.7			* 4.7			* 4.7		
Max Green Setting (Gmax), s	* 27			* 28			* 27			* 28		
Max Q Clear Time (g_c+I1), s	6.5			5.9			7.2			6.1		
Green Ext Time (p_c), s	2.2			1.8			2.6			2.1		

Intersection Summary	
HCM 6th Ctrl Delay	8.2
HCM 6th LOS	A
Notes	

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th AWSC
1: N Wiget Ln & Mitchell Dr

04/01/2025

Intersection						
Intersection Delay, s/veh	15.8					
Intersection LOS	C					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		W		W	W
Traffic Vol, veh/h	371	185	77	184	32	24
Future Vol, veh/h	371	185	77	184	32	24
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	371	185	77	184	32	24
Number of Lanes	1	0	1	0	0	1
Approach	WB	NB		SB		
Opposing Approach		SB		NB		
Opposing Lanes	0	1		1		
Conflicting Approach Left	NB			WB		
Conflicting Lanes Left	1	0		1		
Conflicting Approach Right	SB	WB				
Conflicting Lanes Right	1	1		0		
HCM Control Delay	18.8	10.8		9.5		
HCM LOS	C	B		A		
Lane	NBLn1	WBLn1	SBLn1			
Vol Left, %	0%	67%	57%			
Vol Thru, %	30%	0%	43%			
Vol Right, %	70%	33%	0%			
Sign Control	Stop	Stop	Stop			
Traffic Vol by Lane	261	556	56			
LT Vol	0	371	32			
Through Vol	77	0	24			
RT Vol	184	185	0			
Lane Flow Rate	261	556	56			
Geometry Grp	1	1	1			
Degree of Util (X)	0.358	0.718	0.091			
Departure Headway (Hd)	4.941	4.652	5.875			
Convergence, Y/N	Yes	Yes	Yes			
Cap	720	773	614			
Service Time	3.025	2.722	3.875			
HCM Lane V/C Ratio	0.362	0.719	0.091			
HCM Control Delay	10.8	18.8	9.5			
HCM Lane LOS	B	C	A			
HCM 95th-tile Q	1.6	6.2	0.3			

HCM 6th Signalized Intersection Summary
2: Oak Grove Rd & Mitchell Dr/Peachwillow Ln

01/13/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	177	18	81	94	60	83	162	449	174	42	544	448
Future Volume (veh/h)	177	18	81	94	60	83	162	449	174	42	544	448
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	190	0	49	94	60	53	162	449	117	42	544	307
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	549	0	237	142	91	199	202	1170	302	96	781	440
Arrive On Green	0.15	0.00	0.15	0.13	0.13	0.13	0.11	0.42	0.42	0.05	0.36	0.36
Sat Flow, veh/h	3563	0	1537	1108	707	1549	1781	2780	718	1781	2162	1218
Grp Volume(v), veh/h	190	0	49	154	0	53	162	286	280	42	467	404
Grp Sat Flow(s),veh/h/ln	1781	0	1537	1815	0	1549	1781	1777	1721	1781	1777	1604
Q Serve(g_s), s	3.7	0.0	2.2	6.3	0.0	2.4	6.9	8.6	8.7	1.8	16.6	16.7
Cycle Q Clear(g_c), s	3.7	0.0	2.2	6.3	0.0	2.4	6.9	8.6	8.7	1.8	16.6	16.7
Prop In Lane	1.00		1.00	0.61		1.00	1.00		0.42	1.00		0.76
Lane Grp Cap(c), veh/h	549	0	237	233	0	199	202	748	724	96	642	579
V/C Ratio(X)	0.35	0.00	0.21	0.66	0.00	0.27	0.80	0.38	0.39	0.44	0.70	0.70
Avail Cap(c_a), veh/h	2302	0	993	774	0	661	691	1378	1335	691	1378	1244
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.2	0.0	28.6	32.1	0.0	30.4	33.5	15.5	15.5	35.5	21.1	21.1
Incr Delay (d2), s/veh	0.5	0.0	0.5	4.5	0.0	1.0	2.8	0.5	0.5	1.2	2.0	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	0.8	3.0	0.0	0.9	3.0	3.2	3.2	0.8	6.5	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.7	0.0	29.1	36.6	0.0	31.4	36.3	15.9	16.0	36.6	23.0	23.3
LnGrp LOS	C	A	C	D	A	C	D	B	B	D	C	C
Approach Vol, veh/h	239			207			728			893		
Approach Delay, s/veh	29.6			35.3			20.5			23.8		
Approach LOS	C			D			C			C		
Timer - Assigned Phs	2		3		4		6		7		8	
Phs Duration (G+Y+Rc), s	14.5		13.3		32.9		16.6		8.7		37.6	
Change Period (Y+Rc), s	4.6		4.5		5.0		4.7		4.5		5.0	
Max Green Setting (Gmax), s	33.0		30.0		60.0		50.0		30.0		60.0	
Max Q Clear Time (g_c+I1), s	8.3		8.9		18.7		5.7		3.8		10.7	
Green Ext Time (p_c), s	1.5		0.2		9.3		1.1		0.0		5.4	

Intersection Summary												
HCM 6th Ctrl Delay	24.4											
HCM 6th LOS	C											

Notes
User approved volume balancing among the lanes for turning movement.

HCM 6th AWSC
3: N Wiget Ln & Shadelands Dr

04/01/2025

Intersection												
Intersection Delay, s/veh	31.6											
Intersection LOS	D											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	35	134	22	179	202	79	11	269	77	20	280	28
Future Vol, veh/h	35	134	22	179	202	79	11	269	77	20	280	28
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	35	134	22	179	202	79	11	269	77	20	280	28
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	16.8			45.5			27.5			25.2		
HCM LOS	C			E			D			D		
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	3%	18%	39%	6%								
Vol Thru, %	75%	70%	44%	85%								
Vol Right, %	22%	12%	17%	9%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	357	191	460	328								
LT Vol	11	35	179	20								
Through Vol	269	134	202	280								
RT Vol	77	22	79	28								
Lane Flow Rate	357	191	460	328								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.727	0.424	0.897	0.683								
Departure Headway (Hd)	7.328	7.998	7.145	7.493								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	496	451	511	485								
Service Time	5.346	6.048	5.145	5.511								
HCM Lane V/C Ratio	0.72	0.424	0.9	0.676								
HCM Control Delay	27.5	16.8	45.5	25.2								
HCM Lane LOS	D	C	E	D								
HCM 95th-tile Q	5.9	2.1	10.2	5.1								

HCM 6th TWSC
4: N Via Monte & Shadelands Dr

01/13/2025

Intersection												
Int Delay, s/veh	5.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	51	28	150	557	5	45	15	35	15	43	2
Future Vol, veh/h	1	51	28	150	557	5	45	15	35	15	43	2
Conflicting Peds, #/hr	0	0	13	31	0	0	13	0	31	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	100	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	1	2	2	2	2	1	2	1	2	1	1	1
Mvmt Flow	1	51	28	150	557	5	45	15	35	15	43	2
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	562	0	0	110	0	0	993	960	127	983	972	573
Stage 1	-	-	-	-	-	-	98	98	-	860	860	-
Stage 2	-	-	-	-	-	-	895	862	-	123	112	-
Critical Hdwy	4.11	-	-	4.12	-	-	7.12	6.51	6.22	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.218	-	-	3.518	4.009	3.318	3.509	4.009	3.309
Pot Cap-1 Maneuver	1014	-	-	1480	-	-	224	258	923	229	253	521
Stage 1	-	-	-	-	-	-	908	816	-	352	374	-
Stage 2	-	-	-	-	-	-	335	373	-	884	805	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1014	-	-	1442	-	-	161	213	876	179	209	515
Mov Cap-2 Maneuver	-	-	-	-	-	-	161	213	-	179	209	-
Stage 1	-	-	-	-	-	-	883	794	-	352	318	-
Stage 2	-	-	-	-	-	-	242	317	-	810	783	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			1.6			26.8			29.8		
HCM LOS							D			D		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	171	876	1014	-	-	1442	-	-	204			
HCM Lane V/C Ratio	0.351	0.04	0.001	-	-	0.104	-	-	0.294			
HCM Control Delay (s)	37	9.3	8.6	0	-	7.8	0	-	29.8			
HCM Lane LOS	E	A	A	A	-	A	A	-	D			
HCM 95th %tile Q(veh)	1.5	0.1	0	-	-	0.3	-	-	1.2			

HCM Signalized Intersection Capacity Analysis
5: Oak Grove Rd & Shadelands Dr

01/13/2025

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰↱		↰	↱↲	↱↲	
Traffic Volume (vph)	99	54	572	670	546	128
Future Volume (vph)	99	54	572	670	546	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1		4.5	5.0	5.0	
Lane Util. Factor	0.97		1.00	0.95	0.95	
Frpb, ped/bikes	0.99		1.00	1.00	0.99	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.95		1.00	1.00	0.97	
Flt Protected	0.97		0.95	1.00	1.00	
Satd. Flow (prot)	3277		1770	3539	3412	
Flt Permitted	0.97		0.95	1.00	1.00	
Satd. Flow (perm)	3277		1770	3539	3412	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	99	54	572	670	546	128
RTOR Reduction (vph)	49	0	0	0	12	0
Lane Group Flow (vph)	104	0	572	670	662	0
Confl. Peds. (#/hr)		5			7	
Confl. Bikes (#/hr)					4	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	6		3 11	8	4	
Permitted Phases						
Actuated Green, G (s)	11.4		47.5	108.5	52.0	
Effective Green, g (s)	11.4		47.5	108.5	52.0	
Actuated g/C Ratio	0.09		0.37	0.83	0.40	
Clearance Time (s)	5.1			5.0	5.0	
Vehicle Extension (s)	2.0			4.0	4.0	
Lane Grp Cap (vph)	287		646	2953	1364	
v/s Ratio Prot	c0.03		c0.32	0.19	c0.19	
v/s Ratio Perm						
v/c Ratio	0.36		0.89	0.23	0.49	
Uniform Delay, d1	55.9		38.7	2.2	29.0	
Progression Factor	1.00		0.95	0.23	1.00	
Incremental Delay, d2	0.3		11.4	0.1	1.2	
Delay (s)	56.2		48.1	0.7	30.3	
Level of Service	E		D	A	C	
Approach Delay (s)	56.2			22.5	30.3	
Approach LOS	E			C	C	
Intersection Summary						
HCM 2000 Control Delay			27.5		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.64			
Actuated Cycle Length (s)			130.0		Sum of lost time (s)	19.1
Intersection Capacity Utilization			74.5%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM 6th Signalized Intersection Summary
6: Oak Grove Rd & Citrus Ave

01/13/2025

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↱	↰↱	↱↲		↰↱	↱↲
Traffic Volume (veh/h)	399	42	1197	214	74	529
Future Volume (veh/h)	399	42	1197	214	74	529
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	399	18	1197	199	74	529
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	497	228	1755	290	102	2378
Arrive On Green	0.14	0.14	0.58	0.58	0.06	0.67
Sat Flow, veh/h	3456	1585	3134	502	1781	3647
Grp Volume(v), veh/h	399	18	696	700	74	529
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1766	1781	1777
Q Serve(g_s), s	14.5	1.3	35.4	36.0	5.3	7.5
Cycle Q Clear(g_c), s	14.5	1.3	35.4	36.0	5.3	7.5
Prop In Lane	1.00	1.00		0.28	1.00	
Lane Grp Cap(c), veh/h	497	228	1026	1019	102	2378
V/C Ratio(X)	0.80	0.08	0.68	0.69	0.73	0.22
Avail Cap(c_a), veh/h	891	408	1026	1019	158	2378
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.55	0.55	0.87	0.87
Uniform Delay (d), s/veh	53.9	48.2	19.1	19.2	60.3	8.4
Incr Delay (d2), s/veh	4.3	0.2	2.0	2.1	8.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	0.5	14.3	14.4	2.6	2.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	58.2	48.4	21.1	21.3	68.5	8.5
LnGrp LOS	E	D	C	C	E	A
Approach Vol, veh/h	417		1396			603
Approach Delay, s/veh	57.8		21.2			15.9
Approach LOS	E		C			B
Timer - Assigned Phs						
	2		4		7	8
Phs Duration (G+Y+Rc), s	23.2		92.0		11.9	80.1
Change Period (Y+Rc), s	4.5		5.0		4.5	5.0
Max Green Setting (Gmax), s	33.5		87.0		11.5	71.0
Max Q Clear Time (g_c+I1), s	16.5		9.5		7.3	38.0
Green Ext Time (p_c), s	2.2		5.6		0.0	17.0
Intersection Summary						
HCM 6th Ctrl Delay			26.2			
HCM 6th LOS			C			

HCM 6th Signalized Intersection Summary
7: Wiget Ln/N Wiget Ln & Ygnacio Valley Rd.

01/13/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	289	777	100	66	1669	32	102	116	87	29	133	324
Future Volume (veh/h)	289	777	100	66	1669	32	102	116	87	29	133	324
Initial Q (Qb), veh	0	0	0	0	0	0	2	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1969	1969	1969	1969	1969	1969	2000	2000	2000	2000	2000	2000
Adj Flow Rate, veh/h	289	777	86	66	1669	21	102	116	33	29	133	207
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	0	0	0	0	0	0
Cap, veh/h	321	2420	266	97	2094	606	147	411	342	63	323	268
Arrive On Green	0.34	0.99	0.97	0.05	0.37	0.37	0.08	0.21	0.21	0.03	0.16	0.16
Sat Flow, veh/h	1875	4913	540	1875	5611	1623	1905	2000	1662	1905	2000	1657
Grp Volume(v), veh/h	289	565	298	66	1669	21	102	116	33	29	133	207
Grp Sat Flow(s),veh/h/ln	1875	1792	1870	1875	1870	1623	1905	2000	1662	1905	2000	1657
Q Serve(g_s), s	22.0	0.5	0.7	5.2	39.8	1.2	7.8	7.3	2.4	2.2	9.0	18.0
Cycle Q Clear(g_c), s	22.0	0.5	0.7	5.2	39.8	1.2	7.8	7.3	2.4	2.2	9.0	18.0
Prop In Lane	1.00		0.29	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	321	1765	921	97	2094	606	147	411	342	63	323	268
V/C Ratio(X)	0.90	0.32	0.32	0.68	0.80	0.03	0.69	0.28	0.10	0.46	0.41	0.77
Avail Cap(c_a), veh/h	419	1765	921	144	2094	606	147	617	513	80	547	453
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)	0.99	0.99	0.99	0.82	0.82	0.82	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.1	0.6	0.8	69.9	41.9	29.8	67.8	50.2	48.3	71.2	56.5	60.3
Incr Delay (d2), s/veh	18.4	0.5	0.9	2.6	2.7	0.1	13.0	0.1	0.0	5.1	0.3	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.1	0.3	0.4	2.5	18.4	0.5	4.9	3.8	1.0	1.2	4.6	7.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.5	1.0	1.7	72.5	44.6	29.9	85.1	50.4	48.3	76.3	56.8	62.1
LnGrp LOS	E	A	A	E	D	C	F	D	D	E	E	E
Approach Vol, veh/h	1152			1756			251			369		
Approach Delay, s/veh	17.6			45.5			64.2			61.3		
Approach LOS	B			D			E			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	29.2	59.0	7.5	33.8	11.2	76.9	14.1	27.2				
Change Period (Y+Rc), s	4.5	5.3	4.5	5.0	4.5	5.3	4.5	5.0				
Max Green Setting (Gmax), s	32.5	49.6	4.3	44.3	10.5	71.6	9.6	39.0				
Max Q Clear Time (g_c+I1), s	24.0	41.8	4.2	9.3	7.2	2.7	9.8	20.0				
Green Ext Time (p_c), s	0.7	7.7	0.0	0.3	0.0	34.9	0.0	0.8				
Intersection Summary												
HCM 6th Ctrl Delay	39.4											
HCM 6th LOS	D											

HCM 6th Signalized Intersection Summary
8: S Via Monte/N Via Monte & Ygnacio Valley Rd.

01/13/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	102	724	29	44	1581	13	49	21	57	32	88	116
Future Volume (veh/h)	102	724	29	44	1581	13	49	21	57	32	88	116
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.95	1.00		0.95
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	1969	1969	1969	1890	1969	1969	2000	2000	2000	2000	2000	2000
Adj Flow Rate, veh/h	102	724	24	44	1581	10	49	21	19	32	88	80
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	0	0	0	0	0	0
Cap, veh/h	170	2849	94	69	2810	18	0	424	341	67	247	225
Arrive On Green	0.09	1.00	1.00	0.04	0.51	0.50	0.00	0.21	0.21	0.04	0.26	0.26
Sat Flow, veh/h	3638	5495	182	1800	5510	35	0	2000	1609	1905	937	852
Grp Volume(v), veh/h	102	492	256	44	1028	563	0	21	19	32	0	168
Grp Sat Flow(s),veh/h/ln	1819	1870	1935	1800	1792	1962	0	2000	1609	1905	0	1788
Q Serve(g_s), s	4.0	0.0	0.0	3.6	29.6	29.6	0.0	1.3	1.4	2.5	0.0	11.4
Cycle Q Clear(g_c), s	4.0	0.0	0.0	3.6	29.6	29.6	0.0	1.3	1.4	2.5	0.0	11.4
Prop In Lane	1.00		0.09	1.00		0.02	0.00		1.00	1.00		0.48
Lane Grp Cap(c), veh/h	170	1940	1004	69	1827	1001	0	424	341	67	0	472
V/C Ratio(X)	0.60	0.25	0.25	0.64	0.56	0.56	0.00	0.05	0.06	0.48	0.00	0.36
Avail Cap(c_a), veh/h	255	1940	1004	126	1827	1001	0	567	456	108	0	537
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)	0.98	0.98	0.98	0.82	0.82	0.82	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	66.6	0.0	0.0	71.1	25.3	25.3	0.0	47.1	47.1	71.0	0.0	44.8
Incr Delay (d2), s/veh	1.2	0.3	0.6	3.0	1.0	1.9	0.0	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(50%),veh/ln	1.8	0.1	0.2	1.7	12.4	13.8	0.0	0.6	0.6	1.3	0.0	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.9	0.3	0.6	74.1	26.3	27.1	0.0	47.1	47.2	76.1	0.0	45.0
LnGrp LOS	E	A	A	E	C	C	A	D	D	E	A	D
Approach Vol, veh/h	850			1635			40			200		
Approach Delay, s/veh	8.5			27.9			47.1			50.0		
Approach LOS	A			C			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.5	79.5	7.8	34.8	9.2	80.8	0.0	42.6				
Change Period (Y+Rc), s	4.5	5.3	4.5	5.0	4.5	5.3	4.5	5.0				
Max Green Setting (Gmax), s	9.5	74.2	6.5	40.5	9.5	74.2	4.0	43.0				
Max Q Clear Time (g_c+I1), s	6.0	31.6	4.5	3.4	5.6	2.0	0.0	13.4				
Green Ext Time (p_c), s	0.1	39.7	0.0	0.1	0.0	31.6	0.0	0.4				
Intersection Summary												
HCM 6th Ctrl Delay	23.7											
HCM 6th LOS	C											

HCM Signalized Intersection Capacity Analysis
9: Oak Grove Rd & Ygnacio Valley Rd.

