Transportation Assessment of Proposed Amendment to the Master Plan of Arterial Highways (MPAH) for Villa Park Road

Prepared for:
Orange County Public Works

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OC23-0971.01

FEHR PEERS

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Executive Summary

Fehr & Peers completed a transportation assessment to evaluate the roadway designation in the Master Plan of Arterial Highways (MPAH) for Villa Park Road. The study covers Villa Park Road from Wanda Street to Cannon Street, spanning the jurisdictions of the City of Orange, City of Villa Park, and Unincorporated Orange County. This assessment consisted of a review of operations (in the form of LOS and queueing), safety, and user comfort (particularly for non-auto modes). This led to us identifying suggested future lane configurations and bike/ped facilities, which in turn, led to a recommendation regarding the most appropriate MPAH designation.

Villa Park Road between Hewes Street and Cannon Street is a four-lane Primary Arterial and is planned to be a six-lane Major Arterial based on the current MPAH designation. The Orange County Transportation Authority (OCTA) MPAH Guideline (August 2017), designates a Major Arterial highway as a six-lane divided (raised or painted) roadway, with a typical right-of-way width of 120 feet. The right-of-way for Villa Park Road between Hewes Street and Cannon Street is 100 feet, which excludes the off-street trail on the north side of the roadway **(Table 1)**. According to our operations and cross-section analysis, a five-lane Primary Arterial (three westbound lanes and two eastbound lanes) will be sufficient to serve future traffic demand and can fit within the available right-of-way.

Table 1: MPAH Designation

Facility	Extent	Current Designation	Proposed Designation
Villa Park Road	Hewes Street to Cannon Street	Major Arterial (Divided 6-lane)	**Primary Arterial (Divided 5-lane)**
Villa Park Road	Wanda Street to Hewes Street	Primary Arterial (Divided 4-lane)	Primary Arterial (Divided 4-lane)

*Note: Proposed designation that differ from the current MPAH designation is highlighted in **bold**.*
Source: Fehr & Peers, 2023.

1. Introduction

Study Area

Through coordination with Orange County Transportation Authority (OCTA), Orange County Public Works, and the cities of Villa Park and Orange, 15 study intersections and 15 study roadway segments were identified for this assessment **(Figure 1)**. This study evaluated parallel roadway segments and intersections along the corridor to better understand traffic operations in the area and to help guide recommendations along Villa Park Road.

Study Intersections

1. Wanda Road and Villa Park Road (Signalized)
2. Kathleen Lane and Villa Park Road (Side-Street Stop Control [SSSC])[1]
3. Morrow Circle and Villa Park Road (SSSC)
4. Prado Woods Drive and Villa Park Road (SSSC)
5. Kenwick Drive and Villa Park Road (SSSC)
6. Radec Court and Villa Park Road (SSSC)
7. Center Drive and Villa Park Road (Signalized)
8. Park Villa Lane and Villa Park Road (SSSC)
9. Lemon Street and Villa Park Road (Signalized)
10. Hewes Street and Villa Park Road (Signalized)
11. Linda Vista Street and Villa Park Road (SSSC)
12. Cannon Street and Santiago Canyon Road (Signalized)
13. Cannon Street and Taft Avenue (Signalized)
14. Cannon Street and Serrano Avenue (Signalized)
15. Cannon Street and Loma Street (SSSC)

Study Segments

1. Villa Park Road between Wanda Road and Center Drive
2. Villa Park Road between Center Drive and Hewes Street
3. Villa Park Road between Hewes Street and Cannon Street
4. Santiago Canyon Road east of Cannon Street
5. Taft Avenue between Santiago Boulevard and Center Drive
6. Taft Avenue between Center Drive and Cannon Street

[1] In the HCM methodology, Side-Street Stop Controlled (SSSC) intersection is analyzed as Two-Way Stop Control (TWSC).

7. Serrano Avenue east of Cannon Road
8. Santiago Boulevard north of Taft Avenue
9. Wanda Road between Villa Park Road and Taft Avenue
10. Wanda Road south of Villa Park Road
11. Hewes Street south of Villa Park Road
12. Cannon Street north of Serrano Avenue
13. Cannon Street between Taft Avenue and Serrano Avenue
14. Cannon Street between Santiago Canyon Road and Taft Avenue
15. Cannon Street south of Santiago Canyon Road

Analysis Scenarios

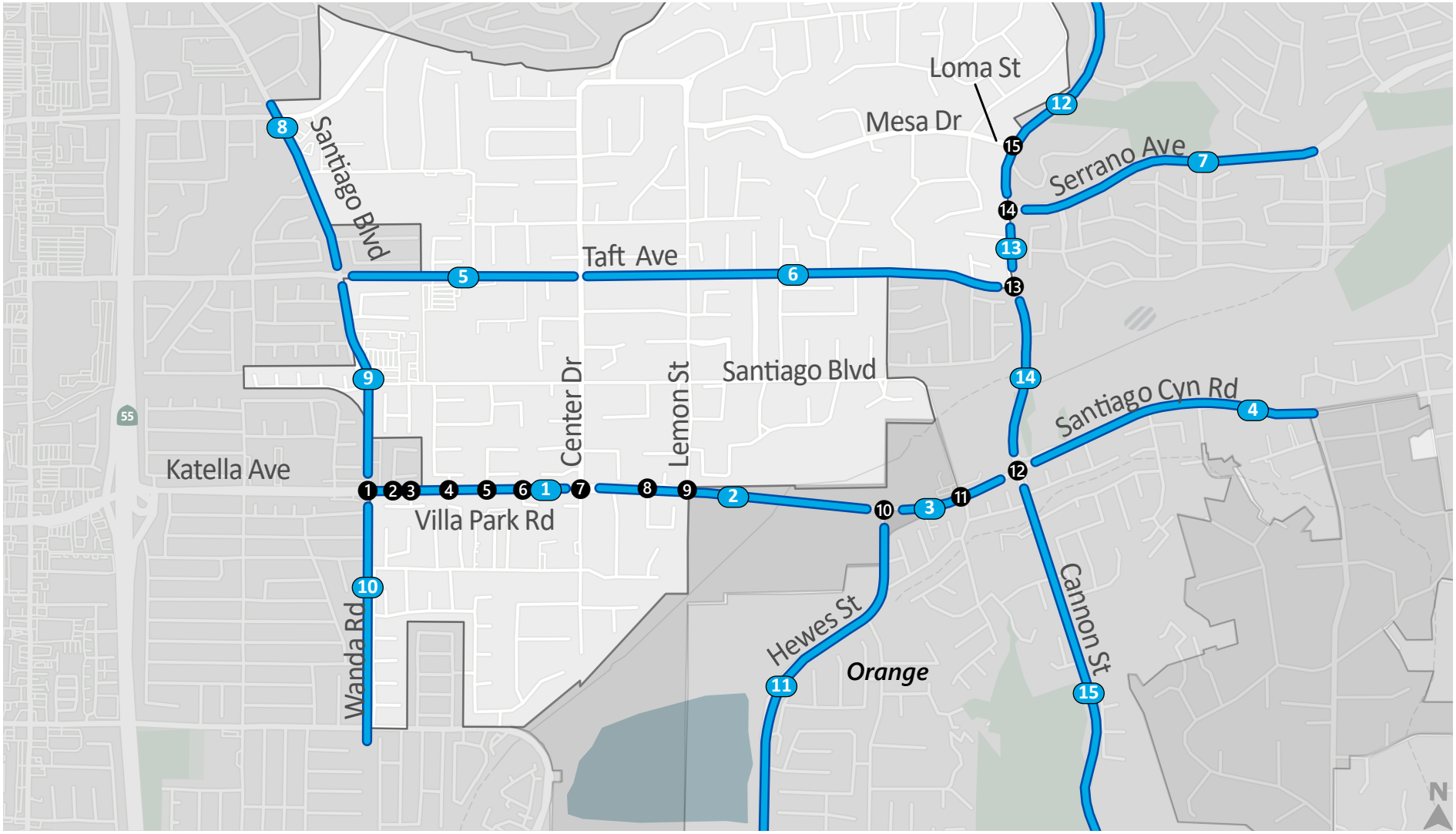
To determine the existing and future needs of the transportation network, Fehr & Peers considered the following scenarios in the analysis:

- Existing (2023) Conditions – Consists of traffic counts collected on April 26, 2023, a typical weekday during an event at Angels Stadium.
- Future Year (2045) Conditions – Consists of traffic forecasts estimated using the County of Orange's travel demand forecasting model, OCTAM.

Report Outline

The remainder of this report contains the following chapters:

- Chapter 2 – Analysis Methodology
- Chapter 3 – Existing (2023) Conditions
- Chapter 4 – Future Year (2045) Conditions
- Chapter 5 – Recommendations
- Chapter 6 – Vehicle Miles Traveled (VMT) Assessment



Study Intersections
Study Segments
City of Villa Park
City of Orange
Unincorporated Orange County

OC23-0971.01

Figure 1: Study Intersections and Segments

Villa Park Road MPAH Amendment

2. Analysis Methodology

This study provides a review of vehicle and multi-modal traffic operations through the corridor.

Roadway LOS Methodology

Study segments were evaluated based on V/C ratios, which were calculated by comparing Average Daily Traffic (ADT) to the theoretical daily capacity. This calculation does not indicate the service level throughout the course of the day, but rather provides a rough estimate of what the service level will be at the primary intersections during peak hours. Roadway capacities for all existing and planned facilities were referenced from the *Guidance for Administration of Orange County Master Plan of Arterial Highways, Orange County Transportation Authority (2017)*, which documents capacities necessary to achieve LOS A through LOS E for various roadway classifications. A threshold of LOS E was utilized for all V/C calculations in conformance with the MPAH. The LOS grades and descriptions for segments are summarized in **Table 2**. Per each jurisdiction's requirements, LOS C is used as the limit of acceptable performance.

Intersection LOS Methodology

Consistent with the County's *Transportation Implementation Manual (2020),* all signalized study intersections within the study area were analyzed utilizing the ICU methodology. ICU methodology reports the volume-to-capacity (V/C) ratio for signalized intersections. The V/C ratio is determined by evaluating the critical movements for each intersection and comparing them to the critical movement capacity of the intersection. For all ICU calculations, a saturation flow rate of 1,700 vehicles per hour per lane (vphpl) and 5% lost time was used.

As the ICU methodology doesn't account for signal timing parameters and several other factors, all signalized intersections were also analyzed using the Transportation Research Board (TRB) *Highway Capacity Manual, 7th Edition* (HCM) methodology. HCM methodology uses signal timing inputs to estimate the average control delay for vehicles at signalized intersections.

All unsignalized intersections were analyzed using HCM methodology, which estimates the worst-case lane delay for side-street stop-controlled intersections. Traffic signal warrants were conducted for unsignalized intersections operating worse than the LOS standards.

After the quantitative V/C or delay estimates are complete, the methodologies assign a qualitative letter grade which represents the operations of the intersection. These grades range from level of service (LOS) A (minimal delay) to LOS F (excessive congestion). LOS E represents at-capacity operations. Descriptions of the LOS letter grades for intersections are provided in **Table 2**.

All ICU and HCM intersection operation analysis was performed using the PTV Vistro 2020 and Synchro 11 software, respectively. Per each jurisdiction's requirements, LOS D is used as the limit of acceptable performance.

Table 2: Intersection LOS Grades

Level Of Service	Description	Signalized Volume-to-Capacity (V/C)	Signalized Delay (Seconds)	Unsignalized Delay (Seconds)
A	Operations with very low delay occurring with favorable progression and/or short cycle length	0.000-0.600	≤ 10.0	≤ 10.0
B	Operations with low delay occurring with good progression and/or short cycle lengths	0.601-0.700	> 10.0 to 20.0	> 10.0 to 15.0
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear	0.701-0.800	> 20.0 to 35.0	> 15.0 to 25.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable	0.801-0.900	> 35.0 to 55.0	> 25.0 to 35.0
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences	0.901-1.000	> 55.0 to 80.0	> 35.0 to 50.0
F	Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths	Greater than 1.000	> 80.0	> 50.0

Source: Fehr & Peers, 2023.

Signalized Intersection Queueing Methodology

The HCM methodology was also used to evaluate signalized intersection turn-lane storage capacities. Storage capacities were compared against 95th percentile queue estimates using the Synchro 11 software.

Peak Hour Traffic Signal Warrants

The Peak Hour Traffic Signal Warrant (*California Manual on Uniform Traffic Control Devices (MUTCD) 2014 Edition)* is intended to examine whether a signal is justifiable, but it does not mandate that a signal be installed. Peak hour traffic signal warrants were conducted for all unsignalized intersections operating below acceptable LOS standards.

Multi-modal LOS Methodology

In an effort to provide quantitative data for all user groups, Fehr & Peers developed PersonDelay+, a tool utilizing HCM methodology that provides a more complete picture of how all users are affected by intersection operations. PersonDelay+ reports person delay for all users: vehicle drivers and passengers, pedestrians, and bicyclists for signalized intersections. The data needed is routinely collected as part of the traffic analyses and Complete Streets studies, including capacity, average passenger occupancy, cycle length and effective green time. The LOS grades and descriptions are consistent with the information

provided in **Table 2**. None of the jurisdictions have adopted standards for multi-modal LOS analysis. Therefore, we assumed that LOS D is used as the limit of acceptable performance.

LOS grades below LOS D indicate that on average each person waits over a minute to cross the intersection on foot or by bike. Generally, bike delays are similar to vehicle delays, but that average intersection delay is weighted by measured bicycle counts. Pedestrian delay is a factor of the intersection cycle length and green times that cause the pedestrians to wait for a walk signal.

Collision Review

Vehicle collisions with bicycles and pedestrians along the corridor were reviewed to evaluate potential trends. Data was pulled from the last five years from the Transportation Injury Mapping System (TIMS) database which summarizes reported California crash data from the Statewide Integrated Traffic Records System (SWITRS).

Data Collection

Turning movement and daily traffic counts were collected on Wednesday, April 26th, 2023. Counts were collected on this day to represent peak travel demand in the area. On this day school was in session and a special event (baseball game) was happening at Angels Stadium. This later condition, an event at Angels Stadium or Honda Center, occurs on over a third of the days per calendar year.