01/13/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	454	63	258	1163	949	176	339	242	119	467	343
Future Volume (vph)	162	454	63	258	1163	949	176	339	242	119	467	343
Ideal Flow (vphpl)	1940	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Total Lost time (s)	3.5	2.7		3.5	2.7	2.7	3.5	3.0	4.0	3.5	3.0	2.0
Lane Util. Factor	0.97	0.91		1.00	0.97	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3505	5244		1863	3804	1641	1881	3762	1649	3650	3762	1659
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3505	5244		1863	3804	1641	1881	3762	1649	3650	3762	1659
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	162	454	63	258	1163	949	176	339	242	119	467	343
RTOR Reduction (vph)	0	12	0	0	0	165	0	0	162	0	0	0
Lane Group Flow (vph)	162	505	0	258	1163	784	176	339	80	119	467	343
Confl. Peds. (#/hr)			1			2			5			8
Confl. Bikes (#/hr)			5			1			1			
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Free
Protected Phases	1	6		5	13	2	3	8		7	4	
Permitted Phases						2			8			Free
Actuated Green, G (s)	9.4	55.6		26.4	77.1	77.1	13.5	32.4	32.4	12.1	31.0	150.0
Effective Green, g (s)	10.4	57.9		28.4	79.4	79.4	14.5	34.4	33.4	13.1	33.0	150.0
Actuated g/C Ratio	0.07	0.39		0.19	0.53	0.53	0.10	0.23	0.22	0.09	0.22	1.00
Clearance Time (s)	4.5	5.0			5.0	5.0	4.5	5.0	5.0	4.5	5.0	
Vehicle Extension (s)	3.0	6.0			6.0	6.0	2.0	2.0	2.0	3.0	2.0	
Lane Grp Cap (vph)	243	2024		352	2013	868	181	862	367	318	827	1659
v/s Ratio Prot	0.05	0.10		c0.14	0.31		c0.09	0.09		0.03	c0.12	
v/s Ratio Perm						c0.48			0.05			c0.21
v/c Ratio	0.67	0.25		0.73	0.58	0.90	0.97	0.39	0.22	0.37	0.56	0.21
Uniform Delay, d1	68.1	31.3		57.2	23.9	31.8	67.6	49.0	47.6	64.6	52.1	0.0
Progression Factor	1.07	1.07		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.7	0.3		8.2	1.2	14.5	58.2	1.3	1.4	0.7	2.8	0.3
Delay (s)	79.6	33.8		65.4	25.1	46.4	125.8	50.3	49.0	65.3	54.9	0.3
Level of Service	E	C		E	C	D	F	D	D	E	D	A
Approach Delay (s)	44.8			38.0			67.4			36.1		
Approach LOS	D			D			E			D		
Intersection Summary												
HCM 2000 Control Delay		43.3										D
HCM 2000 Volume to Capacity ratio		0.84										
Actuated Cycle Length (s)		150.0										16.2
Intersection Capacity Utilization		96.9%										F
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th Roundabout
1: N Wiget Ln & Mitchell Dr

06/19/2025

Intersection			
Intersection Delay, s/veh	6.4		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	556	261	56
Demand Flow Rate, veh/h	567	267	57
Vehicles Circulating, veh/h	79	33	378
Vehicles Exiting, veh/h	221	402	268
Ped Vol Crossing Leg, #/h	17	11	17
Ped Cap Adj	0.998	0.998	0.998
Approach Delay, s/veh	7.4	4.5	4.5
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	567	267	57
Cap Entry Lane, veh/h	1273	1334	938
Entry HV Adj Factor	0.981	0.979	0.974
Flow Entry, veh/h	556	261	56
Cap Entry, veh/h	1245	1304	912
V/C Ratio	0.446	0.200	0.061
Control Delay, s/veh	7.4	4.5	4.5
LOS	A	A	A
95th %tile Queue, veh	2	1	0

HCM 6th Roundabout
3: N Wiget Ln & Shadelands Dr

01/15/2025

Intersection				
Intersection Delay, s/veh	7.9			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	191	460	357	328
Demand Flow Rate, veh/h	195	470	364	335
Vehicles Circulating, veh/h	489	321	193	400
Vehicles Exiting, veh/h	246	236	491	391
Ped Vol Crossing Leg, #/h	2	2	2	2
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	6.9	9.3	6.4	8.1
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	195	470	364	335
Cap Entry Lane, veh/h	838	995	1133	918
Entry HV Adj Factor	0.981	0.979	0.980	0.980
Flow Entry, veh/h	191	460	357	328
Cap Entry, veh/h	822	973	1110	899
V/C Ratio	0.233	0.473	0.321	0.365
Control Delay, s/veh	6.9	9.3	6.4	8.1
LOS	A	A	A	A
95th %tile Queue, veh	1	3	1	2

HCM 6th Signalized Intersection Summary
3: N Wiget Ln & Shadelands Dr

01/15/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	35	134	22	179	202	79	11	269	77	20	280	28
Future Volume (veh/h)	35	134	22	179	202	79	11	269	77	20	280	28
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	35	134	22	179	202	79	11	269	77	20	280	28
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	192	564	81	348	318	106	119	422	118	131	491	47
Arrive On Green	0.41	0.41	0.41	0.41	0.41	0.41	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	153	1391	201	483	784	263	20	1369	382	48	1594	153
Grp Volume(v), veh/h	191	0	0	460	0	0	357	0	0	328	0	0
Grp Sat Flow(s),veh/h/ln	1745	0	0	1530	0	0	1772	0	0	1796	0	0
Q Serve(g_s), s	0.0	0.0	0.0	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.3	0.0	0.0	8.1	0.0	0.0	5.7	0.0	0.0	4.9	0.0	0.0
Prop In Lane	0.18		0.12	0.39		0.17	0.03		0.22	0.06		0.09
Lane Grp Cap(c), veh/h	837	0	0	772	0	0	659	0	0	670	0	0
V/C Ratio(X)	0.23	0.00	0.00	0.60	0.00	0.00	0.54	0.00	0.00	0.49	0.00	0.00
Avail Cap(c_a), veh/h	1571	0	0	1446	0	0	1574	0	0	1583	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	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.5	0.0	0.0	8.1	0.0	0.0	9.8	0.0	0.0	9.6	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.7	0.0	0.0	0.7	0.0	0.0	0.6	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(50%),veh/ln	0.6	0.0	0.0	1.8	0.0	0.0	1.6	0.0	0.0	1.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.6	0.0	0.0	8.8	0.0	0.0	10.5	0.0	0.0	10.1	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h	191			460			357			328		
Approach Delay, s/veh	6.6			8.8			10.5			10.1		
Approach LOS	A			A			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	14.8			18.0			14.8			18.0		
Change Period (Y+Rc), s	* 4.7			* 4.7			* 4.7			* 4.7		
Max Green Setting (Gmax), s	* 27			* 28			* 27			* 28		
Max Q Clear Time (g_c+1), s	7.7			4.3			6.9			10.1		
Green Ext Time (p_c), s	2.1			1.1			1.9			3.0		

Intersection Summary	
HCM 6th Ctrl Delay	9.3
HCM 6th LOS	A
Notes	

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th AWSC
1: N Wiget Ln & Mitchell Dr

04/04/2025

Intersection	
Intersection Delay, s/veh	10.8
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↱		↰	↱
Traffic Vol, veh/h	202	33	31	307	179	75
Future Vol, veh/h	202	33	31	307	179	75
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	202	33	31	307	179	75
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	11.3	10.4	11
HCM LOS	B	B	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	86%	70%
Vol Thru, %	9%	0%	30%
Vol Right, %	91%	14%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	338	235	254
LT Vol	0	202	179
Through Vol	31	0	75
RT Vol	307	33	0
Lane Flow Rate	338	235	254
Geometry Grp	1	1	1
Degree of Util (X)	0.409	0.348	0.359
Departure Headway (Hd)	4.356	5.327	5.087
Convergence, Y/N	Yes	Yes	Yes
Cap	818	667	701
Service Time	2.422	3.423	3.164
HCM Lane V/C Ratio	0.413	0.352	0.362
HCM Control Delay	10.4	11.3	11
HCM Lane LOS	B	B	B
HCM 95th-tile Q	2	1.6	1.6

HCM 6th Signalized Intersection Summary
2: Oak Grove Rd & Mitchell Dr/Peachwillow Ln

01/07/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (veh/h)	426	34	131	50	24	52	59	767	49	65	639	208
Future Volume (veh/h)	426	34	131	50	24	52	59	767	49	65	639	208
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.95	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	450	0	55	50	24	20	59	767	45	65	639	180
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	565	0	251	114	55	141	89	1839	108	92	1472	414
Arrive On Green	0.16	0.00	0.16	0.09	0.09	0.09	0.05	0.54	0.54	0.05	0.54	0.54
Sat Flow, veh/h	3563	0	1579	1222	587	1510	1781	3406	200	1781	2720	765
Grp Volume(v), veh/h	450	0	55	74	0	20	59	400	412	65	417	402
Grp Sat Flow(s),veh/h/ln	1781	0	1579	1809	0	1510	1781	1777	1829	1781	1777	1708
Q Serve(g_s), s	14.6	0.0	3.6	4.6	0.0	1.5	3.9	16.0	16.1	4.3	16.9	16.9
Cycle Q Clear(g_c), s	14.6	0.0	3.6	4.6	0.0	1.5	3.9	16.0	16.1	4.3	16.9	16.9
Prop In Lane	1.00		1.00	0.68		1.00	1.00		0.11	1.00		0.45
Lane Grp Cap(c), veh/h	565	0	251	169	0	141	89	959	987	92	962	925
V/C Ratio(X)	0.80	0.00	0.22	0.44	0.00	0.14	0.66	0.42	0.42	0.71	0.43	0.43
Avail Cap(c_a), veh/h	929	0	412	458	0	383	186	959	987	186	962	925
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.88	0.88	0.88	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.6	0.0	44.0	51.4	0.0	50.0	56.0	16.4	16.4	56.0	16.5	16.5
Incr Delay (d2), s/veh	3.1	0.0	0.5	2.5	0.0	0.7	2.7	1.2	1.1	3.7	1.4	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	0.0	1.4	2.2	0.0	0.6	1.8	6.5	6.7	2.0	6.9	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.7	0.0	44.5	54.0	0.0	50.7	58.7	17.6	17.5	59.7	17.9	18.0
LnGrp LOS	D	A	D	D	A	D	E	B	B	E	B	B
Approach Vol, veh/h		505			94			871			884	
Approach Delay, s/veh		50.9			53.3			20.3			21.0	
Approach LOS		D			D			C			C	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		15.8	10.5	70.0		23.7	10.7	69.8				
Change Period (Y+Rc), s		4.6	4.5	5.0		4.7	4.5	5.0				
Max Green Setting (Gmax), s		30.4	12.5	27.0		31.3	12.5	27.0				
Max Q Clear Time (g_c+I1), s		6.6	5.9	18.9		16.6	6.3	18.1				
Green Ext Time (p_c), s		0.6	0.0	3.9		2.0	0.0	4.1				

Intersection Summary	
HCM 6th Ctrl Delay	28.5
HCM 6th LOS	C

Notes	
User approved pedestrian interval to be less than phase max green.	
User approved volume balancing among the lanes for turning movement.	

HCM 6th AWSC
3: N Wiget Ln & Shadelands Dr

04/04/2025

Intersection												
Intersection Delay, s/veh	21.4											
Intersection LOS	C											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	36	202	40	189	70	26	13	204	104	56	302	20
Future Vol, veh/h	36	202	40	189	70	26	13	204	104	56	302	20
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	202	40	189	70	26	13	204	104	56	302	20
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	18.8			19.8			20.1			25.7		
HCM LOS	C			C			C			D		
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	4%	13%	66%	15%								
Vol Thru, %	64%	73%	25%	80%								
Vol Right, %	32%	14%	9%	5%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	321	278	285	378								
LT Vol	13	36	189	56								
Through Vol	204	202	70	302								
RT Vol	104	40	26	20								
Lane Flow Rate	321	278	285	378								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.61	0.553	0.575	0.72								
Departure Headway (Hd)	6.843	7.164	7.267	6.857								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	526	503	496	525								
Service Time	4.908	5.231	5.333	4.918								
HCM Lane V/C Ratio	0.61	0.553	0.575	0.72								
HCM Control Delay	20.1	18.8	19.8	25.7								
HCM Lane LOS	C	C	C	D								
HCM 95th-tile Q	4	3.3	3.6	5.8								

HCM 6th TWSC
4: N Via Monte & Shadelands Dr

01/07/2025

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Vol, veh/h	2	368	34	28	145	14	34	40	70	10	28	2
Future Vol, veh/h	2	368	34	28	145	14	34	40	70	10	28	2
Conflicting Peds, #/hr	0	0	7	11	0	0	7	0	11	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	100	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	1	2	2	2	2	1	2	1	2	1	1	1
Mvmt Flow	2	368	34	28	145	14	34	40	70	10	28	2
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	159	0	0	413	0	0	630	615	407	663	625	159
Stage 1	-	-	-	-	-	-	400	400	-	208	208	-
Stage 2	-	-	-	-	-	-	230	215	-	455	417	-
Critical Hdwy	4.11	-	-	4.12	-	-	7.12	6.51	6.22	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.218	-	-	3.518	4.009	3.318	3.509	4.009	3.309
Pot Cap-1 Maneuver	1427	-	-	1146	-	-	394	408	644	376	403	889
Stage 1	-	-	-	-	-	-	626	603	-	796	732	-
Stage 2	-	-	-	-	-	-	773	727	-	587	593	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1427	-	-	1135	-	-	358	392	632	299	388	884
Mov Cap-2 Maneuver	-	-	-	-	-	-	358	392	-	299	388	-
Stage 1	-	-	-	-	-	-	619	596	-	794	712	-
Stage 2	-	-	-	-	-	-	717	707	-	482	586	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1.2			14.2			15.9		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	376	632	1427	-	-	1135	-	-	371			
HCM Lane V/C Ratio	0.197	0.111	0.001	-	-	0.025	-	-	0.108			
HCM Control Delay (s)	16.9	11.4	7.5	0	-	8.3	0	-	15.9			
HCM Lane LOS	C	B	A	A	-	A	A	-	C			
HCM 95th %tile Q(veh)	0.7	0.4	0	-	-	0.1	-	-	0.4			

HCM 6th Signalized Intersection Summary
5: Oak Grove Rd & Shadelands Dr

01/07/2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	247	234	105	659	684	125
Future Volume (veh/h)	247	234	105	659	684	125
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No	No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	201	204	105	659	684	119
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	263	234	131	2729	1980	344
Arrive On Green	0.15	0.15	0.07	0.77	0.66	0.66
Sat Flow, veh/h	1781	1585	1781	3647	3107	524
Grp Volume(v), veh/h	201	204	105	659	403	400
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1777	1777	1760
Q Serve(g_s), s	13.0	15.1	7.0	6.3	12.1	12.1
Cycle Q Clear(g_c), s	13.0	15.1	7.0	6.3	12.1	12.1
Prop In Lane	1.00	1.00	1.00			0.30
Lane Grp Cap(c), veh/h	263	234	131	2729	1168	1156
V/C Ratio(X)	0.76	0.87	0.80	0.24	0.35	0.35
Avail Cap(c_a), veh/h	667	593	230	2729	1168	1156
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.93	0.93	0.86	0.86
Uniform Delay (d), s/veh	49.1	50.0	54.7	4.0	9.1	9.1
Incr Delay (d2), s/veh	1.7	3.9	10.2	0.2	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	6.2	3.4	1.8	4.4	4.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	50.8	53.9	64.9	4.2	9.8	9.8
LnGrp LOS	D	D	E	A	A	A
Approach Vol, veh/h	405			764	803	
Approach Delay, s/veh	52.4			12.5	9.8	
Approach LOS	D			B	A	
Timer - Assigned Phs			3	4	6	8
Phs Duration (G+Y+Rc), s			13.3	83.9	22.8	97.2
Change Period (Y+Rc), s			4.5	5.0	5.1	5.0
Max Green Setting (Gmax), s			15.5	45.0	44.9	65.0
Max Q Clear Time (g_c+I1), s			9.0	14.1	17.1	8.3
Green Ext Time (p_c), s			0.1	7.8	0.6	7.3
Intersection Summary						
HCM 6th Ctrl Delay			19.6			
HCM 6th LOS			B			
Notes						
User approved pedestrian interval to be less than phase max green.						
User approved volume balancing among the lanes for turning movement.						

HCM 6th Signalized Intersection Summary
6: Oak Grove Rd & Citrus Ave

01/07/2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	255	75	681	178	91	817
Future Volume (veh/h)	255	75	681	178	91	817
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	255	24	681	172	91	817
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	349	160	2008	507	114	2914
Arrive On Green	0.10	0.10	0.72	0.72	0.13	1.00
Sat Flow, veh/h	3456	1585	2889	705	1781	3647
Grp Volume(v), veh/h	255	24	433	420	91	817
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1724	1781	1777
Q Serve(g_s), s	8.6	1.7	10.9	10.9	6.0	0.0
Cycle Q Clear(g_c), s	8.6	1.7	10.9	10.9	6.0	0.0
Prop In Lane	1.00	1.00		0.41	1.00	
Lane Grp Cap(c), veh/h	349	160	1277	1239	114	2914
V/C Ratio(X)	0.73	0.15	0.34	0.34	0.80	0.28
Avail Cap(c_a), veh/h	994	456	1277	1239	230	2914
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.84	0.84	0.94	0.94
Uniform Delay (d), s/veh	52.4	49.2	6.3	6.3	51.6	0.0
Incr Delay (d2), s/veh	4.2	0.6	0.6	0.6	11.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.7	3.7	3.6	2.8	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	56.5	49.9	6.9	6.9	63.0	0.2
LnGrp LOS	E	D	A	A	E	A
Approach Vol, veh/h	279		853			908
Approach Delay, s/veh	56.0		6.9			6.5
Approach LOS	E		A			A
Timer - Assigned Phs		2		4		7 8
Phs Duration (G+Y+Rc), s		16.6		103.4		12.2 91.2
Change Period (Y+Rc), s		4.5		5.0		4.5 5.0
Max Green Setting (Gmax), s		34.5		76.0		15.5 56.0
Max Q Clear Time (g_c+I1), s		10.6		2.0		8.0 12.9
Green Ext Time (p_c), s		1.5		9.9		0.1 9.2
Intersection Summary						
HCM 6th Ctrl Delay			13.4			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary
7: Wiget Lane/N Wiget Lane & Ygnacio Valley Rd.

01/07/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  							
Traffic Volume (veh/h)	224	2238	84	47	982	37	54	70	62	110	81	413
Future Volume (veh/h)	224	2238	84	47	982	37	54	70	62	110	81	413
Initial Q (Qb), veh	0	0	0	0	0	0	2	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	224	2238	80	47	982	20	54	70	24	110	81	181
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	0	0	0	0	0	0
Cap, veh/h	252	2649	94	71	2181	661	95	255	210	152	315	261
Arrive On Green	0.28	1.00	1.00	0.04	0.43	0.43	0.05	0.13	0.13	0.08	0.17	0.17
Sat Flow, veh/h	1781	5058	180	1781	5106	1547	1810	1900	1561	1810	1900	1572
Grp Volume(v), veh/h	224	1503	815	47	982	20	54	70	24	110	81	181
Grp Sat Flow(s),veh/h/ln	1781	1702	1833	1781	1702	1547	1810	1900	1561	1810	1900	1572
Q Serve(g_s), s	19.3	0.0	0.0	4.2	21.8	1.2	4.7	5.3	1.5	9.5	5.9	17.4
Cycle Q Clear(g_c), s	19.3	0.0	0.0	4.2	21.8	1.2	4.7	5.3	1.5	9.5	5.9	17.4
Prop In Lane	1.00		0.10	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	252	1783	960	71	2181	661	95	255	210	152	315	261
V/C Ratio(X)	0.89	0.84	0.85	0.66	0.45	0.03	0.57	0.27	0.11	0.72	0.26	0.69
Avail Cap(c_a), veh/h	317	1783	960	95	2181	661	119	487	400	166	537	444
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)	0.85	0.85	0.85	0.94	0.94	0.94	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.1	0.0	0.0	75.7	32.5	26.6	74.4	62.3	30.9	71.5	58.2	62.9
Incr Delay (d2), s/veh	18.9	4.3	8.0	3.6	0.6	0.1	5.3	0.2	0.1	13.2	0.2	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	7.4	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	1.1	2.1	2.0	9.0	0.5	2.9	2.6	0.9	5.0	2.9	7.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	75.0	4.3	8.0	79.3	33.1	26.7	87.1	62.5	31.0	84.7	58.3	64.2
LnGrp LOS	E	A	A	E	C	C	F	E	C	F	E	E
Approach Vol, veh/h	2542			1049			148			372		
Approach Delay, s/veh	11.7			35.1			66.4			69.0		
Approach LOS	B			D			E			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	26.2	71.3	15.9	24.2	10.7	86.8	10.6	29.5				
Change Period (Y+Rc), s	4.5	5.3	4.5	5.0	5.3	* 5.3	4.5	5.0				
Max Green Setting (G_max), s	27.5	61.5	12.7	39.0	7.5	* 82	8.5	43.2				
Max Q Clear Time (g_c+I1), s	21.3	23.8	11.5	7.3	6.2	2.0	6.7	19.4				
Green Ext Time (p_c), s	0.4	27.4	0.0	0.2	0.0	78.6	0.0	0.6				
Intersection Summary												
HCM 6th Ctrl Delay	24.8											
HCM 6th LOS	C											
Notes												

HCM 6th Signalized Intersection Summary
8: S Via Monte/N Via Monte & Ygnacio Valley Rd.

01/07/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↰	↰	↰	↰↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (veh/h)	204	2185	26	38	963	27	16	28	20	45	27	90
Future Volume (veh/h)	204	2185	26	38	963	27	16	28	20	45	27	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.96	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	1627	1870	1870	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	204	2185	26	38	963	26	16	28	13	45	27	47
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	0	0	0	0	0	0
Cap, veh/h	262	2846	34	56	2593	70	0	268	219	81	123	213
Arrive On Green	0.15	1.00	1.00	0.04	0.51	0.50	0.00	0.14	0.14	0.04	0.20	0.20
Sat Flow, veh/h	3456	5201	62	1550	5110	138	0	1900	1552	1810	610	1061
Grp Volume(v), veh/h	204	1429	782	38	641	348	0	28	13	45	0	74
Grp Sat Flow(s),veh/h/ln	1728	1702	1859	1550	1702	1843	0	1900	1552	1810	0	1670
Q Serve(g_s), s	9.1	0.0	0.0	3.9	18.3	18.3	0.0	2.1	1.2	3.9	0.0	5.9
Cycle Q Clear(g_c), s	9.1	0.0	0.0	3.9	18.3	18.3	0.0	2.1	1.2	3.9	0.0	5.9
Prop In Lane	1.00		0.03	1.00		0.07	0.00		1.00	1.00		0.64
Lane Grp Cap(c), veh/h	262	1863	1017	56	1728	935	0	268	219	81	0	336
V/C Ratio(X)	0.78	0.77	0.77	0.68	0.37	0.37	0.00	0.10	0.06	0.56	0.00	0.22
Avail Cap(c_a), veh/h	292	1863	1017	92	1728	935	0	487	398	139	0	494
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)	0.69	0.69	0.69	0.87	0.87	0.87	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	66.5	0.0	0.0	76.2	23.9	24.0	0.0	59.9	59.5	74.9	0.0	53.4
Incr Delay (d2), s/veh	6.9	2.2	3.9	4.5	0.5	1.0	0.0	0.1	0.0	5.9	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.6	1.1	1.6	7.4	8.1	0.0	1.0	0.5	2.0	0.0	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	73.5	2.2	3.9	80.7	24.4	24.9	0.0	60.0	59.6	80.8	0.0	53.5
LnGrp LOS	E	A	A	F	C	C	A	E	E	F	A	D
Approach Vol, veh/h	2415			1027			41			119		
Approach Delay, s/veh	8.7			26.7			59.9			63.9		
Approach LOS	A			C			E			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.7	84.2	9.6	25.6	9.3	90.6	0.0	35.2				
Change Period (Y+Rc), s	4.5	5.3	4.5	5.0	4.5	5.3	4.5	5.0				
Max Green Setting (Gmax), s	12.5	78.9	10.3	39.0	8.5	82.9	4.0	45.3				
Max Q Clear Time (g_c+I1), s	11.1	20.3	5.9	4.1	5.9	2.0	0.0	7.9				
Green Ext Time (p_c), s	0.1	37.1	0.0	0.1	0.0	79.9	0.0	0.2				
Intersection Summary												
HCM 6th Ctrl Delay	16.3											
HCM 6th LOS	B											

HCM Signalized Intersection Capacity Analysis
9: Oak Grove Rd & Ygnacio Valley Rd.

01/07/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	317	1799	112	182	633	220	202	382	192	417	458	210
Future Volume (vph)	317	1799	112	182	633	220	202	382	192	417	458	210
Ideal Flow (vphpl)	1824	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	2.7		3.5	2.7	2.7	3.5	3.0	4.0	3.5	3.0	2.0
Lane Util. Factor	0.97	0.91		1.00	0.95	1.00	1.00	0.95	1.00	0.97	*0.85	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3296	5037		1770	3539	1562	1787	3574	1575	3467	3198	1573
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3296	5037		1770	3539	1562	1787	3574	1575	3467	3198	1573
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	317	1799	112	182	633	220	202	382	192	417	458	210
RTOR Reduction (vph)	0	4	0	0	0	141	0	0	122	0	0	0
Lane Group Flow (vph)	317	1907	0	182	633	79	202	382	70	417	458	210
Confl. Peds. (#/hr)						1			1			14
Confl. Bikes (#/hr)			3						1			1
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Free
Protected Phases	1	6		5	2		3	8		7	15	4
Permitted Phases					2				8			Free
Actuated Green, G (s)	32.5	71.9		15.5	54.9	54.9	21.1	22.3	22.3	26.8	32.5	160.0
Effective Green, g (s)	33.5	74.2		16.5	57.2	57.2	22.1	24.3	23.3	28.8	34.5	160.0
Actuated g/C Ratio	0.21	0.46		0.10	0.36	0.36	0.14	0.15	0.15	0.18	0.22	1.00
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0		5.0	
Vehicle Extension (s)	3.0	6.0		4.0	6.0	6.0	2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)	690	2335		182	1265	558	246	542	229	624	689	1573
v/s Ratio Prot	0.10	c0.38		c0.10	0.18		c0.11	c0.11		0.12	c0.14	
v/s Ratio Perm					0.05				0.04			0.13
v/c Ratio	0.46	0.82		1.00	0.50	0.14	0.82	0.70	0.30	0.67	0.66	0.13
Uniform Delay, d1	55.3	37.0		71.8	40.2	34.8	67.0	64.4	61.1	61.1	57.5	0.0
Progression Factor	0.59	0.42		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	2.3		66.7	1.4	0.5	18.5	3.4	0.3	2.7	1.9	0.2
Delay (s)	32.8	17.8		138.5	41.6	35.3	85.5	67.8	61.4	63.9	59.3	0.2
Level of Service	C	B		F	D	D	F	E	E	E	E	A
Approach Delay (s)	19.9			57.3			70.8			49.6		
Approach LOS	B			E			E			D		
Intersection Summary												
HCM 2000 Control Delay		41.5										D
HCM 2000 Volume to Capacity ratio		0.84										
Actuated Cycle Length (s)		160.0										16.2
Intersection Capacity Utilization		89.4%										E
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th Roundabout
1: N Wiget Ln & Mitchell Dr

06/19/2025

Intersection			
Intersection Delay, s/veh	5.4		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	235	338	254
Demand Flow Rate, veh/h	240	345	259
Vehicles Circulating, veh/h	32	183	206
Vehicles Exiting, veh/h	496	282	66
Ped Vol Crossing Leg, #/h	1	1	1
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.3	6.1	5.4
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	240	345	259
Cap Entry Lane, veh/h	1336	1145	1118
Entry HV Adj Factor	0.979	0.981	0.979
Flow Entry, veh/h	235	338	254
Cap Entry, veh/h	1308	1123	1095
V/C Ratio	0.180	0.301	0.232
Control Delay, s/veh	4.3	6.1	5.4
LOS	A	A	A
95th %tile Queue, veh	1	1	1

HCM 6th Roundabout
3: N Wiget Ln & Shadelands Dr

01/15/2025

Intersection				
Intersection Delay, s/veh	7.4			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	278	285	321	378
Demand Flow Rate, veh/h	284	291	327	385
Vehicles Circulating, veh/h	558	258	300	277
Vehicles Exiting, veh/h	104	369	542	272
Ped Vol Crossing Leg, #/h	0	4	4	4
Ped Cap Adj	1.000	0.999	0.999	0.999
Approach Delay, s/veh	9.2	6.2	6.9	7.4
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	284	291	327	385
Cap Entry Lane, veh/h	781	1061	1016	1040
Entry HV Adj Factor	0.979	0.978	0.981	0.982
Flow Entry, veh/h	278	285	321	378
Cap Entry, veh/h	764	1037	997	1021
V/C Ratio	0.364	0.275	0.322	0.370
Control Delay, s/veh	9.2	6.2	6.9	7.4
LOS	A	A	A	A
95th %tile Queue, veh	2	1	1	2

HCM 6th Signalized Intersection Summary
3: N Wiget Ln & Shadelands Dr

01/15/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	36	202	40	189	70	26	13	204	104	56	302	20
Future Volume (veh/h)	36	202	40	189	70	26	13	204	104	56	302	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.97	1.00		0.99
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	36	202	40	189	70	26	13	204	104	56	302	20
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	191	401	74	489	139	40	152	404	198	209	532	33
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	128	1384	254	906	479	139	27	1141	560	149	1502	92
Grp Volume(v), veh/h	278	0	0	285	0	0	321	0	0	378	0	0
Grp Sat Flow(s),veh/h/ln	1766	0	0	1524	0	0	1728	0	0	1744	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0
Cycle Q Clear(g_c), s	3.4	0.0	0.0	3.5	0.0	0.0	3.8	0.0	0.0	4.4	0.0	0.0
Prop In Lane	0.13		0.14	0.66		0.09	0.04		0.32	0.15		0.05
Lane Grp Cap(c), veh/h	666	0	0	669	0	0	754	0	0	774	0	0
V/C Ratio(X)	0.42	0.00	0.00	0.43	0.00	0.00	0.43	0.00	0.00	0.49	0.00	0.00
Avail Cap(c_a), veh/h	2013	0	0	1681	0	0	1910	0	0	1910	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	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.9	0.0	0.0	7.9	0.0	0.0	6.7	0.0	0.0	6.9	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.4	0.0	0.0	0.4	0.0	0.0	0.5	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(50%),veh/ln	0.8	0.0	0.0	0.9	0.0	0.0	0.8	0.0	0.0	1.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.3	0.0	0.0	8.3	0.0	0.0	7.1	0.0	0.0	7.4	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h	278			285			321			378		
Approach Delay, s/veh	8.3			8.3			7.1			7.4		
Approach LOS	A			A			A			A		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	14.0			12.3			14.0			12.3		
Change Period (Y+Rc), s	* 4.7			* 4.7			* 4.7			* 4.7		
Max Green Setting (Gmax), s	* 27			* 28			* 27			* 28		
Max Q Clear Time (g_c+I1), s	5.8			5.4			6.4			5.5		
Green Ext Time (p_c), s	2.0			1.7			2.4			1.9		

Intersection Summary	
HCM 6th Ctrl Delay	7.7
HCM 6th LOS	A
Notes	

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Appendix C

Delay Index and Speed Calculations

DRAFT



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Arterial Level of Service

01/13/2025

Arterial Level of Service: EB Ygnacio Valley Rd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
NB I-680 Off-ramp	11	39.6	52.2	0.1	8
California Blvd	12	30.0	39.7	0.1	13
Main St.	13	4.7	18.2	0.1	23
N.Broadway	14	18.9	39.2	0.2	15
N.Civic Dr.	15	40.3	57.1	0.1	9
Walnut Blvd	16	28.9	54.2	0.2	16
Homestead Ave	17	13.5	29.3	0.2	19
Tampico	18	19.5	53.2	0.4	26
La Casa Via	19	23.1	39.7	0.2	17
John Muir	20	14.2	24.9	0.1	17
S. San Carlos Dr.	21	27.8	51.2	0.3	19
	38	9.2	35.5	0.3	29
Walnut Ave.	22	32.9	39.5	0.1	7
Wimbledon	23	48.9	74.0	0.3	16
Lennon Lane	24	4.4	16.6	0.2	34
Wiget Ln	7	12.6	25.4	0.2	24
S Via Monte	8	12.3	36.0	0.3	31
Oak Grove Rd	9	33.8	49.3	0.2	17
Total		414.6	735.1	3.6	18

Arterial Level of Service: WB Ygnacio Valley Rd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
N Via Monte	8	18.5	36.7	0.2	23
N Wiget Ln	7	24.5	48.5	0.3	23
Lennon Lane	24	17.0	30.8	0.2	20
Wimbledon	23	23.9	36.1	0.2	15
Bancroft Rd.	22	164.0	192.5	0.3	6
	38	10.5	17.6	0.1	16
N.San Carlos Dr.	21	105.2	129.8	0.3	8
John Muir	20	16.0	39.4	0.3	24
Kinross Dr.	19	15.8	26.1	0.1	16
Marchbanks Dr	18	21.6	38.0	0.2	17
Homestead Ave	17	35.1	68.6	0.4	20
Walnut Blvd	16	39.2	55.0	0.2	10
N.Civic Dr.	15	45.9	69.3	0.2	12
N.Broadway	14	32.5	51.0	0.1	10
N.Main St.	13	37.6	56.0	0.2	11
California Blvd.	12	29.9	45.0	0.1	9
Oakland Blvd	11	43.5	59.5	0.1	8
SB I680 On-ramp	10	2.7	15.3	0.1	27
Total		683.3	1015.0	3.6	13

Arterial Level of Service

01/13/2025

Arterial Level of Service: EB Ygnacio Valley Rd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
NB I-680 Off-ramp	11	32.3	43.6	0.1	9
California Blvd	12	29.6	39.4	0.1	12
Main St.	13	5.8	19.0	0.1	22
N.Broadway	14	21.2	41.3	0.2	14
N.Civic Dr.	15	51.2	68.1	0.1	8
Walnut Blvd	16	48.1	72.6	0.2	12
Homestead Ave	17	31.4	47.6	0.2	12
Tampico	18	44.0	78.8	0.4	17
La Casa Via	19	64.8	83.8	0.2	8
John Muir	20	29.1	40.2	0.1	11
S. San Carlos Dr.	21	99.9	123.9	0.3	8
	38	13.0	42.7	0.3	24
Walnut Ave.	22	27.0	34.5	0.1	8
Wimbledon	23	21.7	49.7	0.3	23
Lennon Lane	24	4.7	18.4	0.2	30
Wiget Lane	7	19.5	33.2	0.2	18
S Via Monte	8	19.3	43.7	0.3	25
Oak Grove Rd	9	50.2	67.2	0.2	12
Total		612.9	947.8	3.6	14

Arterial Level of Service: WB Ygnacio Valley Rd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
N Via Monte	8	15.5	33.9	0.2	25
N Wiget Lane	7	17.9	41.9	0.3	26
Lennon Lane	24	16.1	29.6	0.2	21
Wimbledon	23	16.1	28.4	0.2	20
Bancroft Rd.	22	48.6	73.4	0.3	16
	38	5.1	12.2	0.1	22
N.San Carlos Dr.	21	24.4	49.7	0.3	21
John Muir	20	12.3	36.1	0.3	27
Kinross Dr.	19	20.5	30.9	0.1	14
Marchbanks Dr	18	23.8	39.9	0.2	17
Homestead Ave	17	31.3	64.4	0.4	21
Walnut Blvd	16	53.7	69.4	0.2	8
N.Civic Dr.	15	64.6	265.2	0.2	10
N.Broadway	14	28.8	46.9	0.1	11
N.Main St.	13	41.6	60.0	0.2	10
California Blvd.	12	20.2	35.2	0.1	12
Oakland Blvd	11	26.6	42.6	0.1	11
SB I680 On-ramp	10	2.4	15.9	0.1	26
Total		469.5	975.5	3.6	16

Arterial Level of Service

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Arterial Level of Service: EB Ygnacio Valley Rd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
NB I-680 Off-ramp	11	42.7	55.5	0.1	7
California Blvd	12	31.5	41.9	0.1	12
Main St.	13	4.9	18.4	0.1	23
N.Broadway	14	18.7	39.0	0.2	15
N.Civic Dr.	15	38.4	55.2	0.1	10
Walnut Blvd	16	28.3	53.6	0.2	16
Homestead Ave	17	15.4	31.2	0.2	18
Tampico	18	18.0	51.8	0.4	26
La Casa Via	19	22.5	39.0	0.2	17
John Muir	20	14.7	25.4	0.1	17
S. San Carlos Dr.	21	31.2	54.4	0.3	18
	38	10.3	36.5	0.3	28
Walnut Ave.	22	37.4	44.0	0.1	6
Wimbledon	23	55.8	82.2	0.3	14
Lennon Lane	24	4.9	17.1	0.2	33
Wiget Ln	7	11.7	24.4	0.2	25
S Via Monte	8	14.4	38.1	0.3	29
Oak Grove Rd	9	29.0	44.4	0.2	19
Total		429.9	752.2	3.6	17

Arterial Level of Service: WB Ygnacio Valley Rd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
N Via Monte	8	24.7	42.8	0.2	19
N Wiget Ln	7	25.5	49.5	0.3	22
Lennon Lane	24	16.1	29.9	0.2	20
Wimbledon	23	21.6	33.8	0.2	17
Bancroft Rd.	22	133.4	158.4	0.3	7
	38	10.7	17.9	0.1	15
N.San Carlos Dr.	21	90.9	115.4	0.3	9
John Muir	20	14.3	37.8	0.3	25
Kinross Dr.	19	16.0	26.4	0.1	16
Marchbanks Dr	18	21.9	38.3	0.2	17
Homestead Ave	17	38.0	71.4	0.4	19
Walnut Blvd	16	38.8	54.6	0.2	10
N.Civic Dr.	15	41.6	65.2	0.2	13
N.Broadway	14	31.5	50.0	0.1	11
N.Main St.	13	44.5	62.9	0.2	9
California Blvd.	12	32.6	47.7	0.1	9
Oakland Blvd	11	45.3	61.3	0.1	8
SB I680 On-ramp	10	2.6	15.2	0.1	27
Total		650.3	978.5	3.6	13

Arterial Level of Service

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Arterial Level of Service: EB Ygnacio Valley Rd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
NB I-680 Off-ramp	11	30.0	41.0	0.1	10
California Blvd	12	30.0	39.6	0.1	12
Main St.	13	5.8	19.0	0.1	22
N.Broadway	14	21.8	41.8	0.2	14
N.Civic Dr.	15	51.9	68.7	0.1	8
Walnut Blvd	16	51.8	76.2	0.2	11
Homestead Ave	17	35.3	51.5	0.2	11
Tampico	18	58.4	93.0	0.4	15
La Casa Via	19	74.2	93.2	0.2	7
John Muir	20	33.9	45.0	0.1	9
S. San Carlos Dr.	21	106.8	130.9	0.3	7
	38	13.6	43.4	0.3	24
Walnut Ave.	22	28.0	35.6	0.1	8
Wimbledon	23	21.3	49.3	0.3	23
Lennon Lane	24	4.7	18.4	0.2	30
Wiget Lane	7	19.5	33.1	0.2	18
S Via Monte	8	18.9	43.2	0.3	25
Oak Grove Rd	9	51.8	68.9	0.2	12
Total		657.5	991.8	3.6	13

Arterial Level of Service: WB Ygnacio Valley Rd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
N Via Monte	8	17.0	35.2	0.2	24
N Wiget Lane	7	19.5	43.5	0.3	25
Lennon Lane	24	16.2	29.6	0.2	20
Wimbledon	23	17.3	29.6	0.2	19
Bancroft Rd.	22	52.4	77.1	0.3	15
	38	5.5	12.6	0.1	22
N.San Carlos Dr.	21	25.3	50.5	0.3	21
John Muir	20	14.1	37.9	0.3	25
Kinross Dr.	19	20.1	30.5	0.1	14
Marchbanks Dr	18	23.3	39.4	0.2	17
Homestead Ave	17	46.4	79.3	0.4	17
Walnut Blvd	16	62.6	78.3	0.2	7
N.Civic Dr.	15	64.2	267.3	0.2	10
N.Broadway	14	32.2	50.1	0.1	11
N.Main St.	13	40.6	58.9	0.2	10
California Blvd.	12	20.0	35.0	0.1	12
Oakland Blvd	11	27.1	43.0	0.1	11
SB I680 On-ramp	10	2.4	16.0	0.1	26
Total		506.0	1013.8	3.6	15

Arterial Level of Service

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Arterial Level of Service: EB Ygnacio Valley Rd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
NB I-680 Off-ramp	11	41.3	53.8	0.1	8
California Blvd	12	31.9	42.7	0.1	12
Main St.	13	4.9	18.4	0.1	23
N.Broadway	14	19.8	39.9	0.2	15
N.Civic Dr.	15	42.7	59.5	0.1	9
Walnut Blvd	16	31.3	56.6	0.2	15
Homestead Ave	17	16.5	32.3	0.2	18
Tampico	18	19.6	53.2	0.4	26
La Casa Via	19	23.8	40.4	0.2	16
John Muir	20	13.4	24.1	0.1	18
S. San Carlos Dr.	21	31.9	55.3	0.3	17
	38	10.6	36.9	0.3	28
Walnut Ave.	22	36.3	43.0	0.1	6
Wimbledon	23	62.6	93.6	0.3	13
Lennon Lane	24	4.9	17.1	0.2	33
Wiget Ln	7	15.7	28.3	0.2	21
S Via Monte	8	19.1	43.1	0.3	26
Oak Grove Rd	9	30.1	46.2	0.2	18
Total		456.5	784.6	3.6	17

Arterial Level of Service: WB Ygnacio Valley Rd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
N Via Monte	8	25.5	43.6	0.2	19
N Wiget Ln	7	39.5	63.6	0.3	17
Lennon Lane	24	18.4	31.9	0.2	19
Wimbledon	23	27.8	40.0	0.2	14
Bancroft Rd.	22	183.3	213.3	0.3	6
	38	11.8	18.9	0.1	14
N.San Carlos Dr.	21	112.5	137.5	0.3	8
John Muir	20	14.9	38.2	0.3	25
Kinross Dr.	19	15.1	25.5	0.1	17
Marchbanks Dr	18	21.3	37.7	0.2	18
Homestead Ave	17	38.1	71.4	0.4	19
Walnut Blvd	16	43.2	59.0	0.2	10
N.Civic Dr.	15	48.5	72.5	0.2	12
N.Broadway	14	33.5	52.0	0.1	10
N.Main St.	13	47.2	65.7	0.2	9
California Blvd.	12	35.5	50.6	0.1	8
Oakland Blvd	11	46.5	62.5	0.1	8
SB I680 On-ramp	10	2.7	15.3	0.1	27
Total		765.4	1099.2	3.6	12