Turning movement counts were collected during typical peak commute periods (7:00 AM – 9:00 AM and 4:00 PM to 6:00 PM), and vehicle classifications and bicycle and pedestrian counts were collected at select roadway segments and intersections, respectively. Signal timings were obtained from appropriate jurisdictions.

Future Year Forecasting Methodology

The Orange County Transportation Analysis Model (OCTAM) version 5.0 was utilized to prepare traffic forecasts. OCTAM is consistent with the 2020 SCAG Regional Transportation Plan/Sustainable Communities Strategy (2020 RTP/SCS) with a 2016 base year and a 2045 future year and is the most appropriate model for use in this project because it includes the most recent land use and roadway information for the area. Pending development proposals in the surrounding study area were confirmed with the City of Orange, City of Villa Park, and County staff to account for major pending and approved land use projects **(Table 3).**

Table 3: Pending/Approved Developments

Project Name	Jurisdictions	Location	Quantity	Units
Milan Property	City of Orange	North of Santiago Canyon Road between Cannon Street and Orange Park Boulevard	200	Dwelling Units
Orange Heights	City of Orange	South of Santiago Canyon Road, east of Jamboree Road	1,180	Dwelling Units
Villa Park RV Parking	Orange County	Southeast Corner of Hewes Street and Villa Park Road	69,095	Square Feet

Source: Fehr & Peers, 2023.

Traffic forecasts for study intersections and segments were developed using the Difference Method which is consistent with methodologies delineated in the *National Cooperative Highway Research Program Report (NCHRP) 765* published by the *Transportation Research Board (TRB): Analytical Travel Forecasting Approaches for Project Level Planning and Design (Transportation Research Board, 2014)*. In this study, the Base Year and Future Year model outputs were used to calculate a model growth for the study area, which was then applied to existing traffic volumes to develop 2045 forecasts. Bicycle and pedestrian volumes were assumed to be similar in future conditions.

3. Existing (2023) Conditions

LOS Analysis

The existing turning movements and daily traffic volumes are summarized in **Attachment A**. Existing volumes were utilized along with existing lane configurations to conduct the ICU and HCM analysis. The existing segment, intersection LOS, and multi-modal LOS results are summarized in **Attachment B**, respectively. LOS worksheets are provided in **Attachment C**.

All **roadway segments** operate at LOS C or better except the following:

13. Cannon Street between Taft Avenue and Serrano Avenue (LOS E)
14. Cannon Street between Santiago Canyon Road and Taft Avenue (LOS D)

All **unsignalized intersections** operate at LOS E or F, except Trenton Avenue and Villa Park Road. These intersections have stop control for the side-street, and HCM uses the worst-case movement delay to estimate the intersection LOS. All side-streets have relatively low volumes, which results in only a few vehicles experiencing high delays at the intersections. Since adjacent traffic signals typically meter traffic and provide gaps for stop-controlled movements to be made, gaps in traffic are likely resulting in less delay for the stop-controlled movements than reflected in the LOS analysis.

The following three **signalized intersections** operate at worse than LOS D in the ICU and/or HCM analysis:

12. Cannon Street and Santiago Canyon Road (HCM PM LOS E)
13. Cannon Street and Taft Avenue (ICU PM LOS E and HCM AM LOS E)
14. Cannon Street and Serrano Avenue (ICU PM LOS E)

The following two **signalized intersections** along the Villa Park Road operate at worse than LOS D in the multi-modal LOS analysis. The intersection Wanda Road and Villa Park Road has the highest pedestrian and bike volumes in the corridor (26 at the peak in the AM and 21 at the peak in the PM). Pedestrians on average wait approximately a minute to cross the intersection. The intersection of Hewes Street and Villa Park Road has fewer bikes and peds (5 at the peak in the AM and 9 at the peak in the PM) with the greatest delays for those crossing Villa Park Road.

1. Wanda Road and Villa Park Road (Pedestrian AM and PM LOS E)
10. Hewes Street and Villa Park Road (Bike and Pedestrian AM and PM LOS E)

Queuing Analysis

The queuing analysis was prepared for the intersection of Cannon Street and Villa Park Road since it is the only signalized intersection along Villa Park Road that doesn't meet the County's LOS standard. The intersections queuing analysis is summarized in **Attachment B** and detailed queueing worksheets are

provided in **Attachment D**. The northbound left and southbound left exceed the available storage, and the eastbound left is at capacity.

Signal Warrants

We evaluated the signal warrants for the seven unsignalized intersections which don't meet the County's LOS standards along Villa Park Road. Only the intersection of Linda Vista Street and Villa Park Road meets the peak hour signal warrant[2] (**Attachment E**).

Collision Review

The bicyclist and pedestrian collisions were reviewed from 2018 to 2022, acquired from the Transportation Injury Mapping System (TIMS), which is the most recent data available. There were three reported bike collisions and one pedestrian-involved collision along Villa Park Road between Wanda Road and Cannon Road from 2018 to 2022, which accounts for 29% of the total 14 collisions (**Attachment F**). The three bike collisions all occurred at the Villa Park Road and Wanda Road intersection, while the pedestrian involved collision occurred at Villa Park Road, 225 feet west of Cannon Street. The severity level of the four collisions was "visible injury".

[2] Traffic Signal Warrant Disclaimer: This analysis is intended to examine the general correlation between the planned level of existing facility and the need to install new traffic signals. It estimates existing traffic compared against a sub-set of the standard traffic signal warrants recommended in the Federal Highway Administration *Manual on Uniform Traffic Control Devices* and associated State guidelines. This analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated based on field-measured, rather than forecast, traffic data and a thorough study of traffic and roadway conditions by an experienced engineer. Furthermore, the decision to install a signal should not be based solely upon the warrants, since the installation of signals can lead to certain types of collisions. The responsible state or local agency should undertake regular monitoring of actual traffic conditions and accident data, and timely re-evaluation of the full set of warrants in order to prioritize and program intersections for signalization.

4. Future Year (2045) Conditions

LOS Analysis

To accurately model the future year roadway network, Fehr & Peers referenced the OCTA 2023 MPAH, 2020 SCAG Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS), and coordinated with relevant jurisdictions to identify roadway improvements in the study area. The following roadway improvements were assumed in the future year assessment:

- Wanda Road south of Villa Park Road is widened from three to four lanes (MPAH)
- Cannon Street between Santiago Canyon Road and Serrano Avenue is widened in the northbound direction from two to three lanes (City of Orange)

The MPAH identifies Villa Park Road, between Hewes Street and Cannon Street, as six lanes (currently four lanes). The widening was assumed in the modeling and forecasting efforts to analyze unconstrained demand but was not assumed in the intersection and segment operations analysis.

Future year turning movements and daily traffic volumes are provided in **Attachment A** and were utilized along with future year lane configurations to conduct the ICU and HCM analysis. Consistent with standard practice, the HCM analysis assumes routine traffic signal maintenance would occur, and signal timing parameters would be optimized to accommodate future traffic volumes.

The future year roadway segment, intersection LOS, and multi-modal LOS results are summarized in **Attachment B**. LOS worksheets are provided in **Attachment C**.

The following **roadway segments** are forecast to operate below County's LOS C standard:

3. Villa Park Road between Hewes Street and Cannon Street (LOS D)
4. Santiago Canyon Road east of Cannon Street (LOS D)
13. Cannon Street between Taft Avenue and Serrano Avenue (LOS D)

The roadways surrounding Villa Park Road have sufficient capacity to accommodate increased traffic, but Villa Park Road provides the most desirable east/west street in the area and is forecast to have high demand. The segments between Hewes Street and Cannon Street are estimated to not meet the County's LOS standard. There is a significant demand for northbound/southbound traffic on Cannon Street north of Villa Park Road and Hewes Street south of Villa Park Road. This analysis confirms widening Villa Park Road between Hewes Street and Cannon Street is necessary for it to operate within the County's LOS standards.

The side street movements for all **unsignalized intersections** are forecast to operate at LOS E or F or worse. However, all the side-streets have relatively low volumes, which results in only a few vehicles experiencing high delays at the intersections. Since adjacent traffic signals typically meter traffic and

provide gaps for stop-controlled movements to be made, gaps in traffic are likely being underestimated and conditions will be better than the analysis suggests.

The following four **signalized intersections** are forecast to operate at LOS E or F in the ICU and/or HCM analysis:

10. Hewes Street and Villa Park Road (ICU and HCM AM LOS E)
12. Cannon Street and Santiago Canyon Road (ICU AM and PM LOS E)
13. Cannon Street and Taft Avenue (ICU and HCM AM LOS E)
14. Cannon Street and Serrano Avenue (ICU AM LOS F)

The following three **signalized intersections** along the Villa Park Road are forecast to operate at LOS E using a multi-modal LOS analysis. Similar to existing conditions, the pedestrian wait time to cross is on average over a minute at Wanda Street and Hewes Street. The wait times to cross at the intersection of Villa Park Road and Cannon Street is also forecast to be over a minute on average which is worse than existing conditions.

1. Wanda Road and Villa Park Road (Pedestrian AM and PM LOS E)
10. Hewes Street and Villa Park Road (Bike and Pedestrian AM and PM LOS E)
12. Cannon Street and Santiago Canyon Road (Bike and Pedestrian PM LOS E)

Queueing Analysis

The intersections of Hewes Street/Villa Park Road and Cannon Street/Villa Park Road are the only signalized intersections along Villa Park Road that will fail to meet the County's LOS standards. The queuing analysis is summarized in **Attachment B** and detailed queueing worksheets are provided in **Attachment D**. The queues at the following movements exceed available storage capacities:

- Hewes Street and Villa Park Road: westbound left-turn
- Cannon Street and Santiago Canyon Road: eastbound left-turn, northbound left-turn and southbound right-turn

Signal Warrants

Peak hour signal warrants for the unsignalized intersections which operate below County's standards along Villa Park Road are provided in **Attachment E**. Only the intersection of Linda Vista Street and Villa Park Road meets peak hour signal warrant.

5. Recommendations

The recommendations below will provide acceptable operating conditions within the existing right-of-way and built curb-to-curb width.

The future forecasts along Villa Park Road indicate that more capacity is needed between Hewes Street and Cannon Street to effectively serve the future demand. This assessment concluded that an additional westbound through lane on Villa Park Road between Hewes Street and Cannon Street would be the best use of the available right-of-way to increase capacity, meet operational goals, and limit impacts to adjacent properties.

In addition to capacity improvements, we recommend bicycle and pedestrian treatments to improve conditions along the corridor.

Villa Park Road Between Wanda Street and Hewes Street

This segment of Villa Park Road has sufficient capacity to meet future traffic demands. While the unsignalized intersections are not forecast to meet the County's standards, they are also not anticipated to meet the warrants for a signal. The analysis does not consider the effects of upstream signals in creating gaps, and the County should monitor the unsignalized intersections for potential signalization if delays become unreasonable.

To improve bicyclist and pedestrian safety and comfort, we recommend restriping the corridor to provide a three-foot buffer between the bike lane and travel lanes, narrowing the two vehicle lanes to 12 feet and 11 feet. The recommended restriping can occur within the available right-of-way and existing curb-to-curb width, without affecting the exiting raised median. This design would provide a six-foot bike lane between Wanda Street and Lemon Street and an eight-foot bike lane between Lemon Street and Hewes Street. The recommended roadway cross-section for Villa Park Road between Wanda Street and Lemon Street is shown on **Figure 2**, and the recommended cross-section for Villa Park Road between Lemon Street and Hewes Street is shown on **Figure 3**.

The buffer will enhance the visibility of the bike lane and increase the separation between motor vehicles and bicyclists. The buffered bike lane also provides space for bicyclists to pass another bicyclist without encroaching into the adjacent motor vehicle lane. According to the guidelines from U.S. Department of Transportation Federal Highway Administration (FHWA), the range of lane widths for urban arterials and collectors ranges from 10 to 12 feet.[3] The Orange County Highway Design Manual Section 1003.2 requires a Class II bike lane on a curbed street to be a minimum of five feet.

[3] Table 3: Range for Lane Width, U.S. Department of Transportation Federal Highway Administration, https://safety.fhwa.dot.gov/geometric/pubs/mitigationstrategies/chapter3/3_lanewidth.cfm

Figure 2: Roadway Cross-section for Villa Park Road Between Wanda Street and Lemon Street

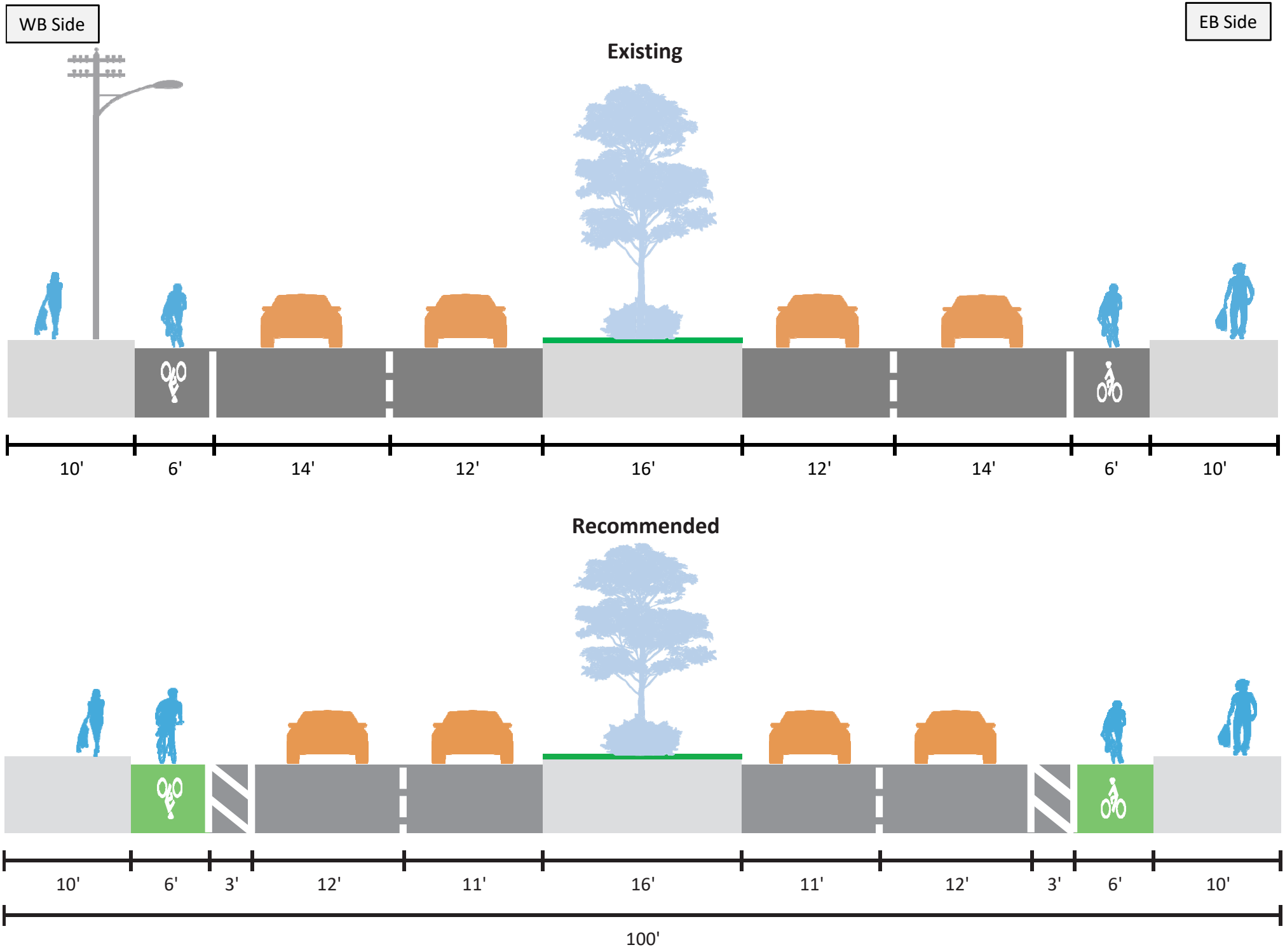
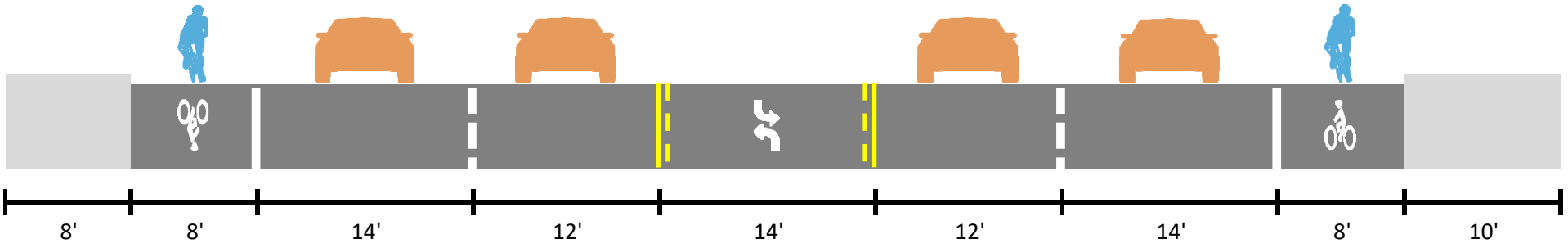


Figure 3: Recommended Roadway Cross-section for Villa Park Road Between Lemon Street and Hewes Street

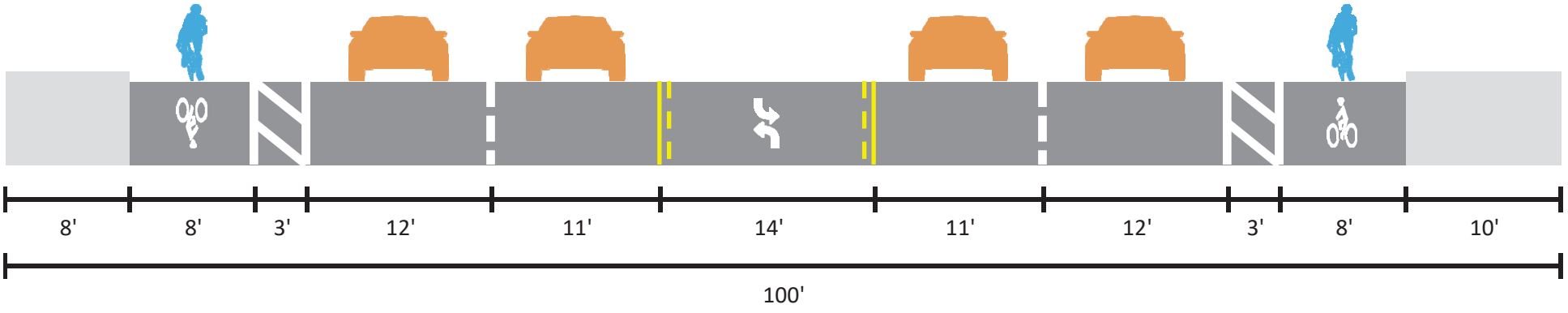
WB Side

EB Side

Existing



Recommended



Villa Park Road Between Hewes Street and Cannon Street

This segment of Villa Park Road will degrade to LOS D, which is below the County's standard. The signalized intersection of Hewes Street and Villa Park Road will not meet the County's standard, and conditions are forecast to worsen at the signalized intersection of Cannon Street and Villa Park Road and unsignalized intersection of Linda Vista Street and Villa Park Road. Vehicle queues at each of these intersections are forecast to extend past available storage, in some cases as far as to adjacent intersections.

To provide conditions that meet the County's operating standards, we recommend the westbound direction of the segment be restriped from two to three lanes between Hewes Street and Cannon Street. This recommendation requires the narrowing of through travel lanes and the center median to 11 feet each to accommodate a third 11-foot westbound vehicle lane. Further, we recommend extending the bike buffer to Cannon Street from Hewes Street by modifying the existing eight-foot Class II bike lane to a five-foot bike lane and a three-foot striped buffer. The recommended cross-section for Villa Park Road between Hewes Street and Cannon Street is shown on **Figure 4**.

In addition to the broader recommendations of a third westbound through lane and bike buffer, these elements should be included in future plans which are shown in **Attachment G**:

Hewes Street and Villa Park Road

- Restripe the westbound approach to add a trap westbound left-turn lane (two total left-turn lanes)
- Extend the westbound left-turn pocket to 450 feet

Linda Vista Street and Villa Park Road

- Signalize the intersection
- Restripe the intersection to add a westbound through lane (three total through lanes)

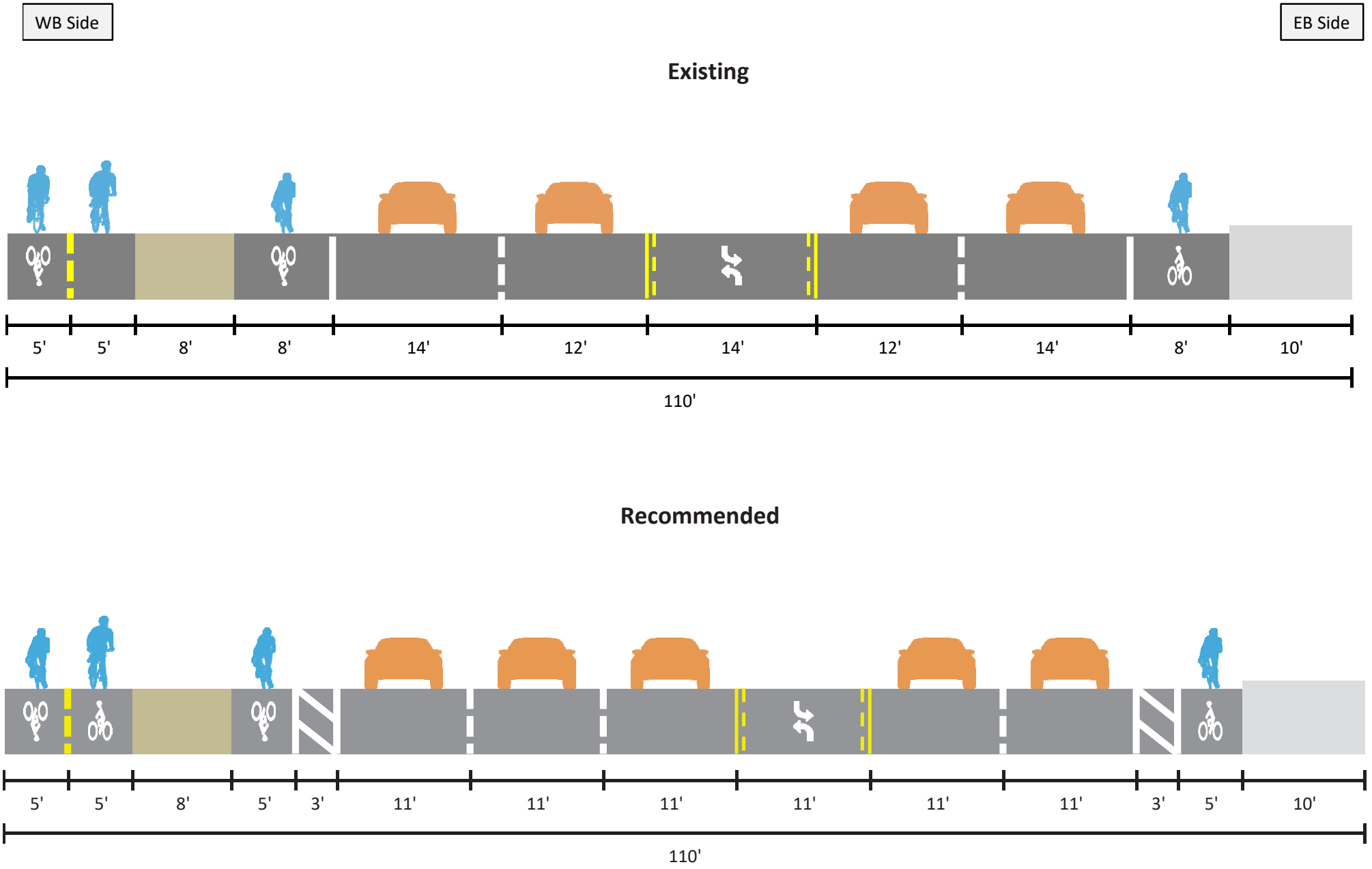
Cannon Street and Santiago Canyon Road

- Stripe a westbound through lane (three total through lanes)
- Add a westbound receiving lane (three total through lanes)
- Restripe one southbound through lane into a trap right-turn lane (two total right-turn lanes)
- Restripe shared southbound through/left lane into a southbound through lane (one total through lane)
- Restripe the existing Class II bike lane between the southbound left-most right-turn lane and the through lane
- Update northbound and southbound signal phasing from split to protected phasing.

The recommended improvement above would meet operational goals and balance multimodal needs along the corridor without requiring roadway widening or additional right-of-way. The recommended cross section provides fewer lanes than what is currently planned in the City of Orange's General Plan Circulation Element. This improvement would not prevent a future project from consideration if future traffic conditions warranted three lanes in each direction.

Fehr & Peers considered other alternatives for the Cannon Street and Santiago Canyon Road intersection but found them to operate inadequately during the PM peak hour. These alternatives were similar to the recommended improvement with a reduction in westbound through lanes and a southbound channelized right turn lane (that would provide a free southbound right movement). A focused alternatives analysis that summarizes average delay results for these alternatives is provided in **Table 8** and was used to screen these alternatives for further consideration.

Figure 4: Recommended Roadway Cross-section for Villa Park Road Between Hewes Street and Cannon Street



LOS Results with Recommended Improvements

The recommended improvements above will provide acceptable daily roadway LOS, peak hour LOS and queues within provided storage. The bicycle and pedestrian delays will also be reduced by the capacity improvements, though not to better than LOS D conditions. **Table 4** summarizes the daily roadway segment LOS results with the improvement. The intersection peak hour LOS and queueing results for the proposed improvements are summarized in **Tables 5, 6,** and **7**, and LOS and queuing worksheets are provided in **Attachments C** and **D**.

Additional directional traffic volume and capacity calculations are provided for Villa Park Road between Hewes Street and Cannon Street. The westbound direction ADT volumes are approximately 1,700 vehicles higher in the existing condition traffic counts and the future forecast westbound ADT is approximately 2,600 vehicles higher than the eastbound direction. As shown, the capacity assessment for the 5-lane cross section as well as the eastbound or westbound isolated direction capacity assessment all result in LOS C or better conditions, further justifying the recommendation for the additional lane in only the westbound direction.

Table 4: Future Year Roadway LOS with Improvements

Segment	Lanes	ADT	Capacity	V/C	LOS
No Improvements					
Villa Park Road between Hewes Street and Cannon Street	4	30,400	37,500	0.81	**D**
With Improvements					
Villa Park Road between Hewes Street and Cannon Street	5	30,400	46,900	0.65	B
Villa Park Road between Hewes Street and Cannon Street (Eastbound)	2	13,900	18,760	0.74	C
Villa Park Road between Hewes Street and Cannon Street (Westbound)	3	16,500	28,140	0.59	A

Note(s):

1. **Bold** symbolizes segment operates below Jurisdictions' LOS standards.
2. Capacities for LOS E were referenced for arterial types from the MPAH.
3. The MPAH does not list capacities for five-lane facilities. The five-lane capacity was estimated by interpolating between the four-lane and 6-lane divided arterial types.

Source: Fehr & Peers, 2023.

Table 5: Future Year Intersection LOS with Improvements

Intersection	Control	Methodology	Peak Hour	Future Year without Improvements		Future Year with Improvements	
				V/C / Delay	LOS	V/C / Delay	LOS
10. Hewes Street and Villa Park Road	Signalized	ICU / HCM	AM PM	**0.955 / 70** 0.889 / 25	**E / E** D / C	0.733 / 41 0.791 / 19	C / D C / B
11. Linda Vista Street and Villa Park Road	TWSC/ Signalized	HCM	AM PM	**>100** **>100**	**F** **F**	0.495 / 14 0.526 / 6	A / B A / A
12. Cannon Street and Santiago Canyon Road	Signalized	ICU / HCM	AM PM	**0.914** / 49 **0.935** / 47	**E** / D **E** / D	0.768 / 36 0.828 / 54	C / D D / D

Note(s):

1. ">100" is reported for highly congested movements where more than 100 seconds is reported.
2. **Bold** symbolizes segment operates below Jurisdictions' LOS standards.