Arterial Level of Service

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Arterial Level of Service: EB Ygnacio Valley Rd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
NB I-680 Off-ramp	11	31.6	42.9	0.1	10
California Blvd	12	30.0	40.2	0.1	12
Main St.	13	6.2	19.4	0.1	22
N.Broadway	14	25.7	45.6	0.2	13
N.Civic Dr.	15	69.1	85.9	0.1	6
Walnut Blvd	16	69.4	94.4	0.2	9
Homestead Ave	17	33.7	49.9	0.2	11
Tampico	18	54.1	88.7	0.4	15
La Casa Via	19	76.2	95.2	0.2	7
John Muir	20	34.0	45.2	0.1	9
S. San Carlos Dr.	21	102.3	126.4	0.3	8
	38	13.9	43.8	0.3	24
Walnut Ave.	22	28.6	36.2	0.1	8
Wimbledon	23	24.8	52.9	0.3	22
Lennon Lane	24	5.5	19.3	0.2	29
Wiget Lane	7	26.3	39.8	0.2	15
S Via Monte	8	35.2	59.6	0.3	18
Oak Grove Rd	9	48.8	65.9	0.2	13
Total		715.6	1051.2	3.6	12

Arterial Level of Service: WB Ygnacio Valley Rd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
N Via Monte	8	26.2	44.3	0.2	19
N Wiget Lane	7	29.2	53.5	0.3	21
Lennon Lane	24	18.0	31.2	0.2	19
Wimbledon	23	17.1	29.3	0.2	19
Bancroft Rd.	22	50.1	74.9	0.3	15
	38	5.6	12.7	0.1	22
N.San Carlos Dr.	21	26.2	51.5	0.3	20
John Muir	20	13.1	37.0	0.3	26
Kinross Dr.	19	22.4	32.8	0.1	13
Marchbanks Dr	18	26.7	42.9	0.2	15
Homestead Ave	17	46.6	79.5	0.4	17
Walnut Blvd	16	61.5	77.4	0.2	7
N.Civic Dr.	15	70.5	273.9	0.2	9
N.Broadway	14	30.3	48.2	0.1	11
N.Main St.	13	47.0	65.3	0.2	9
California Blvd.	12	20.8	35.8	0.1	12
Oakland Blvd	11	28.2	44.1	0.1	11
SB I680 On-ramp	10	2.4	16.0	0.1	26
Total		542.0	1050.3	3.6	15

Arterial Level of Service

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Arterial Level of Service: EB Ygnacio Valley Rd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
NB I-680 Off-ramp	11	41.6	54.3	0.1	8
California Blvd	12	30.2	40.0	0.1	12
Main St.	13	4.4	17.9	0.1	24
N.Broadway	14	18.4	38.7	0.2	15
N.Civic Dr.	15	37.0	53.9	0.1	10
Walnut Blvd	16	29.5	54.9	0.2	16
Homestead Ave	17	15.6	31.3	0.2	18
Tampico	18	17.4	51.0	0.4	27
La Casa Via	19	23.2	39.7	0.2	17
John Muir	20	13.5	24.2	0.1	17
S. San Carlos Dr.	21	28.5	51.8	0.3	18
	38	8.5	34.8	0.3	30
Walnut Ave.	22	35.0	41.6	0.1	7
Wimbledon	23	33.0	57.2	0.3	20
Lennon Lane	24	3.9	16.1	0.2	35
Wiget Ln	7	12.0	24.6	0.2	25
S Via Monte	8	13.8	37.6	0.3	29
Oak Grove Rd	9	34.0	49.5	0.2	17
Total		399.4	719.1	3.6	18

Arterial Level of Service: WB Ygnacio Valley Rd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
N Via Monte	8	16.0	34.2	0.2	24
N Wiget Ln	7	23.6	47.5	0.3	23
Lennon Lane	24	22.1	36.2	0.2	17
Wimbledon	23	35.1	47.2	0.2	12
Bancroft Rd.	22	192.1	224.0	0.3	5
	38	9.8	16.9	0.1	16
N.San Carlos Dr.	21	96.9	121.6	0.3	9
John Muir	20	15.4	38.9	0.3	25
Kinross Dr.	19	16.0	26.4	0.1	16
Marchbanks Dr	18	23.8	40.2	0.2	16
Homestead Ave	17	64.1	97.4	0.4	14
Walnut Blvd	16	50.0	65.8	0.2	9
N.Civic Dr.	15	55.9	84.6	0.2	11
N.Broadway	14	33.7	52.2	0.1	10
N.Main St.	13	36.7	55.1	0.2	11
California Blvd.	12	32.6	47.7	0.1	9
Oakland Blvd	11	46.0	62.0	0.1	8
SB I680 On-ramp	10	2.7	15.3	0.1	27
Total		772.5	1113.2	3.6	12

Arterial Level of Service

01/13/2025

Arterial Level of Service: EB Ygnacio Valley Rd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
NB I-680 Off-ramp	11	29.5	40.6	0.1	10
California Blvd	12	29.3	38.7	0.1	13
Main St.	13	5.9	19.0	0.1	22
N.Broadway	14	21.0	41.0	0.2	14
N.Civic Dr.	15	49.1	65.9	0.1	8
Walnut Blvd	16	43.6	68.2	0.2	13
Homestead Ave	17	30.2	46.4	0.2	12
Tampico	18	35.9	70.7	0.4	19
La Casa Via	19	70.6	89.6	0.2	7
John Muir	20	30.2	41.3	0.1	10
S. San Carlos Dr.	21	100.9	125.0	0.3	8
	38	15.2	45.1	0.3	23
Walnut Ave.	22	29.7	37.3	0.1	7
Wimbledon	23	22.2	50.3	0.3	23
Lennon Lane	24	4.8	18.5	0.2	30
Wiget Lane	7	19.5	33.1	0.2	18
S Via Monte	8	19.3	43.7	0.3	25
Oak Grove Rd	9	49.7	66.8	0.2	12
Total		606.7	941.2	3.6	14

Arterial Level of Service: WB Ygnacio Valley Rd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
N Via Monte	8	14.2	32.4	0.2	26
N Wiget Lane	7	18.1	42.0	0.3	26
Lennon Lane	24	15.6	29.0	0.2	21
Wimbledon	23	15.2	27.4	0.2	20
Bancroft Rd.	22	46.4	71.2	0.3	16
	38	5.0	12.1	0.1	23
N.San Carlos Dr.	21	22.3	47.6	0.3	22
John Muir	20	12.6	36.4	0.3	26
Kinross Dr.	19	19.0	29.4	0.1	14
Marchbanks Dr	18	22.3	38.4	0.2	17
Homestead Ave	17	33.9	67.1	0.4	20
Walnut Blvd	16	50.8	66.4	0.2	9
N.Civic Dr.	15	64.7	233.7	0.2	10
N.Broadway	14	29.3	47.3	0.1	11
N.Main St.	13	41.7	60.1	0.2	10
California Blvd.	12	18.7	33.6	0.1	13
Oakland Blvd	11	26.1	42.1	0.1	12
SB I680 On-ramp	10	2.4	16.0	0.1	26
Total		458.3	932.4	3.6	16

Arterial Level of Service

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Arterial Level of Service: EB Ygnacio Valley Rd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
NB I-680 Off-ramp	11	41.5	54.3	0.1	8
California Blvd	12	33.0	43.2	0.1	11
Main St.	13	4.9	18.3	0.1	23
N.Broadway	14	18.3	38.4	0.2	15
N.Civic Dr.	15	36.7	53.3	0.1	10
Walnut Blvd	16	28.7	54.1	0.2	16
Homestead Ave	17	16.4	32.1	0.2	18
Tampico	18	16.8	50.6	0.4	27
La Casa Via	19	20.7	37.2	0.2	18
John Muir	20	12.8	23.5	0.1	18
S. San Carlos Dr.	21	25.8	49.1	0.3	19
	38	8.7	34.9	0.3	30
Walnut Ave.	22	34.7	41.3	0.1	7
Wimbledon	23	42.1	66.5	0.3	17
Lennon Lane	24	4.2	16.4	0.2	34
Wiget Ln	7	13.6	26.3	0.2	23
S Via Monte	8	14.5	38.2	0.3	29
Oak Grove Rd	9	34.7	50.1	0.2	17
Total		408.0	727.9	3.6	18

Arterial Level of Service: WB Ygnacio Valley Rd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
N Via Monte	8	18.5	36.7	0.2	23
N Wiget Ln	7	28.6	52.7	0.3	21
Lennon Lane	24	27.8	41.8	0.2	15
Wimbledon	23	47.0	59.1	0.2	9
Bancroft Rd.	22	221.8	255.8	0.3	5
	38	10.3	17.4	0.1	16
N.San Carlos Dr.	21	101.3	126.2	0.3	8
John Muir	20	16.1	39.5	0.3	24
Kinross Dr.	19	14.9	25.2	0.1	17
Marchbanks Dr	18	20.0	36.5	0.2	18
Homestead Ave	17	32.6	66.1	0.4	21
Walnut Blvd	16	42.6	58.2	0.2	10
N.Civic Dr.	15	42.6	66.0	0.2	13
N.Broadway	14	37.2	55.7	0.1	10
N.Main St.	13	54.6	73.2	0.2	8
California Blvd.	12	43.0	58.0	0.1	7
Oakland Blvd	11	51.8	67.8	0.1	7
SB I680 On-ramp	10	2.8	15.4	0.1	27
Total		813.6	1151.3	3.6	11

Arterial Level of Service

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Arterial Level of Service: EB Ygnacio Valley Rd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
NB I-680 Off-ramp	11	27.0	37.8	0.1	11
California Blvd	12	27.7	37.4	0.1	13
Main St.	13	6.3	19.5	0.1	22
N.Broadway	14	21.5	41.5	0.2	14
N.Civic Dr.	15	52.8	69.6	0.1	8
Walnut Blvd	16	50.4	75.0	0.2	11
Homestead Ave	17	33.3	49.5	0.2	11
Tampico	18	57.2	91.6	0.4	15
La Casa Via	19	80.5	99.5	0.2	7
John Muir	20	32.5	43.6	0.1	10
S. San Carlos Dr.	21	100.1	124.0	0.3	8
	38	15.9	45.8	0.3	23
Walnut Ave.	22	29.5	37.1	0.1	7
Wimbledon	23	23.2	51.4	0.3	22
Lennon Lane	24	4.9	18.6	0.2	30
Wiget Lane	7	20.5	34.1	0.2	18
S Via Monte	8	18.6	42.9	0.3	26
Oak Grove Rd	9	50.4	67.5	0.2	12
Total		652.2	986.4	3.6	13

Arterial Level of Service: WB Ygnacio Valley Rd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
N Via Monte	8	16.1	34.4	0.2	24
N Wiget Lane	7	21.1	45.1	0.3	24
Lennon Lane	24	15.7	29.1	0.2	21
Wimbledon	23	16.3	28.7	0.2	20
Bancroft Rd.	22	49.0	73.8	0.3	16
	38	5.3	12.4	0.1	22
N.San Carlos Dr.	21	23.5	48.8	0.3	21
John Muir	20	13.4	37.2	0.3	26
Kinross Dr.	19	22.0	32.4	0.1	13
Marchbanks Dr	18	23.3	39.4	0.2	17
Homestead Ave	17	29.8	62.7	0.4	22
Walnut Blvd	16	53.6	69.9	0.2	8
N.Civic Dr.	15	70.2	279.7	0.2	9
N.Broadway	14	30.3	48.5	0.1	11
N.Main St.	13	42.7	61.1	0.2	10
California Blvd.	12	18.3	33.4	0.1	13
Oakland Blvd	11	27.5	43.5	0.1	11
SB I680 On-ramp	10	2.4	16.0	0.1	26
Total		480.7	996.2	3.6	16

Arterial Level of Service

01/13/2025

Arterial Level of Service: EB Ygnacio Valley Rd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
NB I-680 Off-ramp	11	44.5	57.0	0.1	7
California Blvd	12	31.7	42.2	0.1	12
Main St.	13	4.9	18.3	0.1	23
N.Broadway	14	19.9	40.1	0.2	15
N.Civic Dr.	15	41.2	58.0	0.1	9
Walnut Blvd	16	29.2	54.4	0.2	16
Homestead Ave	17	14.9	30.6	0.2	19
Tampico	18	19.3	53.0	0.4	26
La Casa Via	19	22.7	39.3	0.2	17
John Muir	20	13.3	24.0	0.1	18
S. San Carlos Dr.	21	27.9	51.3	0.3	19
	38	9.0	35.3	0.3	29
Walnut Ave.	22	34.6	41.3	0.1	7
Wimbledon	23	46.4	71.0	0.3	16
Lennon Lane	24	4.4	16.6	0.2	34
Wiget Ln	7	19.3	31.8	0.2	19
S Via Monte	8	20.4	44.4	0.3	25
Oak Grove Rd	9	32.1	47.5	0.2	18
Total		435.8	756.1	3.6	17

Arterial Level of Service: WB Ygnacio Valley Rd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
N Via Monte	8	25.6	43.7	0.2	19
N Wiget Ln	7	53.0	76.9	0.3	14
Lennon Lane	24	42.4	57.0	0.2	11
Wimbledon	23	68.3	80.5	0.2	7
Bancroft Rd.	22	244.9	282.6	0.3	4
	38	13.0	20.1	0.1	14
N.San Carlos Dr.	21	125.3	150.1	0.3	7
John Muir	20	15.3	38.7	0.3	25
Kinross Dr.	19	15.6	26.0	0.1	16
Marchbanks Dr	18	20.0	36.4	0.2	18
Homestead Ave	17	43.0	76.5	0.4	18
Walnut Blvd	16	46.6	62.4	0.2	9
N.Civic Dr.	15	50.4	75.6	0.2	12
N.Broadway	14	37.5	56.0	0.1	9
N.Main St.	13	49.5	68.0	0.2	9
California Blvd.	12	39.4	54.4	0.1	8
Oakland Blvd	11	49.6	65.7	0.1	7
SB I680 On-ramp	10	2.8	15.4	0.1	27
Total		942.2	1285.9	3.6	10

Arterial Level of Service

01/13/2025

Arterial Level of Service: EB Ygnacio Valley Rd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
NB I-680 Off-ramp	11	31.9	43.0	0.1	10
California Blvd	12	29.9	39.1	0.1	12
Main St.	13	6.1	19.3	0.1	22
N.Broadway	14	25.0	45.0	0.2	13
N.Civic Dr.	15	67.2	83.9	0.1	6
Walnut Blvd	16	67.5	92.1	0.2	9
Homestead Ave	17	38.7	54.8	0.2	10
Tampico	18	81.8	116.2	0.4	12
La Casa Via	19	86.7	105.6	0.2	6
John Muir	20	35.3	46.5	0.1	9
S. San Carlos Dr.	21	106.6	130.9	0.3	7
	38	18.6	48.4	0.3	21
Walnut Ave.	22	30.3	37.9	0.1	7
Wimbledon	23	22.2	50.2	0.3	23
Lennon Lane	24	5.1	18.7	0.2	30
Wiget Lane	7	27.7	41.2	0.2	15
S Via Monte	8	32.9	57.3	0.3	19
Oak Grove Rd	9	50.0	67.1	0.2	12
Total		763.6	1097.2	3.6	12

Arterial Level of Service: WB Ygnacio Valley Rd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
N Via Monte	8	24.9	43.1	0.2	19
N Wiget Lane	7	30.1	54.4	0.3	20
Lennon Lane	24	17.8	31.0	0.2	20
Wimbledon	23	16.3	28.6	0.2	20
Bancroft Rd.	22	51.9	76.8	0.3	15
	38	5.3	12.4	0.1	22
N.San Carlos Dr.	21	26.0	51.3	0.3	20
John Muir	20	13.1	36.9	0.3	26
Kinross Dr.	19	20.6	31.0	0.1	14
Marchbanks Dr	18	21.0	37.0	0.2	18
Homestead Ave	17	45.6	78.4	0.4	17
Walnut Blvd	16	58.7	74.6	0.2	8
N.Civic Dr.	15	64.5	265.5	0.2	10
N.Broadway	14	31.6	49.7	0.1	11
N.Main St.	13	45.2	63.7	0.2	9
California Blvd.	12	21.2	36.4	0.1	12
Oakland Blvd	11	27.2	43.2	0.1	11
SB I680 On-ramp	10	2.4	15.9	0.1	26
Total		523.4	1029.9	3.6	15

Appendix D

All-Way Stop Control Calculations

DRAFT



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HCM 6th AWSC
4: N Via Monte & Shadelands Dr

04/04/2025

Intersection												
Intersection Delay, s/veh	29.9											
Intersection LOS	D											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	86	31	147	543	0	56	0	59	0	0	0
Future Vol, veh/h	0	86	31	147	543	0	56	0	59	0	0	0
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
Heavy Vehicles, %	1	2	2	2	2	1	2	1	2	1	1	1
Mvmt Flow	0	92	33	158	584	0	60	0	63	0	0	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9	36.7	10.1	0
HCM LOS	A	E	B	-

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	49%	0%	21%	0%
Vol Thru, %	0%	74%	79%	100%
Vol Right, %	51%	26%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	115	117	690	0
LT Vol	56	0	147	0
Through Vol	0	86	543	0
RT Vol	59	31	0	0
Lane Flow Rate	124	126	742	0
Geometry Grp	1	1	1	1
Degree of Util (X)	0.195	0.172	0.922	0
Departure Headway (Hd)	5.665	4.928	4.473	6.237
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	628	722	809	0
Service Time	3.749	3.002	2.519	4.237
HCM Lane V/C Ratio	0.197	0.175	0.917	0
HCM Control Delay	10.1	9	36.7	9.2
HCM Lane LOS	B	A	E	N
HCM 95th-tile Q	0.7	0.6	13.2	0

HCM 6th AWSC
4: N Via Monte & Shadelands Dr

04/04/2025

Intersection												
Intersection Delay, s/veh	14.2											
Intersection LOS	B											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	412	59	53	143	0	36	0	72	0	0	0
Future Vol, veh/h	0	412	59	53	143	0	36	0	72	0	0	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	1	2	2	2	2	1	2	1	2	1	1	1
Mvmt Flow	0	485	69	62	168	0	42	0	85	0	0	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	16.9	10.3	9.7	0
HCM LOS	C	B	A	-

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	33%	0%	27%	0%
Vol Thru, %	0%	87%	73%	100%
Vol Right, %	67%	13%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	108	471	196	0
LT Vol	36	0	53	0
Through Vol	0	412	143	0
RT Vol	72	59	0	0
Lane Flow Rate	127	554	231	0
Geometry Grp	1	1	1	1
Degree of Util (X)	0.188	0.688	0.315	0
Departure Headway (Hd)	5.326	4.47	4.925	6.012
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	668	803	724	0
Service Time	3.407	2.517	2.988	4.012
HCM Lane V/C Ratio	0.19	0.69	0.319	0
HCM Control Delay	9.7	16.9	10.3	9
HCM Lane LOS	A	C	B	N
HCM 95th-tile Q	0.7	5.6	1.4	0

HCM 6th AWSC
4: N Via Monte & Shadelands Dr

04/04/2025

Intersection												
Intersection Delay, s/veh	29.9											
Intersection LOS	D											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	86	31	147	543	0	56	0	59	0	0	0
Future Vol, veh/h	0	86	31	147	543	0	56	0	59	0	0	0
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
Heavy Vehicles, %	1	2	2	2	2	1	2	1	2	1	1	1
Mvmt Flow	0	92	33	158	584	0	60	0	63	0	0	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9	36.7	10.1	0
HCM LOS	A	E	B	-

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	49%	0%	21%	0%
Vol Thru, %	0%	74%	79%	100%
Vol Right, %	51%	26%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	115	117	690	0
LT Vol	56	0	147	0
Through Vol	0	86	543	0
RT Vol	59	31	0	0
Lane Flow Rate	124	126	742	0
Geometry Grp	1	1	1	1
Degree of Util (X)	0.195	0.172	0.922	0
Departure Headway (Hd)	5.665	4.928	4.473	6.237
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	628	722	809	0
Service Time	3.749	3.002	2.519	4.237
HCM Lane V/C Ratio	0.197	0.175	0.917	0
HCM Control Delay	10.1	9	36.7	9.2
HCM Lane LOS	B	A	E	N
HCM 95th-tile Q	0.7	0.6	13.2	0

HCM 6th AWSC
4: N Via Monte & Shadelands Dr

04/04/2025

Intersection												
Intersection Delay, s/veh	14.2											
Intersection LOS	B											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	412	59	53	143	0	36	0	72	0	0	0
Future Vol, veh/h	0	412	59	53	143	0	36	0	72	0	0	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	1	2	2	2	2	1	2	1	2	1	1	1
Mvmt Flow	0	485	69	62	168	0	42	0	85	0	0	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	16.9	10.3	9.7	0
HCM LOS	C	B	A	-

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	33%	0%	27%	0%
Vol Thru, %	0%	87%	73%	100%
Vol Right, %	67%	13%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	108	471	196	0
LT Vol	36	0	53	0
Through Vol	0	412	143	0
RT Vol	72	59	0	0
Lane Flow Rate	127	554	231	0
Geometry Grp	1	1	1	1
Degree of Util (X)	0.188	0.688	0.315	0
Departure Headway (Hd)	5.326	4.47	4.925	6.012
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	668	803	724	0
Service Time	3.407	2.517	2.988	4.012
HCM Lane V/C Ratio	0.19	0.69	0.319	0
HCM Control Delay	9.7	16.9	10.3	9
HCM Lane LOS	A	C	B	N
HCM 95th-tile Q	0.7	5.6	1.4	0