Source: Fehr & Peers, 2023.

Table 6: Future Year Multi-modal LOS with Improvements

Intersection	Mode	Peak Hour	Future Year without Improvements		Future Year with Improvements	
			Delay	LOS	Delay	LOS
1. Wanda Road and Villa Park Road	Bike/ Pedestrian	AM PM	14.2 / 73.0 47.8 / 60.4	B / E D / E	14.2 / 73.0 47.8 / 60.4	B / E D / E
9. Lemon Street and Villa Park Road	Bike/ Pedestrian	AM PM	5.8 / 8.3 6.2 / 9.6	A / A A / A	5.8 / 8.3 6.2 / 9.6	A / A A / A
10. Hewes Street and Villa Park Road	Bike/ Pedestrian	AM PM	62.7 / 63.9 58.7 / 65.6	E / E E / E	62.6 / 63.9 47.1 / 50.6	E / E D / D
12. Cannon Street and Santiago Canyon Road	Bike/ Pedestrian	AM PM	22.8 / 42.2 64.3 / 76.8	B / D E / E	19.8 / 41.0 39.5 / 49.5	B / D D / D

Source: Fehr & Peers, 2023.

Table 7: Future Year 95th Percentile Queues with Improvements

Intersection	Movement	Storage (ft)	Peak Hour	Future Year without Improvements Queue (ft)	Future Year with Improvements Queue (ft)
10. Hewes Street and Villa Park Road	EBT	>1,000	AM	1,025	825
			PM	475	200
	WBL	425[3]	AM	**1,075**	425
			PM	**350**	200
	WBT	550	AM	425	425
			PM	175	150
	NBL	550	AM	450	425
			PM	275	225
	NBR	550	AM	125	125
			PM	225	200
12. Cannon Street and Santiago Canyon Road	EBL	425	AM	175	200
			PM	**675**	<u>425</u>
	EBT	675	AM	375	500
			PM	250	200
	WBL	225	AM	50	50
			PM	50	50
	WBT	>1,000	AM	325	175
			PM	925	500
	WBR	700	AM	0	0
			PM	625	575
	NBL	150	AM	**225**	<u>150</u>
			PM	125	125
	NBT	500	AM	125	125
			PM	350	325
	SBL	550	AM	475	<u>550</u>
			PM	250	350
	SBT	>1,000	AM	475	450
			PM	275	300
	SBR	400	AM	**1,025**	75
			PM	**600**	75

Notes:
1. Queues were calculated using HCM 7th methodologies and are rounded up to the nearest 25-foot increment.
2. "EB" = eastbound, "WB" = westbound, "NB" = northbound, "SB" = southbound, "L" = left, "T" = through, "R" = right.
3. Hewes Street and Villa Park Road WBL turn pocket is proposed to be widened to 450' under Future Year with Improvements conditions.
4. **Bold** symbolizes movement is at or exceeds available storage capacity.
5. <u>Underlined</u> symbolizes movement is at capacity.

Source: Fehr & Peers, 2023.

Table 8 shows the forecasted intersection operations at Intersection 12: Cannon Street and Santiago Canyon Road under the three considered alternatives. Only Alternative 1 provides acceptable conditions during the PM peak hour.

Table 8: Cannon Street/Santiago Canyon Road Future Year Intersection LOS Alternative Results, PM Peak Hour

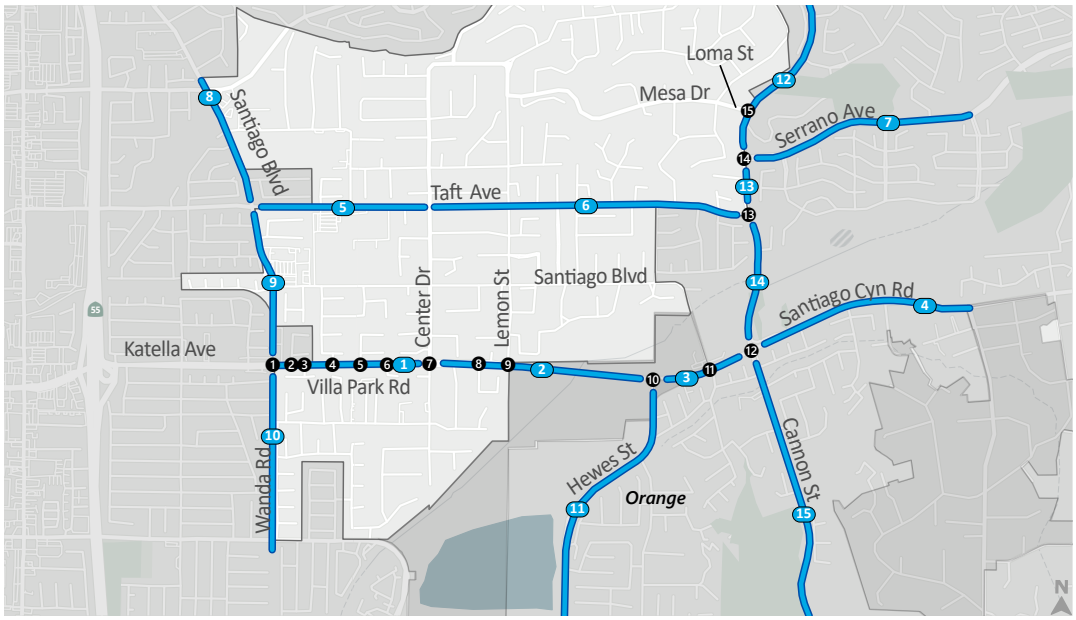
Alternative	Methodology	Future Year with Improvements	
		Delay (sec)	LOS
Alternative 1 (Recommended): Three WB Through Lanes Two SB Right Turn Lanes	HCM	36	D
Alternative 2: Two WB Through Lanes Two SB Right Turn Lanes	HCM	**59**	**E**
Alternative 3: Two WB Through Lanes One SB Right Turn Lane (Channelized)	HCM	**64**	**E**

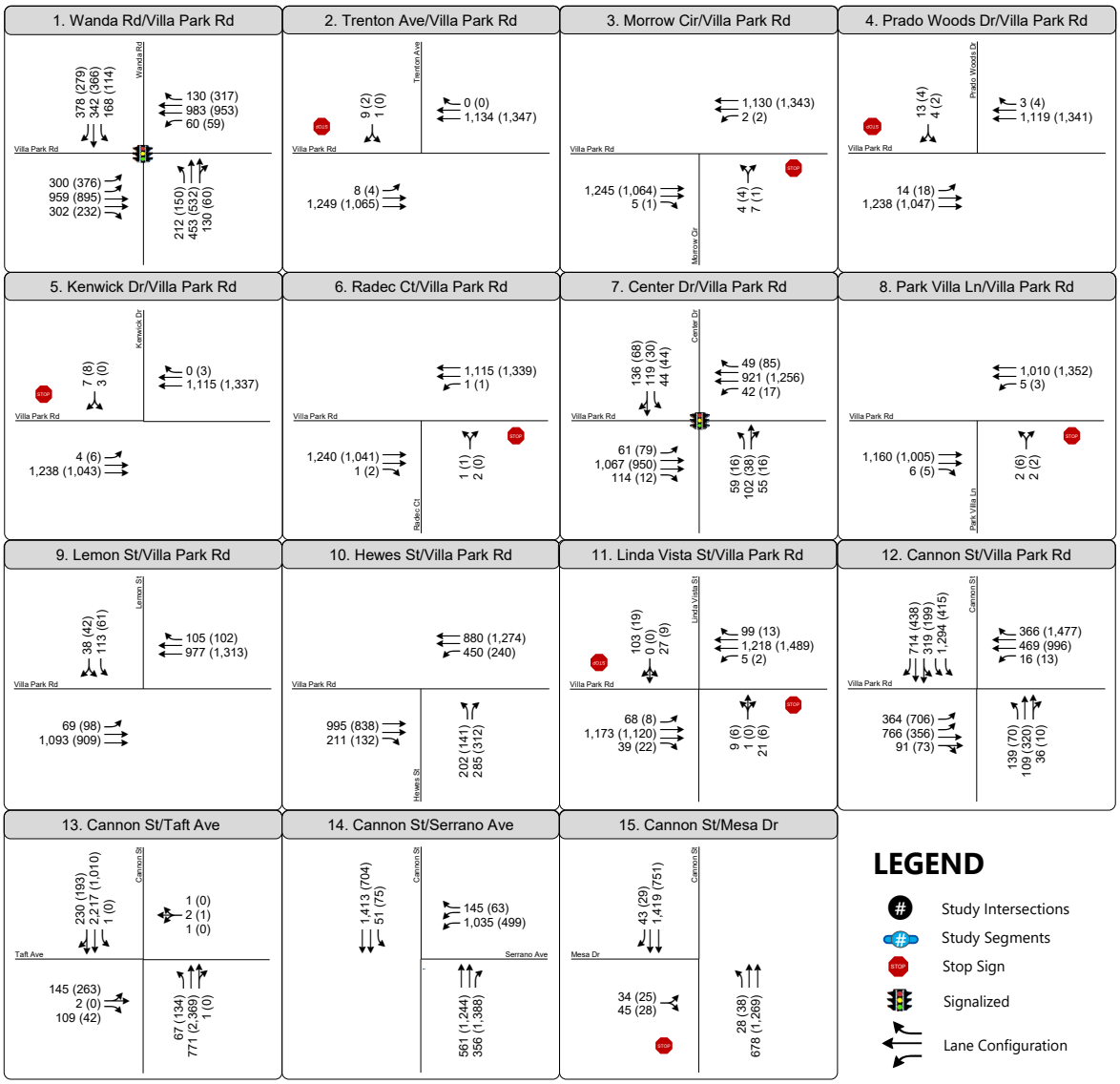
Source: Fehr & Peers, 2024.

6. Vehicle Miles Traveled (VMT) Assessment

Villa Park Road from Lemon Street to west of Cannon Street is planned to be a six-lane Major Arterial in the current MPAH. According to the operations and cross-section analysis, a five-lane design (three westbound lanes and two eastbound lanes) along Villa Park Road between Hewes Street and Cannon Street is sufficient to serve future traffic demand. The above recommendation won't add additional capacity than what has been assumed in adopted Circulation Plans and EIRs for the County and City of Orange and Villa Park. Since no capacity is being added we can conclude that no VMT will be induced, and that the change to the MPAH designation would result in a less-than-significant transportation impact.

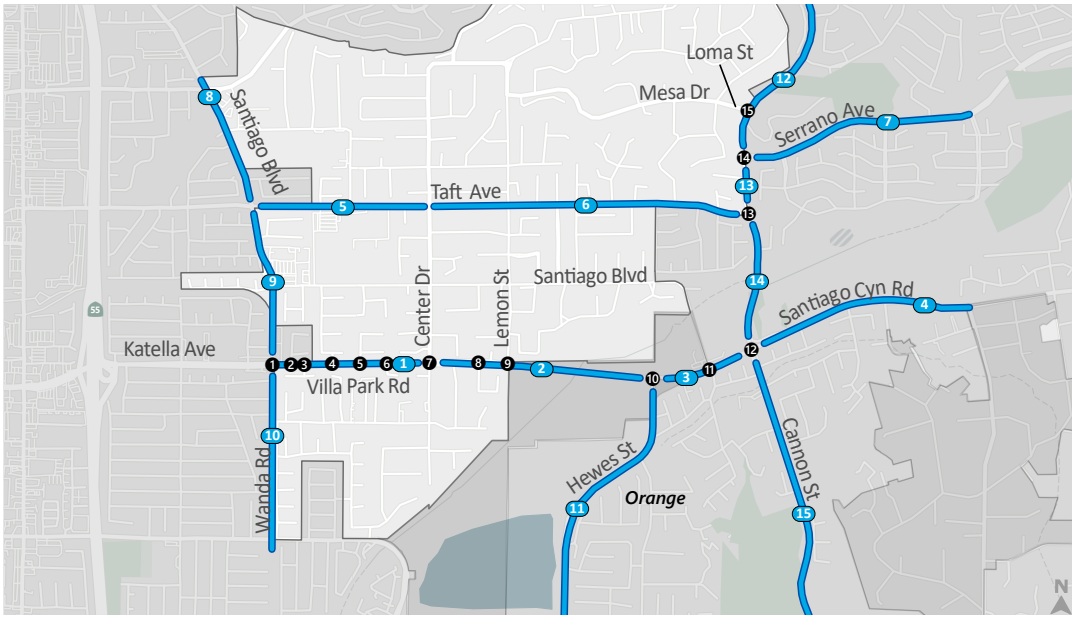
Attachment A: Traffic Volume Data

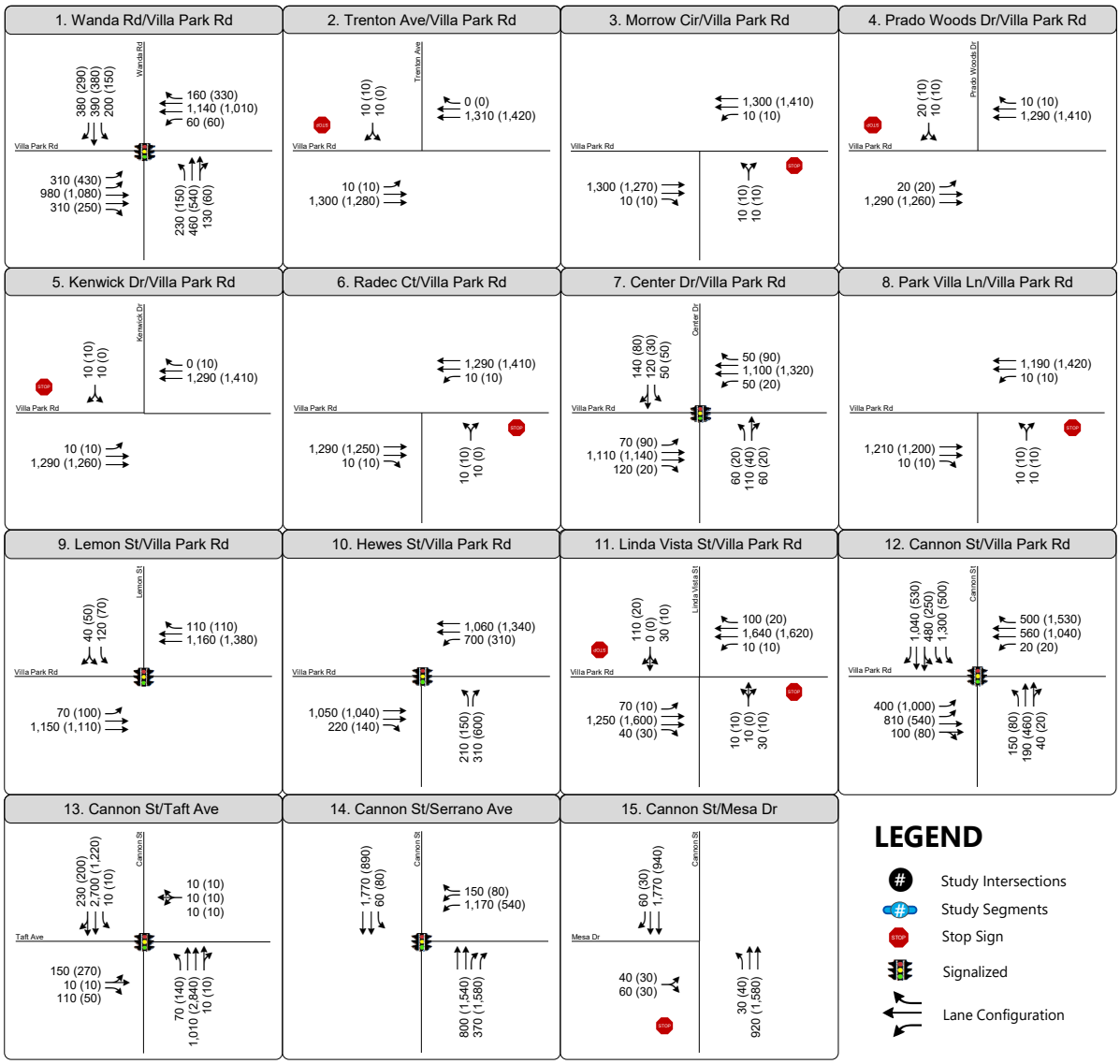




Existing (2023)

Peak Hour Traffic Volumes and Lane Configurations





Future Year (2045)

Peak Hour Traffic Volumes and Lane Configurations

INTERSECTION TURNING MOVEMENT COUNTS

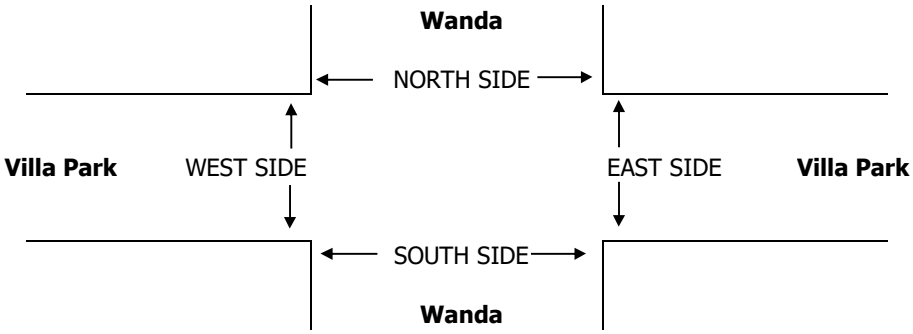
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Villa Park - Orange	PROJECT #:	SC3962
Wed, Apr 26, 23	NORTH & SOUTH:	Wanda	LOCATION #:	1
	EAST & WEST:	Villa Park	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND Wanda			SOUTHBOUND Wanda			EASTBOUND Katella			WESTBOUND Villa Park			
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 1	SR 1	EL 2	ET 2	ER 1	WL 1	WT 2	WR 1	TOTAL
AM	7:00 AM	31	44	14	26	41	60	43	176	37	3	158	20	653
	7:15 AM	30	49	16	31	35	79	55	168	39	9	169	20	700
	7:30 AM	41	90	25	45	78	81	79	267	65	7	263	34	1,075
	7:45 AM	51	127	34	38	105	104	54	270	74	19	251	24	1,151
	8:00 AM	62	145	32	39	88	102	76	221	102	18	253	33	1,171
	8:15 AM	58	91	39	46	71	91	91	201	61	16	216	39	1,020
	8:30 AM	58	74	19	28	70	57	53	147	51	32	194	52	835
	8:45 AM	41	66	14	28	53	64	53	153	47	29	144	50	742
	VOLUMES	372	686	193	281	541	638	504	1,603	476	133	1,648	272	7,347
	APPROACH %	30%	55%	15%	19%	37%	44%	20%	62%	18%	6%	80%	13%	
	APP/DEPART	1,251	/	1,462	1,460	/	1,150	2,583	/	2,077	2,053	/	2,658	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	212	453	130	168	342	378	300	959	302	60	983	130	4,417
	APPROACH %	27%	57%	16%	19%	39%	43%	19%	61%	19%	5%	84%	11%	
	PEAK HR FACTOR		0.832			0.899			0.950			0.965		0.943
	APP/DEPART	795	/	883	888	/	704	1,561	/	1,257	1,173	/	1,573	0
PM	4:00 PM	39	107	25	29	74	75	70	201	62	16	206	63	967
	4:15 PM	34	108	17	24	80	64	96	239	67	18	246	65	1,058
	4:30 PM	36	112	19	25	80	58	94	202	78	21	246	59	1,030
	4:45 PM	38	131	17	22	76	60	89	220	77	10	200	67	1,007
	5:00 PM	37	130	16	24	94	64	93	237	70	20	259	76	1,120
	5:15 PM	44	137	18	34	100	89	84	199	43	17	237	93	1,095
	5:30 PM	31	134	9	34	96	66	110	204	42	12	257	81	1,076
	5:45 PM	23	113	22	36	98	64	101	185	45	15	200	65	967
	VOLUMES	282	972	143	228	698	540	737	1,687	484	129	1,851	569	8,320
	APPROACH %	20%	70%	10%	16%	48%	37%	25%	58%	17%	5%	73%	22%	
	APP/DEPART	1,397	/	2,278	1,466	/	1,311	2,908	/	2,058	2,549	/	2,673	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	150	532	60	114	366	279	376	860	232	59	953	317	4,298
	APPROACH %	20%	72%	8%	15%	48%	37%	26%	59%	16%	4%	72%	24%	
	PEAK HR FACTOR		0.932			0.851			0.918			0.936		0.959
	APP/DEPART	742	/	1,225	759	/	657	1,468	/	1,034	1,329	/	1,382	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

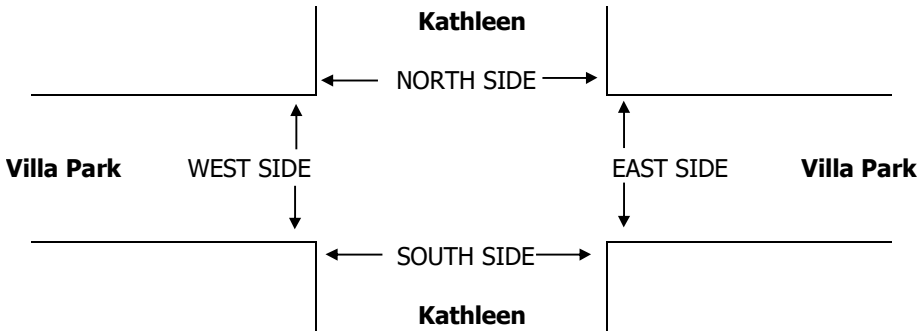
DATE:				
Wed, Apr 26, 23	LOCATION:	Villa Park	PROJECT #:	SC3962
	NORTH & SOUTH:	Kathleen	LOCATION #:	2
	EAST & WEST:	Villa Park	CONTROL:	STOP S

NOTES:

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

		NORTHBOUND Kathleen			SOUTHBOUND Kathleen			EASTBOUND Katella			WESTBOUND Villa Park			
	LANES:	NL X	NT X	NR X	SL 0	ST X	SR 0	EL 1	ET 2	ER X	WL X	WT 2	WR 0	TOTAL
AM	7:00 AM	0	0	0	0	0	1	1	186	0	0	176	0	364
	7:15 AM	0	0	0	0	0	3	0	219	0	0	195	0	417
	7:30 AM	0	0	0	0	0	4	1	306	0	0	229	0	540
	7:45 AM	0	0	0	0	0	3	3	374	0	0	290	0	670
	8:00 AM	0	0	0	0	0	0	2	277	0	0	282	0	561
	8:15 AM	0	0	0	1	0	2	2	287	0	0	280	0	572
	8:30 AM	0	0	0	0	0	1	0	218	0	0	262	0	481
	8:45 AM	0	0	0	0	0	0	1	188	0	0	217	1	407
	VOLUMES	0	0	0	1	0	14	10	2,055	0	0	1,931	1	4,017
	APPROACH %	0%	0%	0%	7%	0%	93%	0%	99%	0%	0%	100%	0%	
	APP/DEPART	0	/	11	15	/	0	2,070	/	2,056	1,932	/	1,950	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	0	0	0	1	0	9	8	1,244	0	0	1,081	0	2,346
	APPROACH %	0%	0%	0%	10%	0%	90%	1%	99%	0%	0%	100%	0%	
	PEAK HR FACTOR		0.000			0.625			0.832			0.932		0.875
	APP/DEPART	0	/	8	10	/	0	1,255	/	1,245	1,081	/	1,093	0
PM	4:00 PM	0	0	0	0	0	1	5	255	0	0	262	0	523
	4:15 PM	0	0	0	0	0	1	0	269	0	0	323	0	593
	4:30 PM	0	0	0	0	0	0	1	268	0	0	302	0	571
	4:45 PM	0	0	0	0	0	0	1	247	0	0	275	0	523
	5:00 PM	0	0	0	0	0	1	1	255	0	0	331	0	588
	5:15 PM	0	0	0	0	0	1	1	264	0	0	360	0	626
	5:30 PM	0	0	0	0	0	4	2	228	0	0	320	0	554
	5:45 PM	0	0	0	0	0	3	1	250	0	0	265	3	522
	VOLUMES	0	0	0	0	0	11	12	2,036	0	0	2,438	3	4,506
	APPROACH %	0%	0%	0%	0%	0%	100%	1%	99%	0%	0%	100%	0%	
	APP/DEPART	0	/	15	11	/	0	2,054	/	2,036	2,441	/	2,455	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	0	0	0	0	0	2	4	1,034	0	0	1,268	0	2,310
	APPROACH %	0%	0%	0%	0%	0%	100%	0%	99%	0%	0%	100%	0%	
	PEAK HR FACTOR		0.000			0.500			0.963			0.881		0.921
	APP/DEPART	0	/	4	2	/	0	1,040	/	1,034	1,268	/	1,272	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

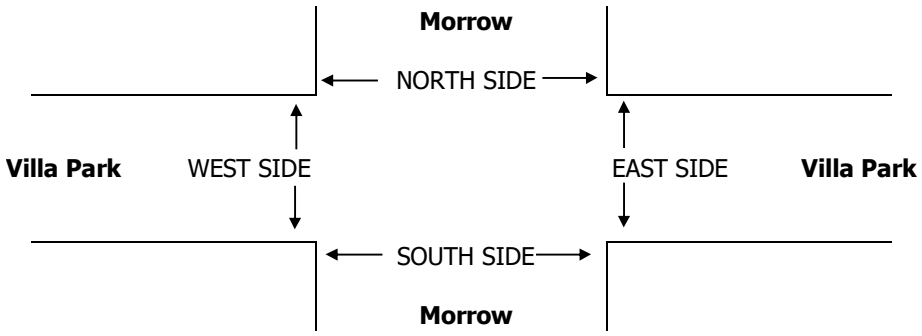
DATE:				
Wed, Apr 26, 23	LOCATION:	Villa Park	PROJECT #:	SC3962
	NORTH & SOUTH:	Morrow	LOCATION #:	3
	EAST & WEST:	Villa Park	CONTROL:	STOP N

NOTES:

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

		NORTHBOUND Morrow			SOUTHBOUND Morrow			EASTBOUND Villa Park			WESTBOUND Villa Park			
	LANES:	NL 0	NT X	NR 0	SL X	ST X	SR X	EL X	ET 2	ER 0	WL 1	WT 2	WR X	TOTAL
AM	7:00 AM	3	0	0	0	0	0	0	186	0	1	173	0	363
	7:15 AM	0	0	0	0	0	0	0	218	1	0	195	0	414
	7:30 AM	2	0	2	0	0	0	0	305	1	1	227	0	538
	7:45 AM	0	0	2	0	0	0	0	372	1	0	290	0	665
	8:00 AM	0	0	2	0	0	0	0	276	1	1	282	0	562
	8:15 AM	2	0	1	0	0	0	0	286	2	0	283	0	574
	8:30 AM	1	0	1	0	0	0	0	217	1	0	261	0	481
	8:45 AM	1	0	0	0	0	0	0	186	2	0	217	0	406
	VOLUMES	9	0	8	0	0	0	0	2,046	9	3	1,928	0	4,003
	APPROACH %	53%	0%	47%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
	APP/DEPART	17	/	0	0	/	10	2,055	/	2,056	1,931	/	1,937	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	4	0	7	0	0	0	0	1,239	5	2	1,082	0	2,339
	APPROACH %	36%	0%	64%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
	PEAK HR FACTOR		0.688			0.000			0.834			0.934		0.879
	APP/DEPART	11	/	0	0	/	6	1,244	/	1,247	1,084	/	1,086	0
PM	4:00 PM	0	0	1	0	0	0	0	254	1	1	262	0	519
	4:15 PM	1	0	0	0	0	0	0	269	0	0	322	0	592
	4:30 PM	1	0	0	0	0	0	0	268	0	0	301	0	570
	4:45 PM	1	0	1	0	0	0	0	247	0	1	274	0	524
	5:00 PM	1	0	0	1	0	0	0	254	1	0	330	0	587
	5:15 PM	1	0	0	0	0	0	0	264	0	1	359	0	625
	5:30 PM	0	0	0	0	0	0	0	217	1	0	327	0	545
	5:45 PM	1	0	0	0	0	0	0	250	0	0	267	0	518
	VOLUMES	6	0	2	1	0	0	0	2,023	3	3	2,442	0	4,480
	APPROACH %	75%	0%	25%	100%	0%	0%	0%	100%	0%	0%	100%	0%	
	APP/DEPART	8	/	0	1	/	6	2,026	/	2,026	2,445	/	2,448	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	4	0	1	1	0	0	0	1,033	1	2	1,264	0	2,306
	APPROACH %	80%	0%	20%	100%	0%	0%	0%	100%	0%	0%	100%	0%	
	PEAK HR FACTOR		0.625			0.250			0.965			0.879		0.922
	APP/DEPART	5	/	0	1	/	3	1,034	/	1,035	1,266	/	1,268	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wed, Apr 26, 23