HCM 6th AWSC
4: N Via Monte & Shadelands Dr

04/04/2025

Intersection	
Intersection Delay, s/veh	26
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	90	32	153	565	0	58	0	61	0	0	0
Future Vol, veh/h	0	90	32	153	565	0	58	0	61	0	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	1	2	2	2	2	1	2	1	2	1	1	1
Mvmt Flow	0	90	32	153	565	0	58	0	61	0	0	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.9	31.6	10	0
HCM LOS	A	D	A	-

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	49%	0%	21%	0%
Vol Thru, %	0%	74%	79%	100%
Vol Right, %	51%	26%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	119	122	718	0
LT Vol	58	0	153	0
Through Vol	0	90	565	0
RT Vol	61	32	0	0
Lane Flow Rate	119	122	718	0
Geometry Grp	1	1	1	1
Degree of Util (X)	0.185	0.165	0.888	0
Departure Headway (Hd)	5.6	4.883	4.452	6.145
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	635	730	811	0
Service Time	3.677	2.949	2.492	4.145
HCM Lane V/C Ratio	0.187	0.167	0.885	0
HCM Control Delay	10	8.9	31.6	9.1
HCM Lane LOS	A	A	D	N
HCM 95th-tile Q	0.7	0.6	11.7	0

HCM 6th AWSC
4: N Via Monte & Shadelands Dr

04/04/2025

Intersection	
Intersection Delay, s/veh	11.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	422	60	54	146	0	37	0	74	0	0	0
Future Vol, veh/h	0	422	60	54	146	0	37	0	74	0	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	1	2	2	2	2	1	2	1	2	1	1	1
Mvmt Flow	0	422	60	54	146	0	37	0	74	0	0	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	13.4	9.6	9.1	0
HCM LOS	B	A	A	-

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	33%	0%	27%	0%
Vol Thru, %	0%	88%	73%	100%
Vol Right, %	67%	12%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	111	482	200	0
LT Vol	37	0	54	0
Through Vol	0	422	146	0
RT Vol	74	60	0	0
Lane Flow Rate	111	482	200	0
Geometry Grp	1	1	1	1
Degree of Util (X)	0.157	0.585	0.266	0
Departure Headway (Hd)	5.095	4.373	4.781	5.614
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	700	824	750	0
Service Time	3.152	2.408	2.825	3.69
HCM Lane V/C Ratio	0.159	0.585	0.267	0
HCM Control Delay	9.1	13.4	9.6	8.7
HCM Lane LOS	A	B	A	N
HCM 95th-tile Q	0.6	3.9	1.1	0

HCM 6th AWSC
4: N Via Monte & Shadelands Dr

04/04/2025

Intersection												
Intersection Delay, s/veh	30.8											
Intersection LOS	D											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	1	47	27	144	535	5	43	15	33	15	43	2
Future Vol, veh/h	1	47	27	144	535	5	43	15	33	15	43	2
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	0.90
Heavy Vehicles, %	1	2	2	2	2	1	2	1	2	1	1	1
Mvmt Flow	1	51	29	155	575	5	46	16	35	16	46	2
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.8	37.8	10.1	9.9
HCM LOS	A	E	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	47%	1%	21%	25%
Vol Thru, %	16%	63%	78%	72%
Vol Right, %	36%	36%	1%	3%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	91	75	684	60
LT Vol	43	1	144	15
Through Vol	15	47	535	43
RT Vol	33	27	5	2
Lane Flow Rate	98	81	735	65
Geometry Grp	1	1	1	1
Degree of Util (X)	0.161	0.114	0.926	0.11
Departure Headway (Hd)	5.922	5.104	4.532	6.13
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	609	705	794	588
Service Time	3.927	3.116	2.601	4.137
HCM Lane V/C Ratio	0.161	0.115	0.926	0.111
HCM Control Delay	10.1	8.8	37.8	9.9
HCM Lane LOS	B	A	E	A
HCM 95th-tile Q	0.6	0.4	13.3	0.4

HCM 6th AWSC
4: N Via Monte & Shadelands Dr

04/04/2025

Intersection												
Intersection Delay, s/veh	12.8											
Intersection LOS	B											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	2	358	33	27	142	14	33	40	68	10	28	2
Future Vol, veh/h	2	358	33	27	142	14	33	40	68	10	28	2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	1	2	2	2	2	1	2	1	2	1	1	1
Mvmt Flow	2	421	39	32	167	16	39	47	80	12	33	2
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	15.2	10.4	10.3	9.5
HCM LOS	C	B	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	23%	1%	15%	25%
Vol Thru, %	28%	91%	78%	70%
Vol Right, %	48%	8%	8%	5%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	141	393	183	40
LT Vol	33	2	27	10
Through Vol	40	358	142	28
RT Vol	68	33	14	2
Lane Flow Rate	166	462	215	47
Geometry Grp	1	1	1	1
Degree of Util (X)	0.251	0.617	0.307	0.078
Departure Headway (Hd)	5.443	4.804	5.132	5.929
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	660	758	700	603
Service Time	3.479	2.804	3.163	3.974
HCM Lane V/C Ratio	0.252	0.609	0.307	0.078
HCM Control Delay	10.3	15.2	10.4	9.5
HCM Lane LOS	B	C	B	A
HCM 95th-tile Q	1	4.3	1.3	0.3

HCM 6th AWSC
4: N Via Monte & Shadelands Dr

04/04/2025

Intersection												
Intersection Delay, s/veh	30.8											
Intersection LOS	D											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	1	47	27	144	535	5	43	15	33	15	43	2
Future Vol, veh/h	1	47	27	144	535	5	43	15	33	15	43	2
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
Heavy Vehicles, %	1	2	2	2	2	1	2	1	2	1	1	1
Mvmt Flow	1	51	29	155	575	5	46	16	35	16	46	2
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.8	37.8	10.1	9.9
HCM LOS	A	E	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	47%	1%	21%	25%
Vol Thru, %	16%	63%	78%	72%
Vol Right, %	36%	36%	1%	3%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	91	75	684	60
LT Vol	43	1	144	15
Through Vol	15	47	535	43
RT Vol	33	27	5	2
Lane Flow Rate	98	81	735	65
Geometry Grp	1	1	1	1
Degree of Util (X)	0.161	0.114	0.926	0.11
Departure Headway (Hd)	5.922	5.104	4.532	6.13
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	609	705	794	588
Service Time	3.927	3.116	2.601	4.137
HCM Lane V/C Ratio	0.161	0.115	0.926	0.111
HCM Control Delay	10.1	8.8	37.8	9.9
HCM Lane LOS	B	A	E	A
HCM 95th-tile Q	0.6	0.4	13.3	0.4

HCM 6th AWSC
4: N Via Monte & Shadelands Dr

04/04/2025

Intersection												
Intersection Delay, s/veh	12.8											
Intersection LOS	B											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	2	358	33	27	142	14	33	40	68	10	28	2
Future Vol, veh/h	2	358	33	27	142	14	33	40	68	10	28	2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	1	2	2	2	2	1	2	1	2	1	1	1
Mvmt Flow	2	421	39	32	167	16	39	47	80	12	33	2
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	15.2	10.4	10.3	9.5
HCM LOS	C	B	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	23%	1%	15%	25%
Vol Thru, %	28%	91%	78%	70%
Vol Right, %	48%	8%	8%	5%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	141	393	183	40
LT Vol	33	2	27	10
Through Vol	40	358	142	28
RT Vol	68	33	14	2
Lane Flow Rate	166	462	215	47
Geometry Grp	1	1	1	1
Degree of Util (X)	0.251	0.617	0.307	0.078
Departure Headway (Hd)	5.443	4.804	5.132	5.929
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	660	758	700	603
Service Time	3.479	2.804	3.163	3.974
HCM Lane V/C Ratio	0.252	0.609	0.307	0.078
HCM Control Delay	10.3	15.2	10.4	9.5
HCM Lane LOS	B	C	B	A
HCM 95th-tile Q	1	4.3	1.3	0.3

HCM 6th AWSC
4: N Via Monte & Shadelands Dr

04/04/2025

Intersection												
Intersection Delay, s/veh	26.7											
Intersection LOS	D											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	1	51	28	150	557	5	45	15	35	15	43	2
Future Vol, veh/h	1	51	28	150	557	5	45	15	35	15	43	2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	1	2	2	2	2	1	2	1	2	1	1	1
Mvmt Flow	1	51	28	150	557	5	45	15	35	15	43	2
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.7	32.4	9.9	9.7
HCM LOS	A	D	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	47%	1%	21%	25%
Vol Thru, %	16%	64%	78%	72%
Vol Right, %	37%	35%	1%	3%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	95	80	712	60
LT Vol	45	1	150	15
Through Vol	15	51	557	43
RT Vol	35	28	5	2
Lane Flow Rate	95	80	712	60
Geometry Grp	1	1	1	1
Degree of Util (X)	0.154	0.112	0.891	0.101
Departure Headway (Hd)	5.835	5.05	4.506	6.048
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	618	714	797	595
Service Time	3.841	3.05	2.569	4.055
HCM Lane V/C Ratio	0.154	0.112	0.893	0.101
HCM Control Delay	9.9	8.7	32.4	9.7
HCM Lane LOS	A	A	D	A
HCM 95th-tile Q	0.5	0.4	11.7	0.3

HCM 6th AWSC
4: N Via Monte & Shadelands Dr

04/04/2025

Intersection												
Intersection Delay, s/veh	11											
Intersection LOS	B											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	2	368	34	28	145	14	34	40	70	10	28	2
Future Vol, veh/h	2	368	34	28	145	14	34	40	70	10	28	2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	1	2	2	2	2	1	2	1	2	1	1	1
Mvmt Flow	2	368	34	28	145	14	34	40	70	10	28	2
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12.4	9.6	9.5	9
HCM LOS	B	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	24%	0%	15%	25%
Vol Thru, %	28%	91%	78%	70%
Vol Right, %	49%	8%	7%	5%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	144	404	187	40
LT Vol	34	2	28	10
Through Vol	40	368	145	28
RT Vol	70	34	14	2
Lane Flow Rate	144	404	187	40
Geometry Grp	1	1	1	1
Degree of Util (X)	0.204	0.512	0.252	0.061
Departure Headway (Hd)	5.097	4.565	4.855	5.515
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	698	784	735	642
Service Time	3.174	2.62	2.922	3.609
HCM Lane V/C Ratio	0.206	0.515	0.254	0.062
HCM Control Delay	9.5	12.4	9.6	9
HCM Lane LOS	A	B	A	A
HCM 95th-tile Q	0.8	3	1	0.2

Appendix E

Community Benefits Variant Calculations

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HCM 6th Roundabout
4: N Via Monte & Shadelands Dr

01/24/2025

Intersection				
Intersection Delay, s/veh	8.3			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	125	742	123	0
Demand Flow Rate, veh/h	128	757	125	0
Vehicles Circulating, veh/h	161	61	94	818
Vehicles Exiting, veh/h	657	158	195	0
Ped Vol Crossing Leg, #/h	13	31	31	0
Ped Cap Adj	0.998	0.996	0.996	1.000
Approach Delay, s/veh	4.1	9.7	3.8	0.0
Approach LOS	A	A	A	-
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	128	757	125	0
Cap Entry Lane, veh/h	1171	1297	1254	599
Entry HV Adj Factor	0.978	0.981	0.984	1.000
Flow Entry, veh/h	125	742	123	0
Cap Entry, veh/h	1143	1266	1228	599
V/C Ratio	0.110	0.586	0.100	0.000
Control Delay, s/veh	4.1	9.7	3.8	6.0
LOS	A	A	A	A
95th %tile Queue, veh	0	4	0	0

HCM 6th Roundabout
4: N Via Monte & Shadelands Dr

01/24/2025

Intersection				
Intersection Delay, s/veh	6.3			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	554	230	127	0
Demand Flow Rate, veh/h	565	234	130	0
Vehicles Circulating, veh/h	63	43	495	277
Vehicles Exiting, veh/h	214	582	133	0
Ped Vol Crossing Leg, #/h	7	11	11	0
Ped Cap Adj	0.999	0.998	0.998	1.000
Approach Delay, s/veh	7.2	4.3	6.0	0.0
Approach LOS	A	A	A	-
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	565	234	130	0
Cap Entry Lane, veh/h	1294	1321	833	1040
Entry HV Adj Factor	0.981	0.981	0.977	1.000
Flow Entry, veh/h	554	230	127	0
Cap Entry, veh/h	1268	1294	812	1040
V/C Ratio	0.437	0.177	0.156	0.000
Control Delay, s/veh	7.2	4.3	6.0	3.5
LOS	A	A	A	A
95th %tile Queue, veh	2	1	1	0

HCM 6th Roundabout
4: N Via Monte & Shadelands Dr

01/24/2025

Intersection				
Intersection Delay, s/veh	8.3			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	125	742	123	0
Demand Flow Rate, veh/h	128	757	125	0
Vehicles Circulating, veh/h	161	61	94	818
Vehicles Exiting, veh/h	657	158	195	0
Ped Vol Crossing Leg, #/h	13	31	31	0
Ped Cap Adj	0.998	0.996	0.996	1.000
Approach Delay, s/veh	4.1		3.8	0.0
Approach LOS	A	A	A	-
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	128	757	125	0
Cap Entry Lane, veh/h	1171	1297	1254	599
Entry HV Adj Factor	0.978	0.981	0.984	1.000
Flow Entry, veh/h	125	742	123	0
Cap Entry, veh/h	1143	1266	1228	599
V/C Ratio	0.110	0.586	0.100	0.000
Control Delay, s/veh	4.1	9.7	3.8	6.0
LOS	A	A	A	A
95th %tile Queue, veh	0	4	0	0

HCM 6th Roundabout
4: N Via Monte & Shadelands Dr

01/24/2025

Intersection				
Intersection Delay, s/veh	6.3			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	554	230	127	0
Demand Flow Rate, veh/h	565	234	130	0
Vehicles Circulating, veh/h	63	43	495	277
Vehicles Exiting, veh/h	214	582	133	0
Ped Vol Crossing Leg, #/h	7	11	11	0
Ped Cap Adj	0.999	0.998	0.998	1.000
Approach Delay, s/veh	7.2	4.3	6.0	0.0
Approach LOS	A	A	A	-
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	565	234	130	0
Cap Entry Lane, veh/h	1294	1321	833	1040
Entry HV Adj Factor	0.981	0.981	0.977	1.000
Flow Entry, veh/h	554	230	127	0
Cap Entry, veh/h	1268	1294	812	1040
V/C Ratio	0.437	0.177	0.156	0.000
Control Delay, s/veh	7.2	4.3	6.0	3.5
LOS	A	A	A	A
95th %tile Queue, veh	2	1	1	0

HCM 6th Roundabout
4: N Via Monte & Shadelands Dr

01/24/2025

Intersection				
Intersection Delay, s/veh	7.9			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	122	718	119	0
Demand Flow Rate, veh/h	125	732	121	0
Vehicles Circulating, veh/h	156	59	92	791
Vehicles Exiting, veh/h	635	154	189	0
Ped Vol Crossing Leg, #/h	13	31	31	0
Ped Cap Adj	0.998	0.996	0.996	1.000
Approach Delay, s/veh	4.0		3.7	0.0
Approach LOS	A	A	A	-
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	125	732	121	0
Cap Entry Lane, veh/h	1177	1299	1256	616
Entry HV Adj Factor	0.978	0.980	0.983	1.000
Flow Entry, veh/h	122	718	119	0
Cap Entry, veh/h	1148	1268	1230	616
V/C Ratio	0.106	0.566	0.097	0.000
Control Delay, s/veh	4.0	9.3	3.7	5.8
LOS	A	A	A	A
95th %tile Queue, veh	0	4	0	0

HCM 6th Roundabout
4: N Via Monte & Shadelands Dr

01/24/2025

Intersection				
Intersection Delay, s/veh	5.7			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	482	200	111	0
Demand Flow Rate, veh/h	491	204	113	0
Vehicles Circulating, veh/h	55	38	430	242
Vehicles Exiting, veh/h	187	505	116	0
Ped Vol Crossing Leg, #/h	7	11	11	0
Ped Cap Adj	0.999	0.998	0.998	1.000
Approach Delay, s/veh	6.4	4.0	5.4	0.0
Approach LOS	A	A	A	-
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	491	204	113	0
Cap Entry Lane, veh/h	1305	1327	890	1078
Entry HV Adj Factor	0.981	0.981	0.982	1.000
Flow Entry, veh/h	482	200	111	0
Cap Entry, veh/h	1278	1300	873	1078
V/C Ratio	0.377	0.154	0.127	0.000
Control Delay, s/veh	6.4	4.0	5.4	3.3
LOS	A	A	A	A
95th %tile Queue, veh	2	1	0	0

HCM 6th Roundabout
4: N Via Monte & Shadelands Dr

01/24/2025

Intersection				
Intersection Delay, s/veh	8.4			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	81	736	98	67
Demand Flow Rate, veh/h	83	750	100	67
Vehicles Circulating, veh/h	223	65	70	791
Vehicles Exiting, veh/h	635	105	236	24
Ped Vol Crossing Leg, #/h	13	31	31	0
Ped Cap Adj	0.998	0.996	0.996	1.000
Approach Delay, s/veh	4.0	9.7	3.5	7.1
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	83	750	100	67
Cap Entry Lane, veh/h	1099	1291	1285	616
Entry HV Adj Factor	0.976	0.981	0.978	0.993
Flow Entry, veh/h	81	736	98	67
Cap Entry, veh/h	1070	1261	1252	611
V/C Ratio	0.076	0.583	0.078	0.109
Control Delay, s/veh	4.0	9.7	3.5	7.1
LOS	A	A	A	A
95th %tile Queue, veh	0	4	0	0

HCM 6th Roundabout
4: N Via Monte & Shadelands Dr

01/24/2025

Intersection				
Intersection Delay, s/veh	5.7			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	462	215	163	44
Demand Flow Rate, veh/h	471	219	166	44
Vehicles Circulating, veh/h	75	86	442	243
Vehicles Exiting, veh/h	212	522	104	62
Ped Vol Crossing Leg, #/h	7	11	11	0
Ped Cap Adj	0.999	0.998	0.998	1.000
Approach Delay, s/veh	6.4	4.4	6.1	3.7
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	471	219	166	44
Cap Entry Lane, veh/h	1278	1264	879	1077
Entry HV Adj Factor	0.980	0.980	0.979	0.993
Flow Entry, veh/h	462	215	163	44
Cap Entry, veh/h	1251	1237	860	1069
V/C Ratio	0.369	0.174	0.189	0.041
Control Delay, s/veh	6.4	4.4	6.1	3.7
LOS	A	A	A	A
95th %tile Queue, veh	2	1	1	0

HCM 6th Roundabout
4: N Via Monte & Shadelands Dr

01/24/2025

Intersection				
Intersection Delay, s/veh	8.4			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	81	736	98	67
Demand Flow Rate, veh/h	83	750	100	67
Vehicles Circulating, veh/h	223	65	70	791
Vehicles Exiting, veh/h	635	105	236	24
Ped Vol Crossing Leg, #/h	13	31	31	0
Ped Cap Adj	0.998	0.996	0.996	1.000
Approach Delay, s/veh	4.0	9.7	3.5	7.1
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	83	750	100	67
Cap Entry Lane, veh/h	1099	1291	1285	616
Entry HV Adj Factor	0.976	0.981	0.978	0.993
Flow Entry, veh/h	81	736	98	67
Cap Entry, veh/h	1070	1261	1252	611
V/C Ratio	0.076	0.583	0.078	0.109
Control Delay, s/veh	4.0	9.7	3.5	7.1
LOS	A	A	A	A
95th %tile Queue, veh	0	4	0	0

HCM 6th Roundabout
4: N Via Monte & Shadelands Dr

01/24/2025

Intersection				
Intersection Delay, s/veh	5.7			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	462	215	163	44
Demand Flow Rate, veh/h	471	219	166	44
Vehicles Circulating, veh/h	75	86	442	243
Vehicles Exiting, veh/h	212	522	104	62
Ped Vol Crossing Leg, #/h	7	11	11	0
Ped Cap Adj	0.999	0.998	0.998	1.000
Approach Delay, s/veh	6.4	4.4	6.1	3.7
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	471	219	166	44
Cap Entry Lane, veh/h	1278	1264	879	1077
Entry HV Adj Factor	0.980	0.980	0.979	0.993
Flow Entry, veh/h	462	215	163	44
Cap Entry, veh/h	1251	1237	860	1069
V/C Ratio	0.369	0.174	0.189	0.041
Control Delay, s/veh	6.4	4.4	6.1	3.7
LOS	A	A	A	A
95th %tile Queue, veh	2	1	1	0

HCM 6th Roundabout
4: N Via Monte & Shadelands Dr

01/24/2025

Intersection				
Intersection Delay, s/veh	8.1			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	80	712	95	60
Demand Flow Rate, veh/h	82	726	97	60
Vehicles Circulating, veh/h	211	62	68	767
Vehicles Exiting, veh/h	616	103	225	21
Ped Vol Crossing Leg, #/h	13	31	31	0
Ped Cap Adj	0.998	0.996	0.996	1.000
Approach Delay, s/veh	4.0	9.3	3.5	6.8
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	82	726	97	60
Cap Entry Lane, veh/h	1113	1295	1287	631
Entry HV Adj Factor	0.975	0.981	0.978	0.993
Flow Entry, veh/h	80	712	95	60
Cap Entry, veh/h	1083	1265	1254	627
V/C Ratio	0.074	0.563	0.076	0.095
Control Delay, s/veh	4.0	9.3	3.5	6.8
LOS	A	A	A	A
95th %tile Queue, veh	0	4	0	0

HCM 6th Roundabout
4: N Via Monte & Shadelands Dr

01/24/2025

Intersection				
Intersection Delay, s/veh	5.2			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	404	187	144	40
Demand Flow Rate, veh/h	412	191	146	40
Vehicles Circulating, veh/h	67	77	387	212
Vehicles Exiting, veh/h	185	456	92	56
Ped Vol Crossing Leg, #/h	7	11	11	0
Ped Cap Adj	0.999	0.998	0.998	1.000
Approach Delay, s/veh	5.8	4.1	5.5	3.6
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	412	191	146	40
Cap Entry Lane, veh/h	1289	1276	930	1112
Entry HV Adj Factor	0.980	0.980	0.984	0.993
Flow Entry, veh/h	404	187	144	40
Cap Entry, veh/h	1261	1248	913	1104
V/C Ratio	0.320	0.150	0.157	0.036
Control Delay, s/veh	5.8	4.1	5.5	3.6
LOS	A	A	A	A
95th %tile Queue, veh	1	1	1	0

Appendix F

Traffic Signal Warrant Worksheets

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Warrant 3: Peak-Hour Volumes and Delay

Mitchell Dr & N Wiget Ln
Walnut Creek

Project Name: WCR036

Intersection: 1

	Major Street	Minor Street
Street Name	Mitchell Dr	N Wiget Ln
Direction	E-W	N-S
Number of Lanes	1	1
Approach Speed	30	30

Population less than 10,000? No
Date of Count: Tuesday, September 17, 2024
Scenario: AM Cumulative

Warrant 3 Met?: Met when either Condition A or B is met

Condition A: Met when conditions A1, A2, and A3 are met

Condition A1

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Minor Approach Delay: 0.86 vehicle-hours

Condition A2

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic of 150 vph for two moving lanes

Minor Approach Volume: 285 vph

Condition A3

The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches

Total Entering Volume: 854 vph

Condition B

The plotted point falls above the curve

No

Not Met

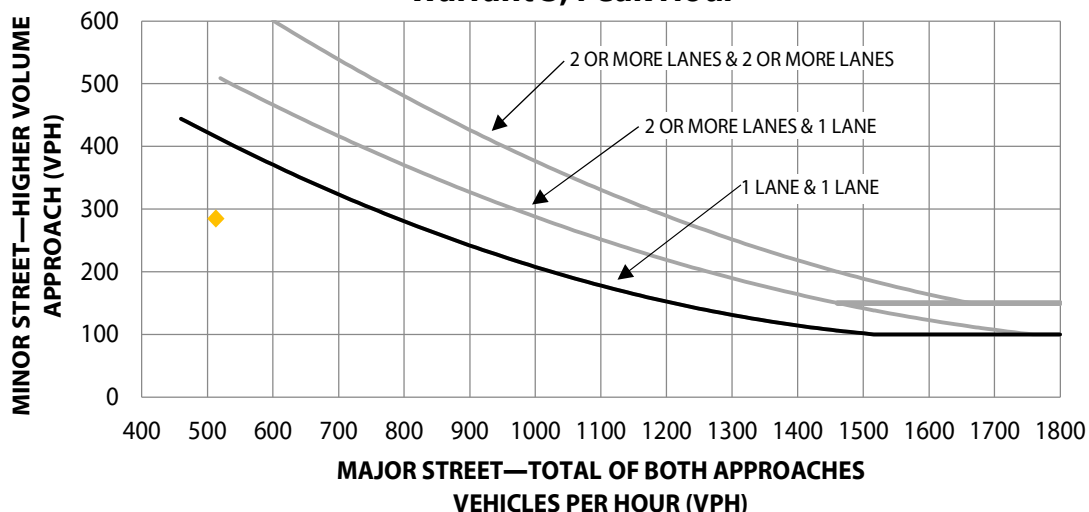
Not Met

Met

Met

Not Met

Warrant 3, Peak Hour



Warrant 3: Peak-Hour Volumes and Delay

N Wiget Ln & Mitchell Dr
Walnut Creek

Project Name: WCR036

Intersection: 1

	Major Street	Minor Street
Street Name	N Wiget Ln	Mitchell Dr
Direction	N-S	E-W
Number of Lanes	1	1
Approach Speed	30	30

Population less than 10,000? No
Date of Count: Tuesday, September 17, 2024
Scenario: PM Cumulative

Warrant 3 Met?: Met when either Condition A or B is met

No

Condition A: Met when conditions A1, A2, and A3 are met

Not Met

Condition A1

Not Met

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Minor Approach Delay: 0.75 vehicle-hours

Condition A2

Met

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes

Minor Approach Volume: 240 vph

Condition A3

Met

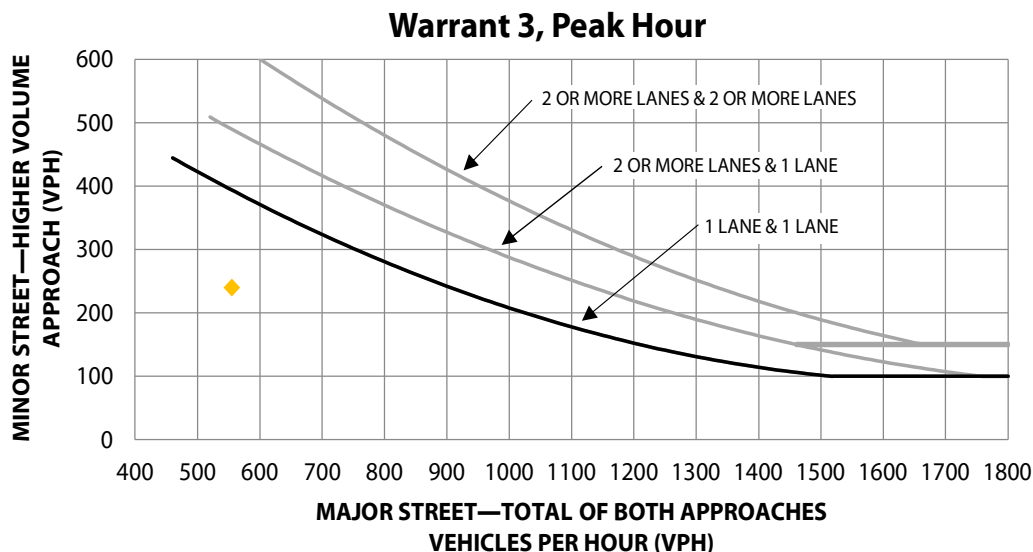
The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches

Total Entering Volume: 795 vph

Condition B

Not Met

The plotted point falls above the curve



Warrant 3: Peak-Hour Volumes and Delay

Mitchell Dr & N Wiget Ln
Walnut Creek

Project Name: WCR036

Intersection: 1

	Major Street	Minor Street
Street Name	Mitchell Dr	N Wiget Ln
Direction	E-W	N-S
Number of Lanes	1	1
Approach Speed	30	30

Population less than 10,000? No
Date of Count: Tuesday, September 17, 2024
Scenario: AM Cumulative plus Project

Warrant 3 Met?: Met when either Condition A or B is met

No

Condition A: Met when conditions A1, A2, and A3 are met

Not Met

Condition A1

Not Met

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Minor Approach Delay: 0.78 vehicle-hours

Condition A2

Met

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes

Minor Approach Volume: 261 vph

Condition A3

Met

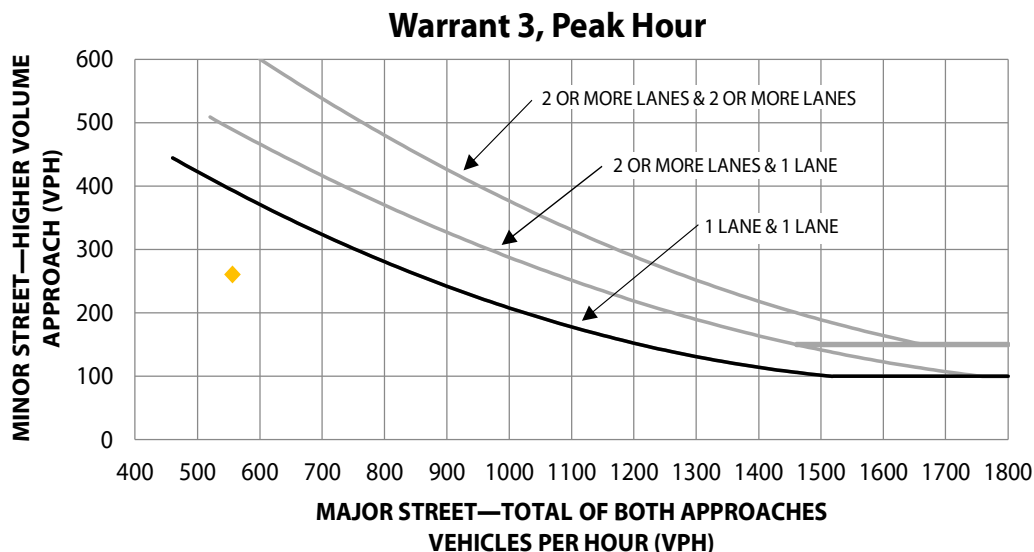
The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches

Total Entering Volume: 873 vph

Condition B

Not Met

The plotted point falls above the curve



Warrant 3: Peak-Hour Volumes and Delay

N Wiget Ln & Mitchell Dr
Walnut Creek

Project Name: WCR036

Intersection: 1

	Major Street	Minor Street
Street Name	N Wiget Ln	Mitchell Dr
Direction	N-S	E-W
Number of Lanes	1	1
Approach Speed	30	30

Population less than 10,000? No
Date of Count: Tuesday, September 17, 2024
Scenario: PM Cumulative plus Project

Warrant 3 Met?: Met when either Condition A or B is met

No

Condition A: Met when conditions A1, A2, and A3 are met

Not Met

Condition A1

Not Met

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Minor Approach Delay: 0.74 vehicle-hours

Condition A2

Met

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes

Minor Approach Volume: 235 vph

Condition A3

Met

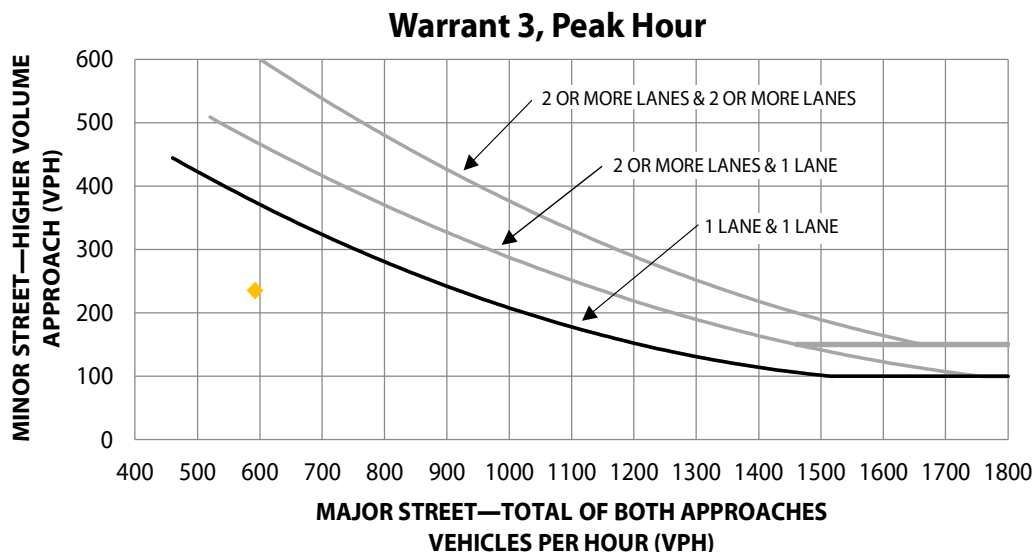
The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches

Total Entering Volume: 827 vph

Condition B

Not Met

The plotted point falls above the curve



Warrant 3: Peak-Hour Volumes and Delay

N Wiget Ln & Shadelands Dr
Walnut Creek

Project Name: WCR036

Intersection: 1

	Major Street	Minor Street
Street Name	N Wiget Ln	Shadelands Dr
Direction	N-S	E-W
Number of Lanes	1	1
Approach Speed	30	30

Population less than 10,000? No
Date of Count: Tuesday, September 17, 2024
Scenario: AM Existing

Warrant 3 Met?: Met when either Condition A or B is met

Yes

Condition A: Met when conditions A1, A2, and A3 are met

Not Met

Condition A1

Not Met

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Minor Approach Delay: 3.74 vehicle-hours

Condition A2

Met

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes

Minor Approach Volume: 436 vph

Condition A3

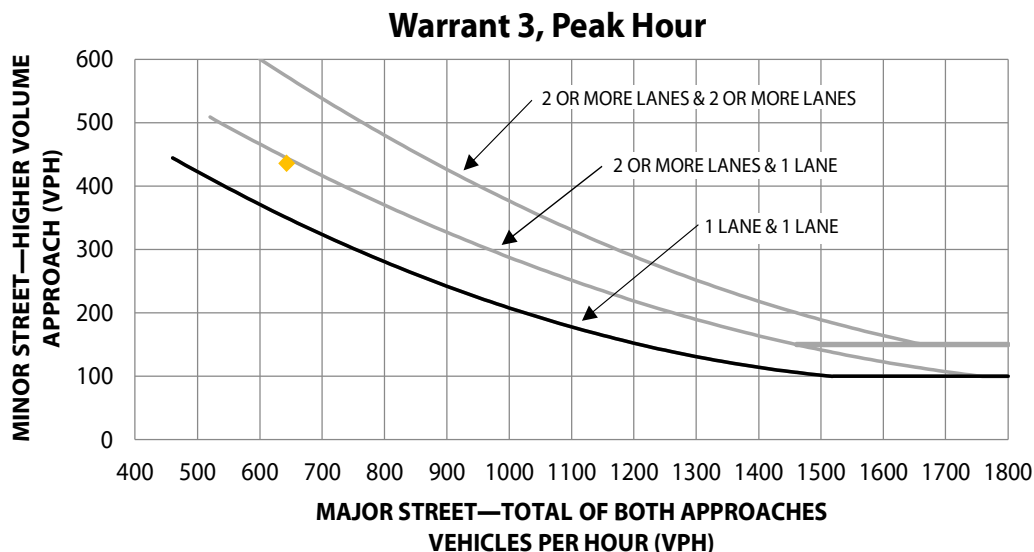
Met

Total Entering Volume: 1263 vph

Condition B

Met

The plotted point falls above the curve



Warrant 3: Peak-Hour Volumes and Delay

N Wiget Ln & Shadelands Dr
Walnut Creek

Project Name: WCR036

Intersection: 1

	Major Street	Minor Street
Street Name	N Wiget Ln	Shadelands Dr
Direction	N-S	E-W
Number of Lanes	1	1
Approach Speed	30	30

Population less than 10,000? No
Date of Count: Tuesday, September 17, 2024
Scenario: PM Existing

Warrant 3 Met?: Met when either Condition A or B is met

No

Condition A: Met when conditions A1, A2, and A3 are met

Not Met

Condition A1

Not Met

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Minor Approach Delay: 2.45 vehicle-hours

Condition A2

Met

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes

Minor Approach Volume: 313 vph

Condition A3

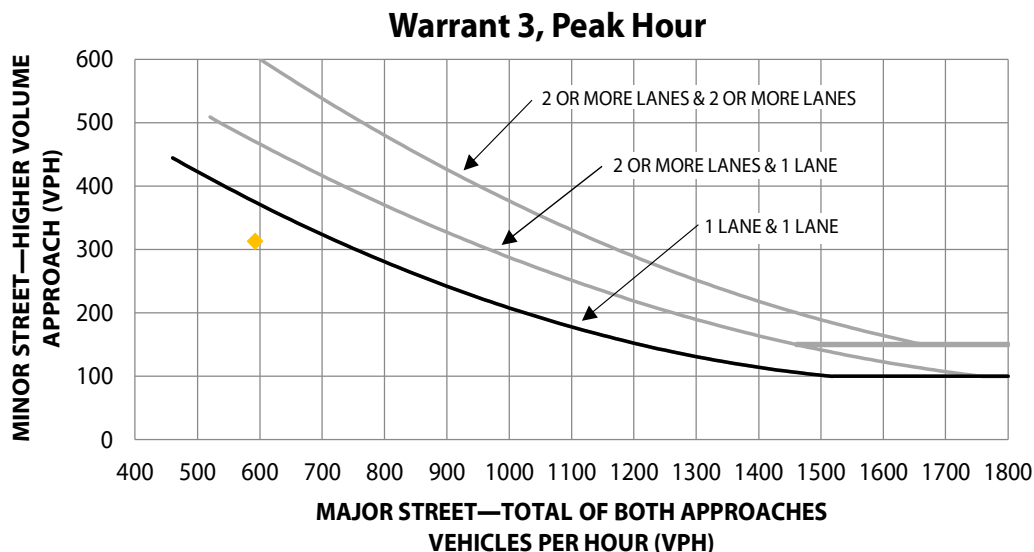
Met

Total Entering Volume: 1176 vph

Condition B

Not Met

The plotted point falls above the curve



Warrant 3: Peak-Hour Volumes and Delay

Shadelands Dr & N Wiget Ln
Walnut Creek

Project Name: WCR036

Intersection: 1

	Major Street	Minor Street
Street Name	Shadelands Dr	N Wiget Ln
Direction	E-W	N-S
Number of Lanes	1	1
Approach Speed	30	30

Population less than 10,000? No
Date of Count: Tuesday, September 17, 2024
Scenario: AM Existing plus Project

Warrant 3 Met?: Met when either Condition A or B is met

No

Condition A: Met when conditions A1, A2, and A3 are met

Not Met

Condition A1

Not Met

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Minor Approach Delay: 1.74 vehicle-hours

Condition A2

Met

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes

Minor Approach Volume: 323 vph

Condition A3

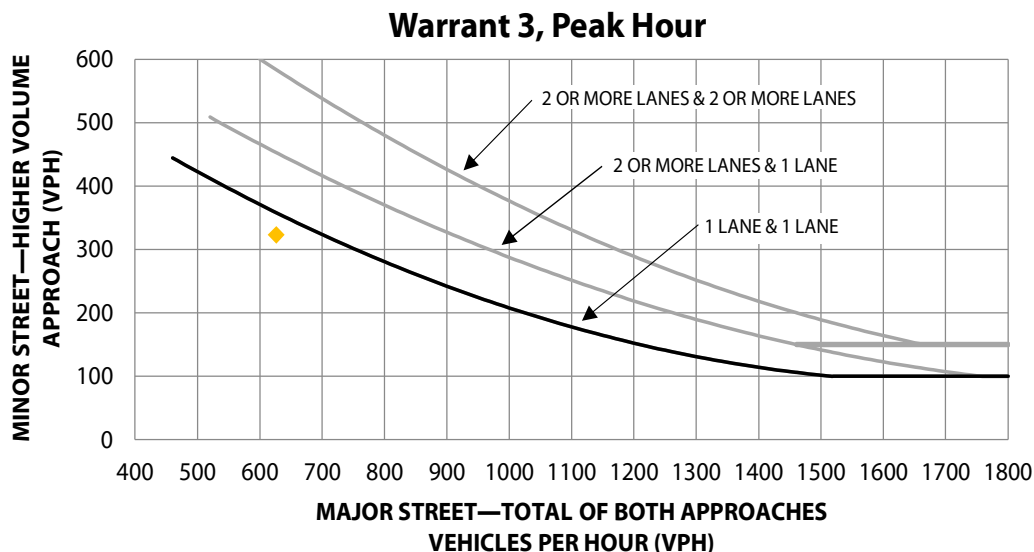
Met

Total Entering Volume: 1244 vph

Condition B

Not Met

The plotted point falls above the curve



Warrant 3: Peak-Hour Volumes and Delay

N Wiget Ln & Shadelands Dr
Walnut Creek

Project Name: WCR036

Intersection: 1

	Major Street	Minor Street
Street Name	N Wiget Ln	Shadelands Dr
Direction	N-S	E-W
Number of Lanes	1	1
Approach Speed	30	30

Population less than 10,000? No
Date of Count: Tuesday, September 17, 2024
Scenario: PM Existing plus Project

Warrant 3 Met?: Met when either Condition A or B is met

No

Condition A: Met when conditions A1, A2, and A3 are met

Not Met

Condition A1

Not Met

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Minor Approach Delay: 1.79 vehicle-hours