LOCATION: Villa Park
NORTH & SOUTH: Prado Woods
EAST & WEST: Villa Park

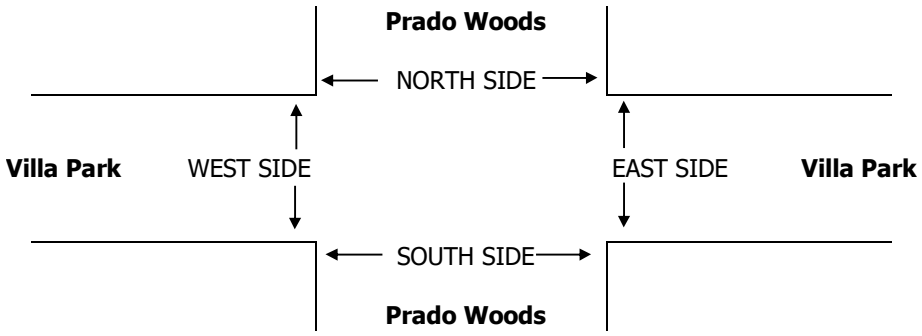
PROJECT #: SC3962
LOCATION #: 4
CONTROL: STOP S

NOTES:

AM / PM / MD / OTHER / OTHER

▲ N
◄ W E ►
S ▼

		NORTHBOUND Prado Woods			SOUTHBOUND Prado Woods			EASTBOUND Villa Park			WESTBOUND Villa Park			
	LANES:	NL X	NT X	NR X	SL 0	ST X	SR 0	EL 1	ET 2	ER X	WL X	WT 2	WR 0	TOTAL
AM	7:00 AM	0	0	0	0	0	2	1	186	0	0	171	0	360
	7:15 AM	0	0	0	1	0	3	2	216	0	0	192	0	414
	7:30 AM	0	0	0	3	0	3	1	307	0	0	225	0	539
	7:45 AM	0	0	0	1	0	4	3	371	0	0	290	3	672
	8:00 AM	0	0	0	0	0	2	4	268	0	0	281	0	555
	8:15 AM	0	0	0	0	0	4	6	281	0	0	277	0	568
	8:30 AM	0	0	0	0	0	2	2	216	0	0	259	0	479
	8:45 AM	0	0	0	0	0	2	3	183	0	0	215	0	403
	VOLUMES	0	0	0	5	0	22	22	2,028	0	0	1,910	3	3,990
	APPROACH %	0%	0%	0%	19%	0%	81%	1%	99%	0%	0%	100%	0%	
	APP/DEPART	0	/	22	27	/	0	2,050	/	2,033	1,913	/	1,935	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	0	0	0	4	0	13	14	1,227	0	0	1,073	3	2,334
	APPROACH %	0%	0%	0%	24%	0%	76%	1%	99%	0%	0%	100%	0%	
	PEAK HR FACTOR		0.000			0.708			0.830			0.918		0.868
	APP/DEPART	0	/	15	17	/	0	1,241	/	1,231	1,076	/	1,088	0
PM	4:00 PM	0	0	0	1	0	3	1	254	0	0	266	2	527
	4:15 PM	0	0	0	0	0	0	3	257	0	0	322	1	583
	4:30 PM	0	0	0	0	0	1	7	261	0	0	300	0	569
	4:45 PM	0	0	0	1	0	2	3	245	0	0	273	0	524
	5:00 PM	0	0	0	1	0	0	2	253	0	0	330	1	587
	5:15 PM	0	0	0	0	0	1	6	258	0	0	359	3	627
	5:30 PM	0	0	0	0	0	0	3	214	0	0	327	0	544
	5:45 PM	0	0	0	0	0	1	0	250	0	0	266	1	518
	VOLUMES	0	0	0	3	0	8	25	1,992	0	0	2,443	8	4,479
	APPROACH %	0%	0%	0%	27%	0%	73%	1%	99%	0%	0%	100%	0%	
	APP/DEPART	0	/	33	11	/	0	2,017	/	1,995	2,451	/	2,451	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	0	0	0	2	0	4	18	1,017	0	0	1,262	4	2,307
	APPROACH %	0%	0%	0%	33%	0%	67%	2%	98%	0%	0%	100%	0%	
	PEAK HR FACTOR		0.000			0.500			0.965			0.874		0.920
	APP/DEPART	0	/	22	6	/	0	1,035	/	1,019	1,266	/	1,266	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

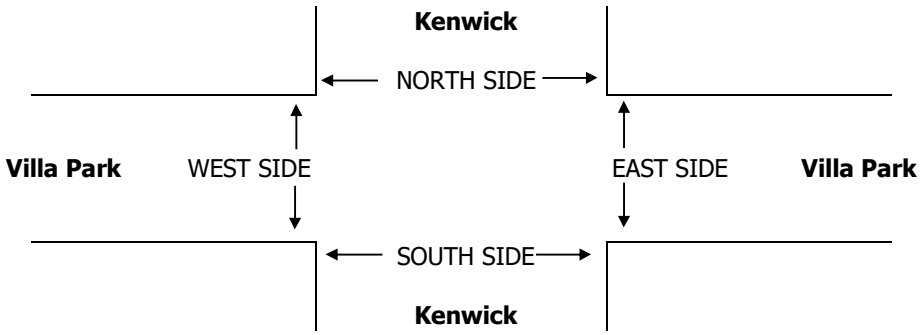
DATE:	LOCATION:	Villa Park	PROJECT #:	SC3962
Wed, Apr 26, 23	NORTH & SOUTH:	Kenwick	LOCATION #:	5
	EAST & WEST:	Villa Park	CONTROL:	STOP S

NOTES:

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

		NORTHBOUND Kenwick			SOUTHBOUND Kenwick			EASTBOUND Villa Park			WESTBOUND Villa Park			
	LANES:	NL X	NT X	NR X	SL 0	ST X	SR 0	EL 1	ET 2	ER X	WL X	WT 2	WR 0	TOTAL
AM	7:00 AM	0	0	0	0	0	1	0	186	0	0	170	0	357
	7:15 AM	0	0	0	0	0	1	0	217	0	0	191	0	409
	7:30 AM	0	0	0	1	0	2	0	304	0	0	223	0	530
	7:45 AM	0	0	0	0	0	2	2	370	0	0	296	0	670
	8:00 AM	0	0	0	2	0	1	0	268	0	0	280	0	551
	8:15 AM	0	0	0	0	0	2	2	279	0	0	275	0	558
	8:30 AM	0	0	0	0	0	0	0	216	0	0	259	0	475
	8:45 AM	0	0	0	0	0	0	1	182	0	0	215	0	398
	VOLUMES	0	0	0	3	0	9	5	2,022	0	0	1,909	0	3,949
	APPROACH %	0%	0%	0%	25%	0%	75%	0%	100%	0%	0%	100%	0%	
	APP/DEPART	0	/	5	12	/	0	2,027	/	2,026	1,910	/	1,918	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	0	0	0	3	0	7	4	1,221	0	0	1,074	0	2,309
	APPROACH %	0%	0%	0%	30%	0%	70%	0%	100%	0%	0%	100%	0%	
	PEAK HR FACTOR		0.000			0.833			0.823			0.907		0.862
	APP/DEPART	0	/	4	10	/	0	1,225	/	1,224	1,074	/	1,081	0
PM	4:00 PM	0	0	0	0	0	0	2	253	0	0	268	0	523
	4:15 PM	0	0	0	0	0	0	1	256	0	0	323	0	580
	4:30 PM	0	0	0	0	0	1	1	260	0	0	307	0	569
	4:45 PM	0	0	0	0	0	4	2	244	0	0	269	1	520
	5:00 PM	0	0	0	0	0	1	2	248	0	0	329	1	581
	5:15 PM	0	0	0	0	0	2	1	256	0	0	359	1	619
	5:30 PM	0	0	0	1	0	1	1	213	0	0	326	0	542
	5:45 PM	0	0	0	1	0	1	2	248	0	0	266	1	519
	VOLUMES	0	0	0	2	0	10	12	1,978	0	0	2,447	4	4,455
	APPROACH %	0%	0%	0%	17%	0%	83%	1%	99%	0%	0%	100%	0%	
	APP/DEPART	0	/	16	12	/	0	1,992	/	1,980	2,451	/	2,459	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	0	0	0	0	0	8	6	1,008	0	0	1,264	3	2,291
	APPROACH %	0%	0%	0%	0%	0%	100%	1%	99%	0%	0%	100%	0%	
	PEAK HR FACTOR		0.000			0.500			0.973			0.880		0.924
	APP/DEPART	0	/	9	8	/	0	1,016	/	1,008	1,267	/	1,274	0



INTERSECTION TURNING MOVEMENT COUNTS

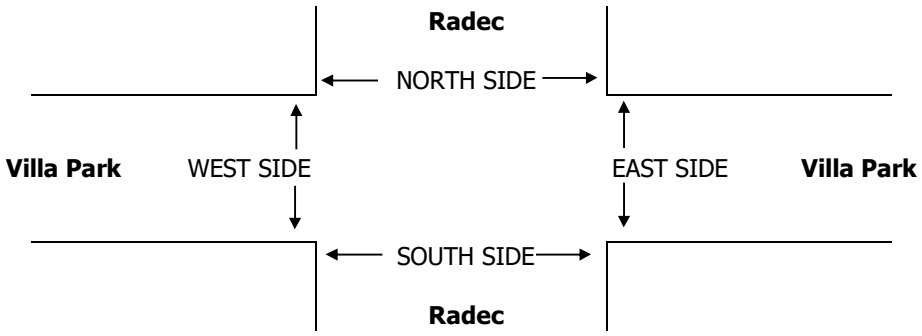
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Villa Park	PROJECT #:	SC3962
Wed, Apr 26, 23	NORTH & SOUTH:	Radec	LOCATION #:	6
	EAST & WEST:	Villa Park	CONTROL:	STOP N

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND Radec			SOUTHBOUND Radec			EASTBOUND Villa Park			WESTBOUND Villa Park			
	LANES:	NL 0	NT X	NR 0	SL X	ST X	SR X	EL X	ET 2	ER 0	WL 1	WT 2	WR X	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	185	1	0	170	0	356
	7:15 AM	0	0	0	0	0	0	0	206	1	0	191	0	398
	7:30 AM	0	0	2	0	0	0	0	303	1	0	222	0	528
	7:45 AM	1	0	0	0	0	0	0	370	0	1	295	0	667
	8:00 AM	0	0	0	0	0	0	0	270	0	0	286	0	556
	8:15 AM	0	0	0	0	0	0	0	279	0	0	275	0	554
	8:30 AM	0	0	0	0	0	0	0	215	0	0	258	0	473
	8:45 AM	1	0	0	0	0	0	0	183	0	0	215	0	399
	VOLUMES	2	0	2	0	0	0	0	2,011	3	1	1,912	0	3,935
	APPROACH %	50%	0%	50%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
	APP/DEPART	4	/	0	0	/	4	2,016	/	2,015	1,915	/	1,916	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	1	0	2	0	0	0	0	1,222	1	1	1,078	0	2,307
	APPROACH %	33%	0%	67%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
	PEAK HR FACTOR		0.375			0.000			0.827			0.912		0.865
	APP/DEPART	3	/	0	0	/	2	1,224	/	1,225	1,080	/	1,080	0
PM	4:00 PM	0	0	1	0	0	0	0	252	1	0	268	0	522
	4:15 PM	0	0	0	0	0	0	0	256	0	0	323	0	579
	4:30 PM	0	0	0	0	0	0	0	260	0	0	307	0	567
	4:45 PM	1	0	0	0	0	0	0	242	2	1	279	0	525
	5:00 PM	0	0	0	0	0	0	0	244	0	0	330	0	574
	5:15 PM	0	0	0	0	0	0	0	256	0	0	360	0	616
	5:30 PM	0	0	0	0	0	0	0	214	0	0	326	0	540
	5:45 PM	0	0	0	0	0	0	0	249	0	0	267	0	516
	VOLUMES	1	0	1	0	0	0	0	1,973	3	1	2,460	0	4,439
	APPROACH %	50%	0%	50%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
	APP/DEPART	2	/	0	0	/	4	1,976	/	1,974	2,461	/	2,461	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	1	0	0	0	0	0	0	1,002	2	1	1,276	0	2,282
	APPROACH %	100%	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
	PEAK HR FACTOR		0.250			0.000			0.965			0.887		0.926
	APP/DEPART	1	/	0	0	/	3	1,004	/	1,002	1,277	/	1,277	0