Condition A2

Met

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes

Minor Approach Volume: 277 vph

Condition A3

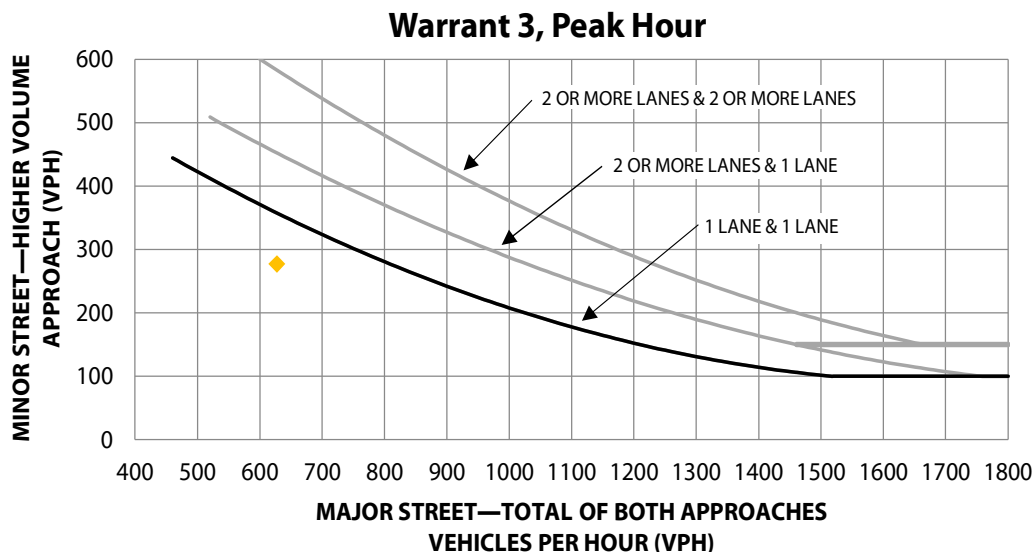
Met

Total Entering Volume: 1175 vph

Condition B

Not Met

The plotted point falls above the curve



Warrant 3: Peak-Hour Volumes and Delay

N Wiget Ln & Shadelands Dr
Walnut Creek

Project Name: WCR036

Intersection: 1

	Major Street	Minor Street
Street Name	N Wiget Ln	Shadelands Dr
Direction	N-S	E-W
Number of Lanes	1	1
Approach Speed	30	30

Population less than 10,000? No
Date of Count: Tuesday, September 17, 2024
Scenario: AM Baseline

Warrant 3 Met?: Met when either Condition A or B is met

Condition A: Met when conditions A1, A2, and A3 are met

Condition A1

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Minor Approach Delay: 6.89 vehicle-hours

Condition A2

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes

Minor Approach Volume: 436 vph

Condition A3

The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches

Total Entering Volume: 1303 vph

Condition B

The plotted point falls above the curve

Yes

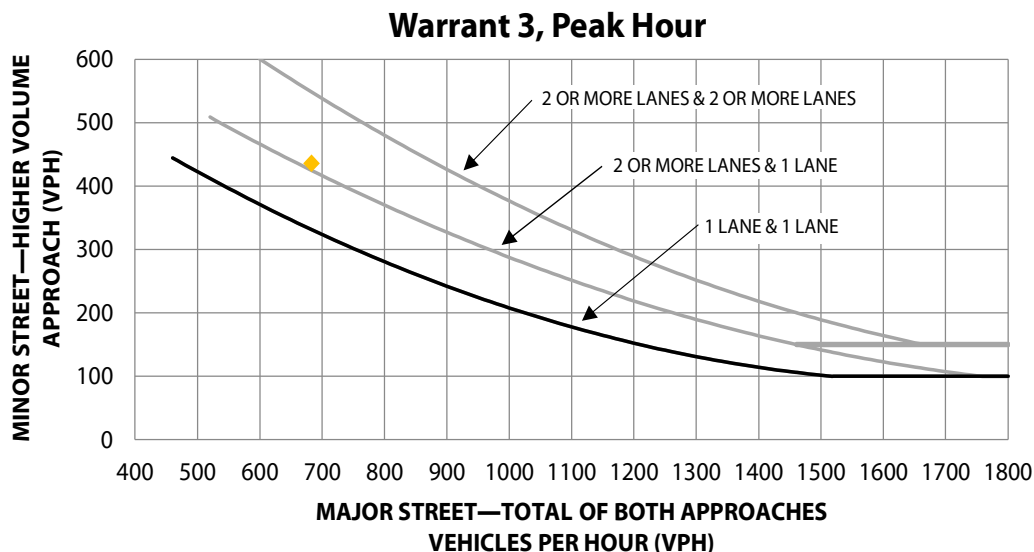
Met

Met

Met

Met

Met



Warrant 3: Peak-Hour Volumes and Delay

N Wiget Ln & Shadelands Dr
Walnut Creek

Project Name: WCR036

Intersection: 1

	Major Street	Minor Street
Street Name	N Wiget Ln	Shadelands Dr
Direction	N-S	E-W
Number of Lanes	1	1
Approach Speed	30	30

Population less than 10,000? No
Date of Count: Tuesday, September 17, 2024
Scenario: PM Baseline

Warrant 3 Met?: Met when either Condition A or B is met

No

Condition A: Met when conditions A1, A2, and A3 are met

Not Met

Condition A1

Not Met

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Minor Approach Delay: 2.87 vehicle-hours

Condition A2

Met

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes

Minor Approach Volume: 313 vph

Condition A3

Met

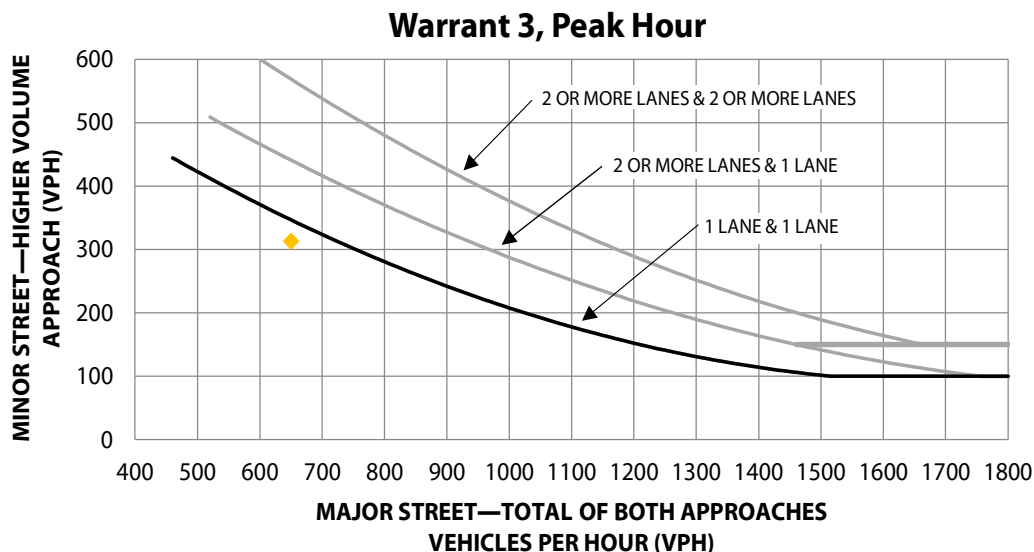
The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches

Total Entering Volume: 1234 vph

Condition B

Not Met

The plotted point falls above the curve



Warrant 3: Peak-Hour Volumes and Delay

N Wiget Ln & Shadelands Dr
Walnut Creek

Project Name: WCR036

Intersection: 1

	Major Street	Minor Street
Street Name	N Wiget Ln	Shadelands Dr
Direction	N-S	E-W
Number of Lanes	1	1
Approach Speed	30	30

Population less than 10,000? No
Date of Count: Tuesday, September 17, 2024
Scenario: AM Baseline plus Project

Warrant 3 Met?: Met when either Condition A or B is met

Yes

Condition A: Met when conditions A1, A2, and A3 are met

Met

Condition A1

Met

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Minor Approach Delay: 7.05 vehicle-hours

Condition A2

Met

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes

Minor Approach Volume: 442 vph

Condition A3

Met

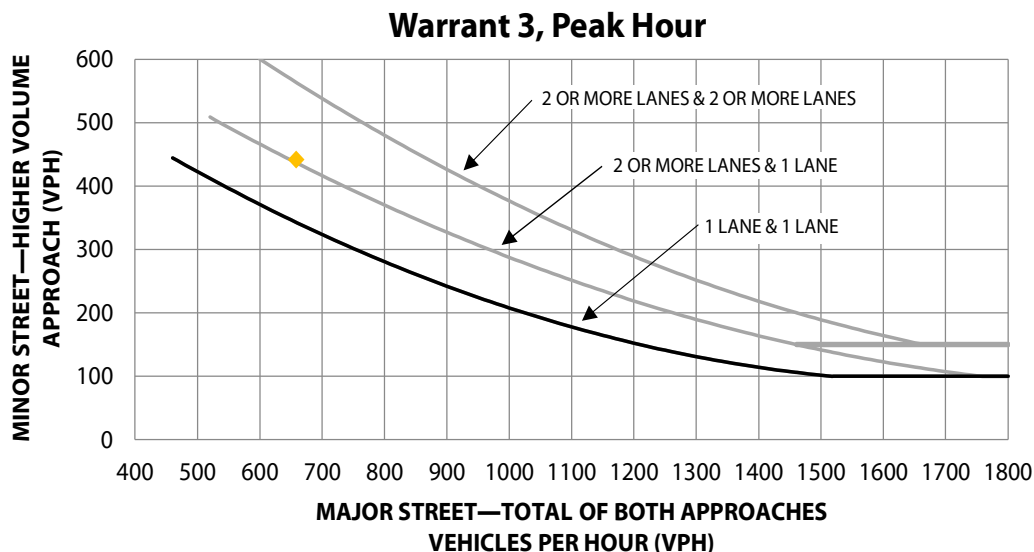
The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches

Total Entering Volume: 1284 vph

Condition B

Met

The plotted point falls above the curve



Warrant 3: Peak-Hour Volumes and Delay

N Wiget Ln & Shadelands Dr
Walnut Creek

Project Name: WCR036

Intersection: 1

	Major Street	Minor Street
Street Name	N Wiget Ln	Shadelands Dr
Direction	N-S	E-W
Number of Lanes	1	1
Approach Speed	30	30

Population less than 10,000? No
Date of Count: Tuesday, September 17, 2024
Scenario: PM Baseline plus Project

Warrant 3 Met?: Met when either Condition A or B is met

No

Condition A: Met when conditions A1, A2, and A3 are met

Not Met

Condition A1

Not Met

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Minor Approach Delay: 2.11 vehicle-hours

Condition A2

Met

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes

Minor Approach Volume: 277 vph

Condition A3

Met

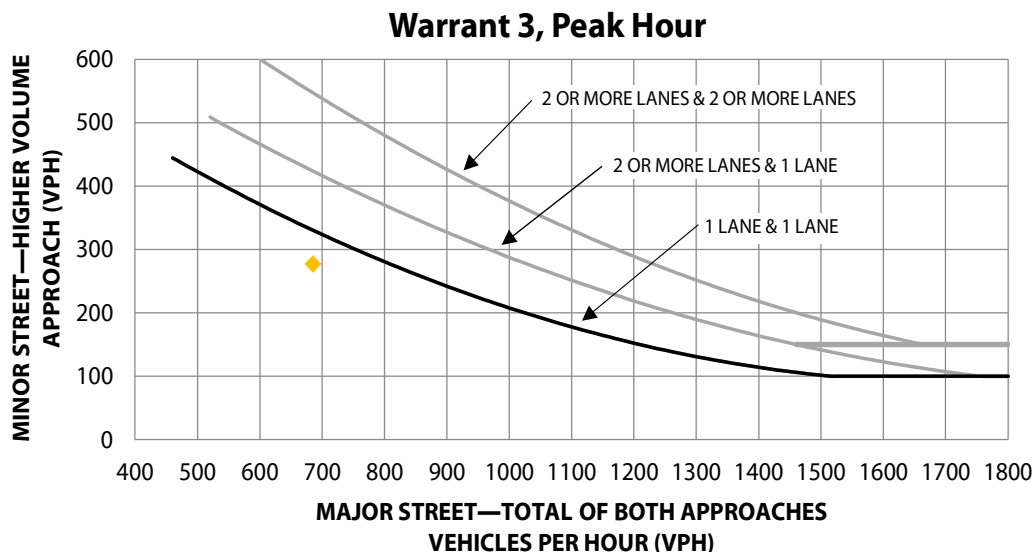
The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches

Total Entering Volume: 1233 vph

Condition B

Not Met

The plotted point falls above the curve



Warrant 3: Peak-Hour Volumes and Delay

N Wiget Ln & Shadelands Dr
Walnut Creek

Project Name: WCR036

Intersection: 1

	Major Street	Minor Street
Street Name	N Wiget Ln	Shadelands Dr
Direction	N-S	E-W
Number of Lanes	1	1
Approach Speed	30	30

Population less than 10,000? No
Date of Count: Tuesday, September 17, 2024
Scenario: AM Cumulative

Warrant 3 Met?: Met when either Condition A or B is met

Condition A: Met when conditions A1, A2, and A3 are met

Condition A1

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Minor Approach Delay: 6.09 vehicle-hours

Condition A2

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic of 150 vph for two moving lanes

Minor Approach Volume: 454 vph

Condition A3

The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches

Total Entering Volume: 1355 vph

Condition B

The plotted point falls above the curve

Yes

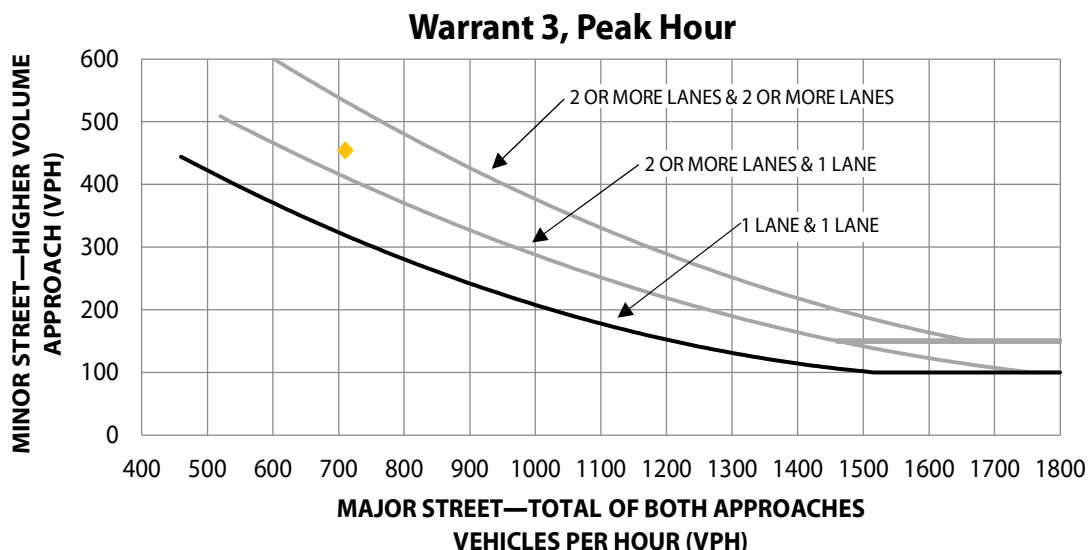
Met

Met

Met

Met

Met



Warrant 3: Peak-Hour Volumes and Delay

N Wiget Ln & Shadelands Dr
Walnut Creek

Project Name: WCR036

Intersection: 1

	Major Street	Minor Street
Street Name	N Wiget Ln	Shadelands Dr
Direction	N-S	E-W
Number of Lanes	1	1
Approach Speed	30	30

Population less than 10,000? No
Date of Count: Tuesday, September 17, 2024
Scenario: PM Cumulative

Warrant 3 Met?: Met when either Condition A or B is met

No

Condition A: Met when conditions A1, A2, and A3 are met

Not Met

Condition A1

Not Met

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Minor Approach Delay: 1.98 vehicle-hours

Condition A2

Met

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes

Minor Approach Volume: 321 vph

Condition A3

Met

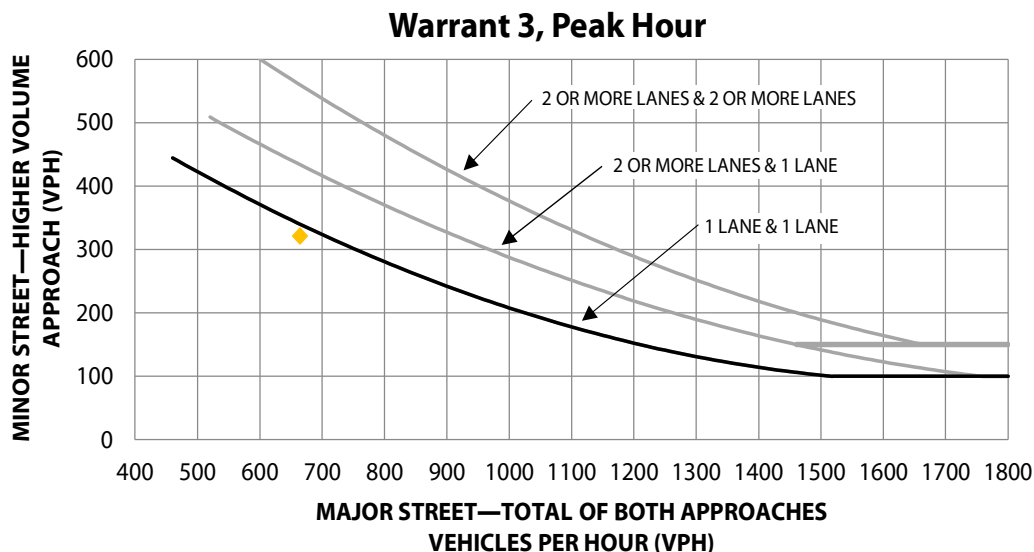
The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches

Total Entering Volume: 1263 vph

Condition B

Not Met

The plotted point falls above the curve



Warrant 3: Peak-Hour Volumes and Delay

N Wiget Ln & Shadelands Dr
Walnut Creek

Project Name: WCR036

Intersection: 1

	Major Street	Minor Street
Street Name	N Wiget Ln	Shadelands Dr
Direction	N-S	E-W
Number of Lanes	1	1
Approach Speed	30	30

Population less than 10,000? No
Date of Count: Tuesday, September 17, 2024
Scenario: AM Cumulative plus Project

Warrant 3 Met?: Met when either Condition A or B is met

Condition A: Met when conditions A1, A2, and A3 are met

Condition A1

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Minor Approach Delay: 5.81 vehicle-hours

Condition A2

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes

Minor Approach Volume: 460 vph

Condition A3

The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches

Total Entering Volume: 1336 vph

Condition B

The plotted point falls above the curve

Yes

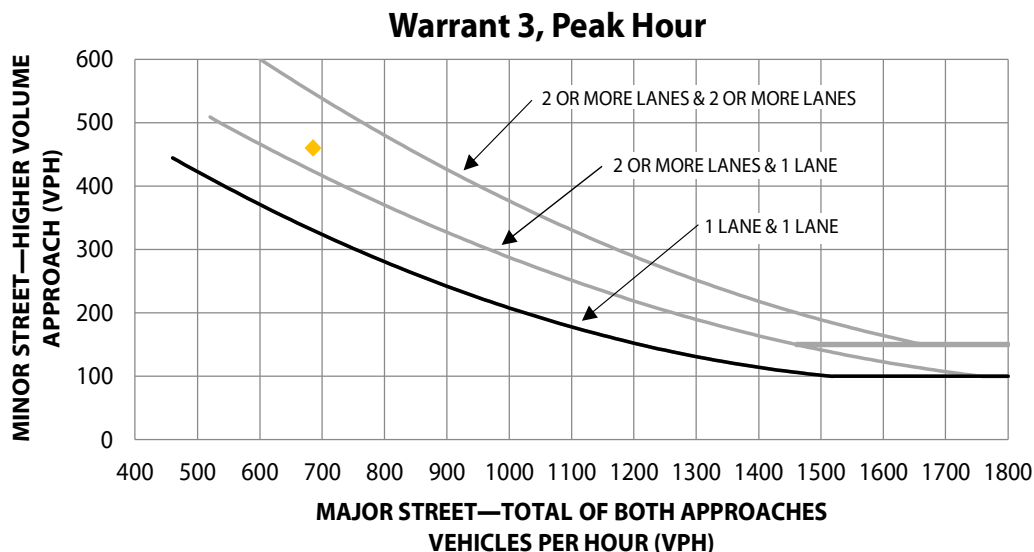
Met

Met

Met

Met

Met



Warrant 3: Peak-Hour Volumes and Delay

N Wiget Ln & Shadelands Dr
Walnut Creek

Project Name: WCR036

Intersection: 1

	Major Street	Minor Street
Street Name	N Wiget Ln	Shadelands Dr
Direction	N-S	E-W
Number of Lanes	1	1
Approach Speed	30	30

Population less than 10,000? No
Date of Count: Tuesday, September 17, 2024
Scenario: PM Cumulative plus Project

Warrant 3 Met?: Met when either Condition A or B is met

No

Condition A: Met when conditions A1, A2, and A3 are met

Not Met

Condition A1

Not Met

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Minor Approach Delay: 1.57 vehicle-hours

Condition A2

Met

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes

Minor Approach Volume: 285 vph

Condition A3

Met

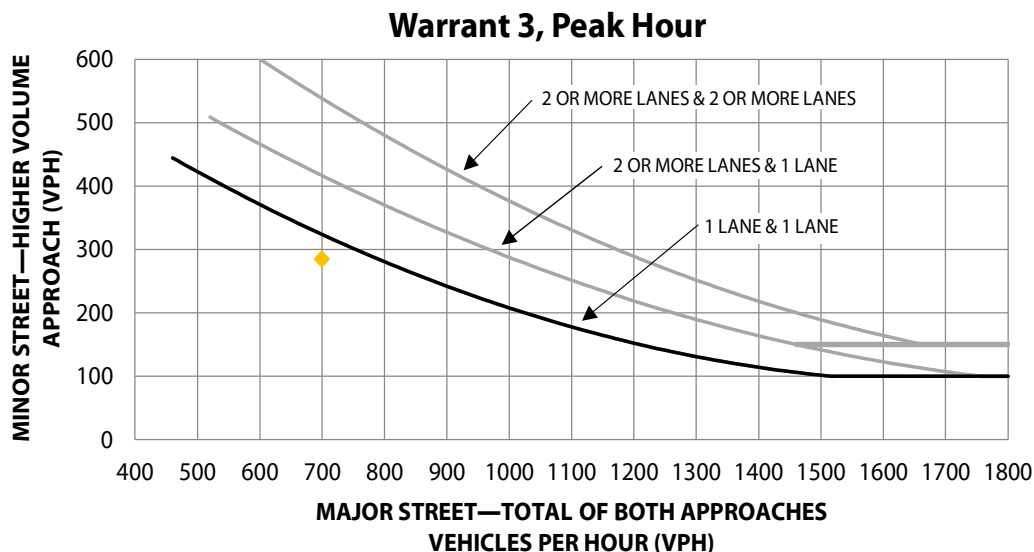
The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches

Total Entering Volume: 1262 vph

Condition B

Not Met

The plotted point falls above the curve



Warrant 3: Peak-Hour Volumes and Delay

Shadelands Dr & N Via Monte
Walnut Creek

Project Name: WCR036

Intersection: 1

	Major Street	Minor Street
Street Name	Shadelands Dr	N Via Monte
Direction	E-W	N-S
Number of Lanes	1	1
Approach Speed	30	30

Population less than 10,000? No
Date of Count: Tuesday, September 17, 2024
Scenario: AM Cumulative

Warrant 3 Met?: Met when either Condition A or B is met

No

Condition A: Met when conditions A1, A2, and A3 are met

Not Met

Condition A1

Not Met

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Minor Approach Delay: 0.71 vehicle-hours

Condition A2

Met

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes

Minor Approach Volume: 119 vph

Condition A3

Met

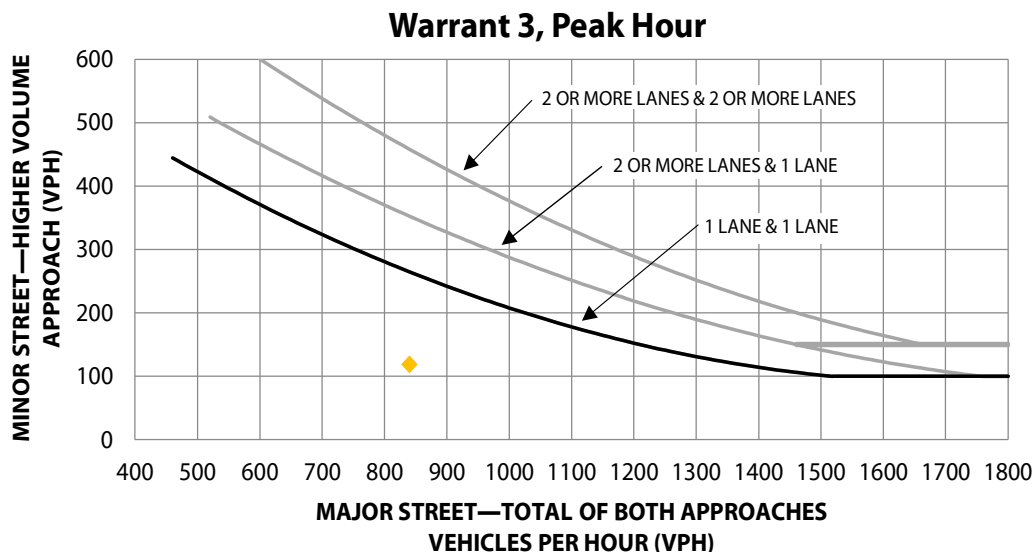
The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches

Total Entering Volume: 959 vph

Condition B

Not Met

The plotted point falls above the curve



Warrant 3: Peak-Hour Volumes and Delay

Shadelands Dr & N Via Monte
Walnut Creek

Project Name: WCR036

Intersection: 1

	Major Street	Minor Street
Street Name	Shadelands Dr	N Via Monte
Direction	E-W	N-S
Number of Lanes	1	1
Approach Speed	30	30

Population less than 10,000? No
Date of Count: Tuesday, September 17, 2024
Scenario: PM Cumulative

Warrant 3 Met?: Met when either Condition A or B is met

No

Condition A: Met when conditions A1, A2, and A3 are met

Not Met

Condition A1

Not Met

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Minor Approach Delay: 0.43 vehicle-hours

Condition A2

Met

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes

Minor Approach Volume: 111 vph

Condition A3

Met

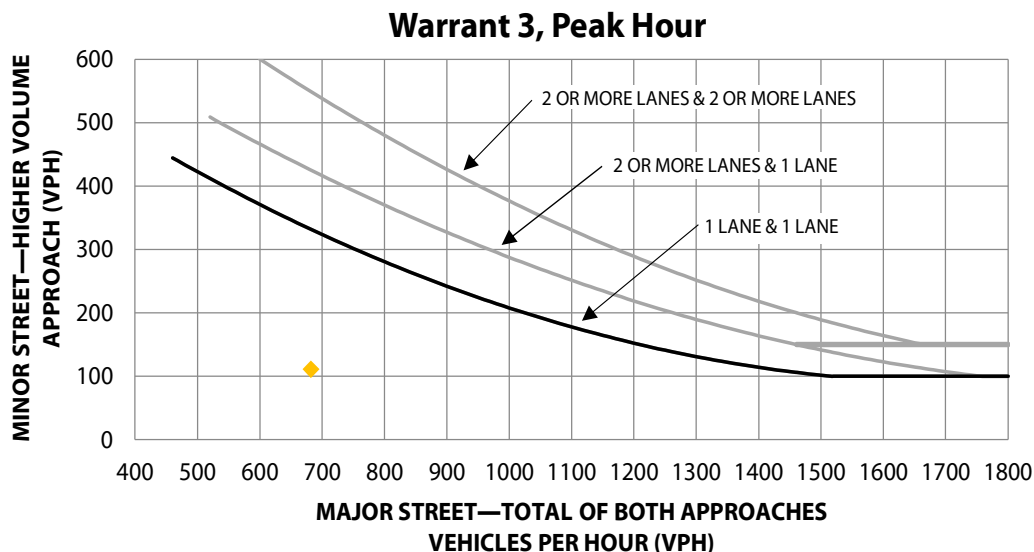
The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches

Total Entering Volume: 793 vph

Condition B

Not Met

The plotted point falls above the curve



Warrant 3: Peak-Hour Volumes and Delay

Shadelands Dr & N Via Monte
Walnut Creek

Project Name: WCR036

Intersection: 1

	Major Street	Minor Street
Street Name	Shadelands Dr	N Via Monte
Direction	E-W	N-S
Number of Lanes	1	1
Approach Speed	30	30

Population less than 10,000? No
Date of Count: Tuesday, September 17, 2024
Scenario: AM Cumulative plus Project

Warrant 3 Met?: Met when either Condition A or B is met

No

Condition A: Met when conditions A1, A2, and A3 are met

Not Met

Condition A1

Not Met

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Minor Approach Delay: 0.71 vehicle-hours

Condition A2

Not Met

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes

Minor Approach Volume: 95 vph

Condition A3

Met

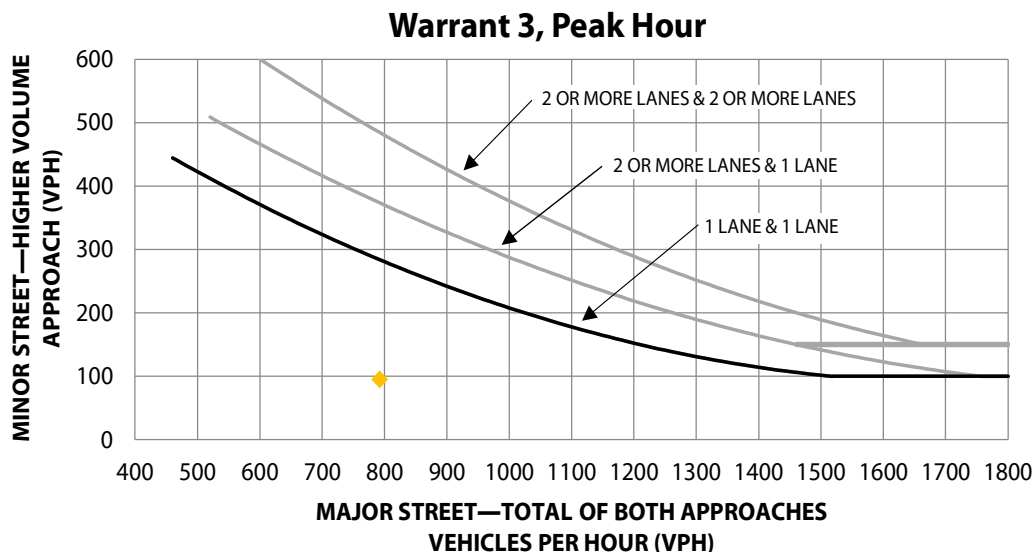
The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches

Total Entering Volume: 947 vph

Condition B

Not Met

The plotted point falls above the curve



Warrant 3: Peak-Hour Volumes and Delay

Shadelands Dr & N Via Monte
Walnut Creek

Project Name: WCR036

Intersection: 1

	Major Street	Minor Street
Street Name	Shadelands Dr	N Via Monte
Direction	E-W	N-S
Number of Lanes	1	1
Approach Speed	30	30

Population less than 10,000? No
Date of Count: Tuesday, September 17, 2024
Scenario: PM Cumulative plus Project

Warrant 3 Met?: Met when either Condition A or B is met

No

Condition A: Met when conditions A1, A2, and A3 are met

Not Met

Condition A1

Not Met

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Minor Approach Delay: 0.57 vehicle-hours

Condition A2

Met

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes

Minor Approach Volume: 144 vph

Condition A3

Not Met

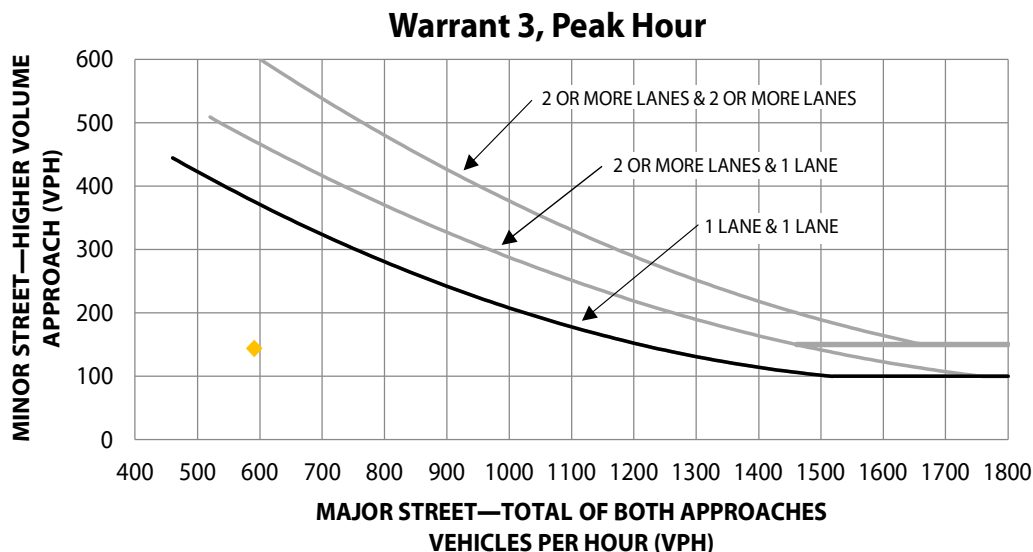
The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches

Total Entering Volume: 775 vph

Condition B

Not Met

The plotted point falls above the curve



Appendix G

Collision Rate Calculations

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Intersection Collision Rate Worksheet

Mitchell Drive Townhomes Project TIS

Intersection # 1: Mitchell Drive & North Wiget Lane

Date of Count: Tuesday, September 17, 2024

Number of Collisions: 0

Number of Injuries: 0

Number of Fatalities: 0

Average Daily Traffic (ADT): 7000

Start Date: October 25, 2019

End Date: October 24, 2024

Number of Years: 5

Intersection Type: Tee

Control Type: 4 Way Stop

Area: Urban

$$\text{Collision Rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times \text{Days per Year} \times \text{Number of Years}}$$

$$\text{Collision Rate} = \frac{0}{7,000} \times \frac{1,000,000}{365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	0.00 c/mve	0.0%	0.0%
Statewide Average*	0.11 c/mve	1.1%	43.5%

Notes

ADT = average daily total vehicles entering intersection

c/mve = collisions per million vehicles entering intersection

* 2022 Collision Data on California State Highways, Caltrans

Intersection # 2: Mitchell Drive & Oak Grove Road

Date of Count: Tuesday, September 17, 2024

Number of Collisions: 3

Number of Injuries: 1

Number of Fatalities: 0

Average Daily Traffic (ADT): 24200

Start Date: October 25, 2019

End Date: October 24, 2024

Number of Years: 5

Intersection Type: Four-Legged

Control Type: Signals

Area: Urban

$$\text{Collision Rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times \text{Days per Year} \times \text{Number of Years}}$$

$$\text{Collision Rate} = \frac{3}{24,200} \times \frac{1,000,000}{365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	0.07 c/mve	0.0%	33.3%
Statewide Average*	0.33 c/mve	0.6%	47.7%

Notes

ADT = average daily total vehicles entering intersection

c/mve = collisions per million vehicles entering intersection

* 2022 Collision Data on California State Highways, Caltrans

Intersection Collision Rate Worksheet

Mitchell Drive Townhomes Project TIS

Intersection # 3: Shadelands Drive & North Wiget Lane

Date of Count: Tuesday, September 17, 2024

Number of Collisions: 9

Number of Injuries: 6

Number of Fatalities: 0

Average Daily Traffic (ADT): 11800

Start Date: October 25, 2019

End Date: October 24, 2024

Number of Years: 5

Intersection Type: Four-Legged

Control Type: 4 Way Stop

Area: Urban

Collision Rate = $\frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times \text{Days per Year} \times \text{Number of Years}}$

Collision Rate = $\frac{9}{11,800} \times \frac{1,000,000}{365 \times 5}$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	0.42 c/mve	0.0%	66.7%
Statewide Average*	0.21 c/mve	2.5%	25.6%

Notes

ADT = average daily total vehicles entering intersection

c/mve = collisions per million vehicles entering intersection

* 2022 Collision Data on California State Highways, Caltrans

Intersection # 4: Shadelands Drive & North Via Monte

Date of Count: Tuesday, September 17, 2024

Number of Collisions: 1

Number of Injuries: 1

Number of Fatalities: 0

Average Daily Traffic (ADT): 7800

Start Date: October 25, 2019

End Date: October 24, 2024

Number of Years: 5

Intersection Type: Tee

Control Type: Stop & Yield Controls

Area: Urban

Collision Rate = $\frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times \text{Days per Year} \times \text{Number of Years}}$

Collision Rate = $\frac{1}{7,800} \times \frac{1,000,000}{365 \times 5}$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	0.07 c/mve	0.0%	100.0%
Statewide Average*	0.13 c/mve	1.3%	47.3%

Notes

ADT = average daily total vehicles entering intersection

c/mve = collisions per million vehicles entering intersection

* 2022 Collision Data on California State Highways, Caltrans

Intersection Collision Rate Worksheet

Mitchell Drive Townhomes Project TIS

Intersection # 5: Shadelands Drive & Oak Grove Road

Date of Count: Tuesday, September 17, 2024

Number of Collisions: 5

Number of Injuries: 2

Number of Fatalities: 0

Average Daily Traffic (ADT): 20600

Start Date: October 25, 2019

End Date: October 24, 2024

Number of Years: 5

Intersection Type: Tee

Control Type: Signals

Area: Urban

$$\text{Collision Rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times \text{Days per Year} \times \text{Number of Years}}$$

$$\text{Collision Rate} = \frac{5}{20,600} \times \frac{1,000,000}{365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	0.13 c/mve	0.0%	40.0%
Statewide Average*	0.28 c/mve	0.9%	49.1%

Notes

ADT = average daily total vehicles entering intersection

c/mve = collisions per million vehicles entering intersection

* 2022 Collision Data on California State Highways, Caltrans

Intersection # 6: Oak Grove Road & Citrus Avenue

Date of Count: Tuesday, September 17, 2024

Number of Collisions: 2

Number of Injuries: 1

Number of Fatalities: 0

Average Daily Traffic (ADT): 19900

Start Date: October 25, 2019

End Date: October 24, 2024

Number of Years: 5

Intersection Type: Tee

Control Type: Signals

Area: Urban

$$\text{Collision Rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times \text{Days per Year} \times \text{Number of Years}}$$

$$\text{Collision Rate} = \frac{2}{19,900} \times \frac{1,000,000}{365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	0.06 c/mve	0.0%	50.0%
Statewide Average*	0.28 c/mve	0.9%	49.1%

Notes

ADT = average daily total vehicles entering intersection

c/mve = collisions per million vehicles entering intersection

* 2022 Collision Data on California State Highways, Caltrans

Intersection Collision Rate Worksheet

Mitchell Drive Townhomes Project TIS

Intersection # 7: Ygnacio Valley Road & North Wiget Lane

Date of Count: Tuesday, September 17, 2024

Number of Collisions: 19

Number of Injuries: 15

Number of Fatalities: 0

Average Daily Traffic (ADT): 41700

Start Date: October 25, 2019

End Date: October 24, 2024

Number of Years: 5

Intersection Type: Four-Legged

Control Type: Signals

Area: Urban

$$\text{Collision Rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times \text{Days per Year} \times \text{Number of Years}}$$

$$\text{Collision Rate} = \frac{19}{41,700} \times \frac{1,000,000}{365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	0.25 c/mve	0.0%	78.9%
Statewide Average*	0.33 c/mve	0.6%	47.7%

Notes

ADT = average daily total vehicles entering intersection

c/mve = collisions per million vehicles entering intersection

* 2022 Collision Data on California State Highways, Caltrans

Intersection # 8: Ygnacio Valley Road & Via Monte

Date of Count: Tuesday, September 17, 2024

Number of Collisions: 14

Number of Injuries: 6

Number of Fatalities: 0

Average Daily Traffic (ADT): 35300

Start Date: October 25, 2019

End Date: October 24, 2024

Number of Years: 5

Intersection Type: Four-Legged

Control Type: Signals

Area: Urban

$$\text{Collision Rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times \text{Days per Year} \times \text{Number of Years}}$$

$$\text{Collision Rate} = \frac{14}{35,300} \times \frac{1,000,000}{365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	0.22 c/mve	0.0%	42.9%
Statewide Average*	0.33 c/mve	0.6%	47.7%

Notes

ADT = average daily total vehicles entering intersection

c/mve = collisions per million vehicles entering intersection

* 2022 Collision Data on California State Highways, Caltrans

Intersection Collision Rate Worksheet

Mitchell Drive Townhomes Project TIS

Intersection # 9: Ygnacio Valley Road & Oak Grove Road

Date of Count: Tuesday, September 17, 2024

Number of Collisions: 40

Number of Injuries: 23

Number of Fatalities: 1

Average Daily Traffic (ADT): 49600

Start Date: October 25, 2019

End Date: October 24, 2024

Number of Years: 5

Intersection Type: Four-Legged

Control Type: Signals

Area: Urban

Collision Rate =
$$\frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times \text{Days per Year} \times \text{Number of Years}}$$

Collision Rate =
$$\frac{40}{49,600} \times \frac{1,000,000}{365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	0.44 c/mve	2.5%	57.5%
Statewide Average*	0.33 c/mve	0.6%	47.7%

Notes

ADT = average daily total vehicles entering intersection

c/mve = collisions per million vehicles entering intersection

* 2022 Collision Data on California State Highways, Caltrans

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