INTERSECTION TURNING MOVEMENT COUNTS

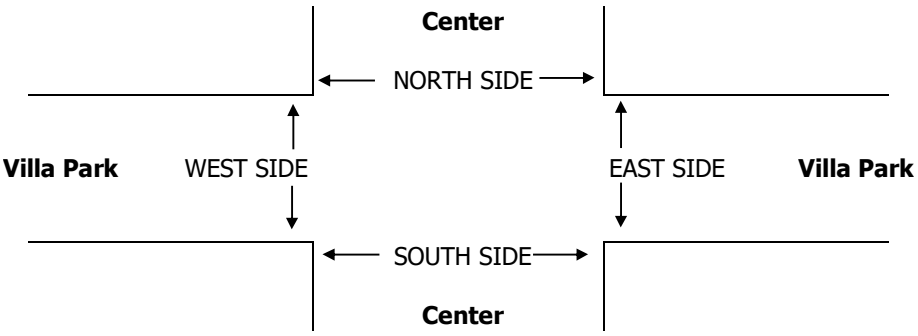
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
Wed, Apr 26, 23	LOCATION:	Villa Park	PROJECT #:	SC3962
	NORTH & SOUTH:	Center	LOCATION #:	7
	EAST & WEST:	Villa Park	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND Center			SOUTHBOUND Center			EASTBOUND Villa Park			WESTBOUND Villa Park			
	LANES:	NL 1	NT 1	NR 0	SL 1	ST 1	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL
AM	7:00 AM	1	1	2	6	2	14	11	165	6	4	154	1	367
	7:15 AM	2	5	10	10	8	10	11	192	5	1	180	7	441
	7:30 AM	10	10	6	10	25	15	9	256	31	10	200	10	592
	7:45 AM	27	49	28	6	49	25	23	286	65	23	250	13	844
	8:00 AM	20	29	16	13	23	48	17	245	14	6	220	16	667
	8:15 AM	2	14	5	15	22	48	12	262	4	3	227	10	624
	8:30 AM	5	7	9	18	15	43	14	197	1	4	210	12	535
	8:45 AM	5	2	6	6	6	19	10	170	6	4	190	11	435
	VOLUMES	72	117	82	84	150	222	107	1,773	132	55	1,631	80	4,505
	APPROACH %	27%	43%	30%	18%	33%	49%	5%	88%	7%	3%	92%	5%	
	APP/DEPART	271	/	302	456	/	336	2,012	/	1,940	1,766	/	1,927	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	59	102	55	44	119	136	61	1,049	114	42	897	49	2,727
	APPROACH %	27%	47%	25%	15%	40%	45%	5%	86%	9%	4%	91%	5%	
	PEAK HR FACTOR		0.519			0.879			0.818			0.864		0.808
	APP/DEPART	216	/	211	299	/	275	1,224	/	1,148	988	/	1,093	0
PM	4:00 PM	4	7	7	7	11	19	25	233	4	8	245	16	586
	4:15 PM	5	8	9	10	6	18	18	242	3	12	313	10	654
	4:30 PM	1	5	6	10	7	22	17	227	4	4	270	15	588
	4:45 PM	5	9	6	10	8	11	24	222	2	6	277	28	608
	5:00 PM	2	12	3	15	9	19	22	219	3	2	302	22	630
	5:15 PM	8	12	1	9	6	16	16	241	3	5	346	20	683
	5:30 PM	2	11	3	12	9	20	15	197	5	2	300	10	586
	5:45 PM	5	6	2	12	7	20	21	202	4	5	244	9	537
	VOLUMES	32	70	37	85	63	145	158	1,783	28	44	2,297	130	4,872
	APPROACH %	23%	50%	27%	29%	22%	49%	8%	91%	1%	2%	93%	5%	
	APP/DEPART	139	/	358	293	/	134	1,969	/	1,906	2,471	/	2,474	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	16	38	16	44	30	68	79	909	12	17	1,195	85	2,509
	APPROACH %	23%	54%	23%	31%	21%	48%	8%	91%	1%	1%	92%	7%	
	PEAK HR FACTOR		0.833			0.826			0.962			0.874		0.918
	APP/DEPART	70	/	202	142	/	59	1,000	/	969	1,297	/	1,279	0



INTERSECTION TURNING MOVEMENT COUNTS

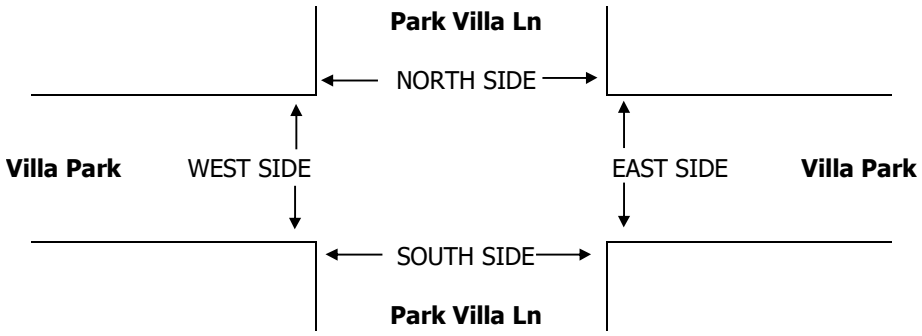
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
Wed, Apr 26, 23	LOCATION:	Villa Park	PROJECT #:	SC3962
	NORTH & SOUTH:	Park Villa Ln	LOCATION #:	8
	EAST & WEST:	Villa Park	CONTROL:	STOP N

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND Park Villa Ln			SOUTHBOUND Park Villa Ln			EASTBOUND Villa Park			WESTBOUND Villa Park			
	LANES:	NL 0	NT X	NR 0	SL X	ST X	SR X	EL X	ET 2	ER 0	WL 1	WT 2	WR X	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	170	0	0	159	0	329
	7:15 AM	1	0	0	0	0	0	0	216	0	0	189	0	406
	7:30 AM	0	0	0	0	0	0	0	272	2	0	224	0	498
	7:45 AM	0	0	1	0	0	0	0	305	0	1	286	0	593
	8:00 AM	2	0	0	0	0	0	0	285	0	2	252	0	541
	8:15 AM	0	0	1	0	0	0	0	283	4	2	223	0	513
	8:30 AM	3	0	3	0	0	0	0	224	1	1	231	0	463
	8:45 AM	3	0	3	0	0	0	0	184	0	0	197	0	387
	VOLUMES	9	0	8	0	0	0	0	1,939	7	6	1,761	0	3,730
	APPROACH %	53%	0%	47%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
	APP/DEPART	17	/	0	0	/	10	1,946	/	1,950	1,767	/	1,770	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	2	0	2	0	0	0	0	1,145	6	5	985	0	2,145
	APPROACH %	50%	0%	50%	0%	0%	0%	0%	99%	1%	1%	99%	0%	
	PEAK HR FACTOR		0.500			0.000			0.943			0.862		0.904
	APP/DEPART	4	/	0	0	/	8	1,151	/	1,150	990	/	987	0
PM	4:00 PM	1	0	0	0	0	0	0	261	5	2	276	0	545
	4:15 PM	2	0	3	0	0	0	0	255	2	1	337	0	600
	4:30 PM	1	0	0	0	0	0	0	237	3	0	287	0	528
	4:45 PM	2	0	2	0	0	0	0	241	1	2	332	0	580
	5:00 PM	1	0	0	0	0	0	0	238	1	0	321	0	561
	5:15 PM	2	0	0	0	0	0	0	242	0	1	359	0	604
	5:30 PM	0	0	1	0	0	0	0	221	0	0	301	0	523
	5:45 PM	0	0	0	0	0	0	0	208	0	1	260	0	469
	VOLUMES	9	0	6	0	0	0	0	1,903	12	7	2,473	0	4,410
	APPROACH %	60%	0%	40%	0%	0%	0%	0%	99%	1%	0%	100%	0%	
	APP/DEPART	15	/	0	0	/	15	1,915	/	1,913	2,480	/	2,482	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	6	0	2	0	0	0	0	958	5	3	1,299	0	2,273
	APPROACH %	75%	0%	25%	0%	0%	0%	0%	99%	1%	0%	100%	0%	
	PEAK HR FACTOR		0.500			0.000			0.995			0.904		0.941
	APP/DEPART	8	/	0	0	/	7	963	/	961	1,302	/	1,305	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

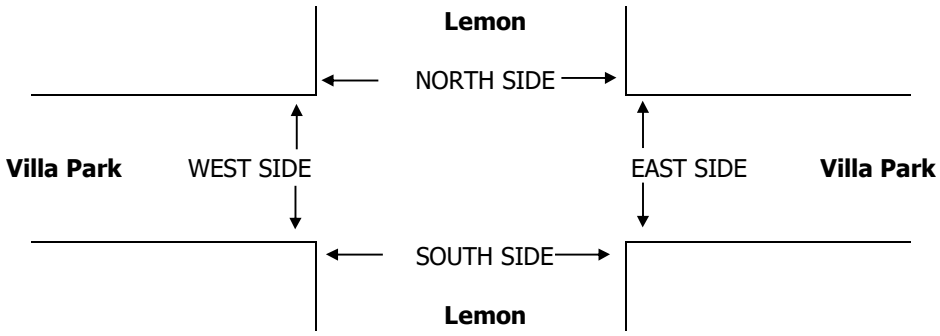
DATE:				
Wed, Apr 26, 23	LOCATION:	Villa Park - Orange	PROJECT #:	SC3962
	NORTH & SOUTH:	Lemon	LOCATION #:	9
	EAST & WEST:	Villa Park	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

		NORTHBOUND Lemon			SOUTHBOUND Lemon			EASTBOUND Villa Park			WESTBOUND Villa Park			
	LANES:	NL X	NT X	NR X	SL 1.5	ST X	SR 0.5	EL 1	ET 2	ER X	WL X	WT 2	WR 0	TOTAL
AM	7:00 AM	0	0	0	12	0	6	13	163	0	0	152	4	350
	7:15 AM	0	0	0	18	0	5	16	203	0	0	184	10	436
	7:30 AM	0	0	0	20	0	4	13	261	0	0	228	11	537
	7:45 AM	0	0	0	31	0	13	14	307	0	0	275	33	673
	8:00 AM	0	0	0	34	0	10	19	251	0	0	242	35	591
	8:15 AM	0	0	0	28	0	11	23	260	0	0	215	26	563
	8:30 AM	0	0	0	19	0	15	27	201	0	0	217	12	491
	8:45 AM	0	0	0	16	0	9	19	164	0	0	188	15	411
	VOLUMES	0	0	0	178	0	73	144	1,810	0	0	1,701	146	4,052
	APPROACH %	0%	0%	0%	71%	0%	29%	7%	93%	0%	0%	92%	8%	
	APP/DEPART	0	/	289	251	/	0	1,954	/	1,988	1,847	/	1,775	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	0	0	0	113	0	38	69	1,079	0	0	960	105	2,364
	APPROACH %	0%	0%	0%	75%	0%	25%	6%	94%	0%	0%	90%	10%	
	PEAK HR FACTOR		0.000			0.858			0.894			0.864		0.878
	APP/DEPART	0	/	173	151	/	0	1,148	/	1,192	1,065	/	999	0
PM	4:00 PM	0	0	0	7	0	5	12	225	0	0	278	28	555
	4:15 PM	0	0	0	15	0	10	20	246	0	0	316	28	635
	4:30 PM	0	0	0	14	0	11	25	213	0	0	267	24	554
	4:45 PM	0	0	0	13	0	8	23	232	0	0	323	22	621
	5:00 PM	0	0	0	15	0	15	20	223	0	0	303	22	598
	5:15 PM	0	0	0	18	0	10	26	201	0	0	344	32	631
	5:30 PM	0	0	0	15	0	9	29	208	0	0	292	26	579
	5:45 PM	0	0	0	15	0	6	19	187	0	0	284	33	544
	VOLUMES	0	0	0	112	0	74	174	1,735	0	0	2,407	215	4,717
	APPROACH %	0%	0%	0%	60%	0%	40%	9%	91%	0%	0%	92%	8%	
	APP/DEPART	0	/	386	186	/	0	1,909	/	1,847	2,622	/	2,484	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	0	0	0	61	0	42	98	864	0	0	1,262	102	2,429
	APPROACH %	0%	0%	0%	59%	0%	41%	10%	90%	0%	0%	93%	7%	
	PEAK HR FACTOR		0.000			0.858			0.943			0.907		0.962
	APP/DEPART	0	/	198	103	/	0	962	/	925	1,364	/	1,306	0



INTERSECTION TURNING MOVEMENT COUNTS

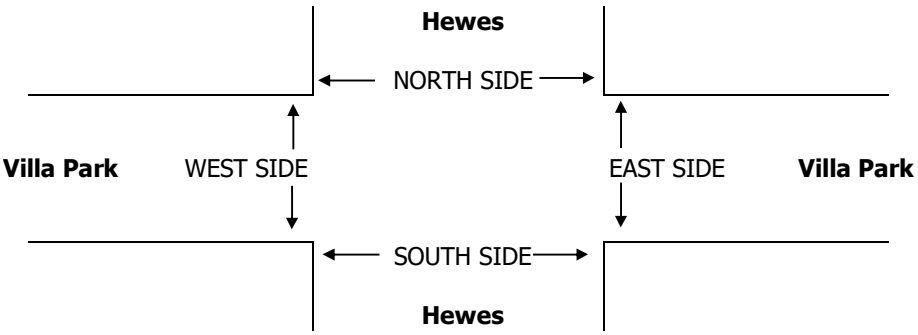
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Orange	PROJECT #:	SC3962
Wed, Apr 26, 23	NORTH & SOUTH:	Hewes	LOCATION #:	10
	EAST & WEST:	Villa Park	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND Hewes			SOUTHBOUND Hewes			EASTBOUND Villa Park			WESTBOUND Villa Park			
	LANES:	NL 1	NT X	NR 1	SL X	ST X	SR X	EL X	ET 2	ER 0	WL 1	WT 2	WR X	TOTAL
AM	7:00 AM	23	0	21	0	0	0	0	142	23	48	139	0	396
	7:15 AM	29	0	40	0	0	0	0	191	32	71	168	0	531
	7:30 AM	44	0	46	0	0	0	0	224	59	85	197	0	655
	7:45 AM	60	0	74	0	0	0	0	257	52	129	267	0	839
	8:00 AM	58	0	75	0	0	0	0	248	47	127	202	0	757
	8:15 AM	40	0	90	0	0	0	0	247	53	109	200	0	739
	8:30 AM	35	0	39	0	0	0	0	180	33	90	204	0	581
	8:45 AM	29	0	39	0	0	0	0	164	22	53	170	0	477
	VOLUMES	318	0	424	0	0	0	0	1,653	321	712	1,547	0	4,975
	APPROACH %	43%	0%	57%	0%	0%	0%	0%	84%	16%	32%	68%	0%	
	APP/DEPART	742	/	0	0	/	1,033	1,974	/	2,077	2,259	/	1,865	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	202	0	285	0	0	0	0	976	211	450	866	0	2,990
	APPROACH %	41%	0%	59%	0%	0%	0%	0%	82%	18%	34%	66%	0%	
	PEAK HR FACTOR		0.909			0.000			0.960			0.831		0.891
	APP/DEPART	487	/	0	0	/	661	1,187	/	1,261	1,316	/	1,068	0
PM	4:00 PM	30	0	83	0	0	0	0	208	33	48	281	0	683
	4:15 PM	37	0	62	0	0	0	0	238	32	61	336	0	766
	4:30 PM	40	0	69	0	0	0	0	189	30	59	279	0	666
	4:45 PM	38	0	82	0	0	0	0	176	42	64	292	0	694
	5:00 PM	26	0	99	0	0	0	0	234	28	56	312	0	755
	5:15 PM	33	0	95	0	0	0	0	189	33	61	327	0	738
	5:30 PM	28	0	84	0	0	0	0	190	29	67	294	0	692
	5:45 PM	46	0	71	0	0	0	0	170	34	54	252	0	627
	VOLUMES	278	0	645	0	0	0	0	1,594	261	470	2,373	0	5,621
	APPROACH %	30%	0%	70%	0%	0%	0%	0%	86%	14%	17%	83%	0%	
	APP/DEPART	923	/	0	0	/	731	1,855	/	2,239	2,843	/	2,651	0
	BEGIN PEAK HR		4:15 PM											
	VOLUMES	141	0	312	0	0	0	0	837	132	240	1,219	0	2,881
	APPROACH %	31%	0%	69%	0%	0%	0%	0%	86%	14%	16%	84%	0%	
	PEAK HR FACTOR		0.906			0.000			0.897			0.919		0.940
	APP/DEPART	453	/	0	0	/	372	969	/	1,149	1,459	/	1,360	0



INTERSECTION TURNING MOVEMENT COUNTS

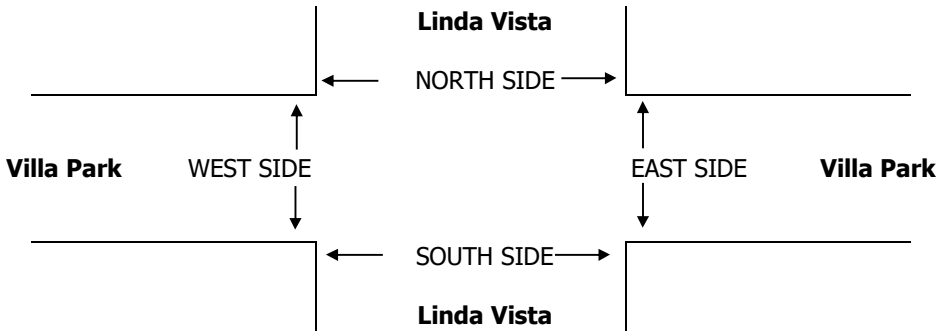
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:					
Wed, Apr 26, 23	LOCATION:	Orange	PROJECT #:	SC3962	
	NORTH & SOUTH:	Linda Vista	LOCATION #:	11	
	EAST & WEST:	Villa Park	CONTROL:	STOP N/S	

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND Linda Vista			SOUTHBOUND Santiago			EASTBOUND Villa Park			WESTBOUND Villa Park			
	LANES:	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL
AM	7:00 AM	3	0	2	1	0	1	3	165	1	1	182	2	361
	7:15 AM	1	0	5	2	0	6	3	190	6	1	233	5	452
	7:30 AM	2	0	4	5	0	6	7	249	9	1	292	12	587
	7:45 AM	2	0	7	3	0	30	26	307	20	1	309	37	742
	8:00 AM	2	0	3	5	0	37	17	293	6	1	332	16	712
	8:15 AM	3	1	7	14	0	30	18	301	4	2	275	34	689
	8:30 AM	4	0	6	8	0	14	10	229	2	1	262	8	544
	8:45 AM	0	0	2	5	0	12	14	181	6	1	225	6	452
	VOLUMES	17	1	36	43	0	136	98	1,915	54	9	2,110	120	4,539
	APPROACH %	31%	2%	67%	24%	0%	76%	5%	93%	3%	0%	94%	5%	
	APP/DEPART	54	/	219	179	/	63	2,067	/	1,994	2,239	/	2,263	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	9	1	21	27	0	103	68	1,150	39	5	1,208	99	2,730
	APPROACH %	29%	3%	68%	21%	0%	79%	5%	91%	3%	0%	92%	8%	
	PEAK HR FACTOR		0.705			0.739			0.890			0.940		0.920
	APP/DEPART	31	/	168	130	/	44	1,257	/	1,198	1,312	/	1,320	0
PM	4:00 PM	0	0	4	6	0	12	2	278	4	1	311	3	621
	4:15 PM	4	0	1	4	0	8	4	278	5	4	349	6	663
	4:30 PM	3	0	3	3	0	13	4	273	3	0	330	6	638
	4:45 PM	3	0	1	3	0	3	1	252	6	0	352	2	623
	5:00 PM	0	0	1	2	0	1	0	323	7	1	394	3	732
	5:15 PM	0	0	1	1	0	2	3	272	6	1	406	2	694
	5:30 PM	4	0	3	1	0	3	0	261	3	3	339	1	618
	5:45 PM	2	0	2	3	0	5	3	254	3	3	315	1	591
	VOLUMES	16	0	16	23	0	47	17	2,191	37	13	2,796	24	5,180
	APPROACH %	50%	0%	50%	33%	0%	67%	1%	98%	2%	0%	99%	1%	
	APP/DEPART	32	/	41	70	/	50	2,245	/	2,230	2,833	/	2,859	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	6	0	6	9	0	19	8	1,120	22	2	1,482	13	2,687
	APPROACH %	50%	0%	50%	32%	0%	68%	1%	97%	2%	0%	99%	1%	
	PEAK HR FACTOR		0.500			0.438			0.871			0.915		0.918
	APP/DEPART	12	/	21	28	/	24	1,150	/	1,135	1,497	/	1,507	0



INTERSECTION TURNING MOVEMENT COUNTS

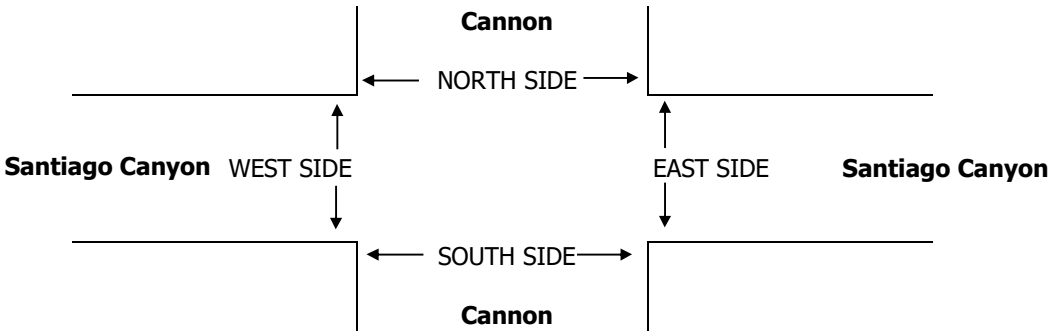
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Orange	PROJECT #:	SC3962
Wed, Apr 26, 23	NORTH & SOUTH:	Cannon	LOCATION #:	12
	EAST & WEST:	Santiago Canyon	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND Cannon			SOUTHBOUND Cannon			EASTBOUND Santiago Canyon			WESTBOUND Santiago Canyon			
	LANES:	NL 1	NT 2	NR 0	SL 2.5	ST 1.5	SR 1	EL 2	ET 2	ER 0	WL 1	WT 2	WR 1	TOTAL
AM	7:00 AM	14	14	2	245	66	117	33	129	6	1	54	37	718
	7:15 AM	16	20	1	338	67	154	58	134	5	1	69	62	925
	7:30 AM	29	23	9	325	86	172	70	160	19	5	104	87	1,089
	7:45 AM	54	25	12	303	87	207	91	182	44	6	96	85	1,192
	8:00 AM	38	36	7	321	54	182	95	194	12	2	129	85	1,155
	8:15 AM	18	25	8	345	50	153	108	198	16	3	140	109	1,173
	8:30 AM	17	19	4	270	72	157	85	148	10	0	97	106	985
	8:45 AM	19	17	3	175	44	117	60	121	7	0	97	84	744
	VOLUMES	205	179	46	2,322	526	1,259	600	1,266	119	18	786	655	7,981
	APPROACH %	48%	42%	11%	57%	13%	31%	30%	64%	6%	1%	54%	45%	
	APP/DEPART	430	/	1,434	4,107	/	663	1,985	/	3,635	1,459	/	2,249	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	139	109	36	1,294	277	714	364	734	91	16	469	366	4,609
	APPROACH %	49%	38%	13%	57%	12%	31%	31%	62%	8%	2%	55%	43%	
	PEAK HR FACTOR		0.780			0.957			0.923			0.844		0.967
	APP/DEPART	284	/	839	2,285	/	383	1,189	/	2,065	851	/	1,322	0
PM	4:00 PM	20	53	4	96	27	95	202	61	25	2	200	283	1,068
	4:15 PM	16	63	2	84	28	120	187	76	20	1	223	324	1,144
	4:30 PM	16	55	0	84	33	106	192	67	20	2	218	334	1,127
	4:45 PM	20	81	0	105	44	108	172	73	11	6	226	375	1,221
	5:00 PM	18	81	5	94	30	126	204	97	21	2	254	373	1,305
	5:15 PM	10	65	3	98	42	107	172	82	20	5	292	348	1,244
	5:30 PM	22	93	2	118	44	97	158	86	21	0	224	381	1,246
	5:45 PM	19	86	0	85	42	86	164	73	22	1	214	311	1,103
	VOLUMES	141	577	16	764	290	845	1,451	615	160	19	1,851	2,729	9,458
	APPROACH %	19%	79%	2%	40%	15%	44%	65%	28%	7%	0%	40%	59%	
	APP/DEPART	734	/	4,757	1,899	/	469	2,226	/	1,395	4,599	/	2,837	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	70	320	10	415	160	438	706	338	73	13	996	1,477	5,016
	APPROACH %	18%	80%	3%	41%	16%	43%	63%	30%	7%	1%	40%	59%	
	PEAK HR FACTOR		0.855			0.978			0.867			0.964		0.961
	APP/DEPART	400	/	2,503	1,013	/	246	1,117	/	763	2,486	/	1,504	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wed, Apr 26, 23

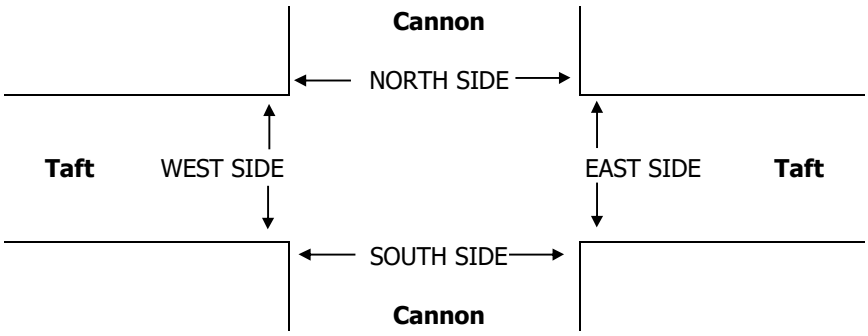
LOCATION: Villa Park - Orange
NORTH & SOUTH: Cannon
EAST & WEST: Taft

PROJECT #: SC3962
LOCATION #: 13
CONTROL: SIGNAL

NOTES:

AM PM MD OTHER OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND Cannon			SOUTHBOUND Cannon			EASTBOUND Taft			WESTBOUND Taft			
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 0.5	ET 0.5	ER 1	WL 0	WT 1	WR 0	TOTAL
AM	7:00 AM	4	83	0	0	461	28	8	0	12	0	0	0	596
	7:15 AM	3	132	0	0	577	38	13	1	17	0	0	0	781
	7:30 AM	10	155	0	0	600	49	20	0	13	0	0	0	847
	7:45 AM	11	198	1	1	560	57	36	0	27	0	0	1	892
	8:00 AM	22	181	0	0	532	70	45	2	36	1	0	0	889
	8:15 AM	24	212	0	0	504	54	44	0	33	0	2	0	873
	8:30 AM	20	174	0	0	423	44	33	0	26	0	0	0	720
	8:45 AM	24	146	1	0	305	40	28	0	14	0	0	0	558
	VOLUMES	118	1,281	2	1	3,962	380	227	3	178	1	2	1	6,156
	APPROACH %	8%	91%	0%	0%	91%	9%	56%	1%	44%	25%	50%	25%	
	APP/DEPART	1,401	/	1,508	4,343	/	4,141	408	/	6	4	/	501	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	67	746	1	1	2,196	230	145	2	109	1	2	1	3,501
	APPROACH %	8%	92%	0%	0%	90%	9%	57%	1%	43%	25%	50%	25%	
	PEAK HR FACTOR		0.862			0.935			0.771			0.500		0.981
	APP/DEPART	814	/	891	2,427	/	2,306	256	/	4	4	/	300	0
PM	4:00 PM	19	536	2	1	220	46	58	0	15	2	0	0	899
	4:15 PM	40	533	0	0	232	51	73	0	12	0	0	0	941
	4:30 PM	24	556	0	0	200	38	75	0	12	0	0	0	905
	4:45 PM	40	567	0	0	271	55	64	0	9	0	0	0	1,006
	5:00 PM	37	606	0	0	234	39	51	0	9	0	0	0	976
	5:15 PM	26	566	0	0	251	51	79	0	12	0	1	0	986
	5:30 PM	31	587	0	0	241	48	69	0	12	0	0	0	988
	5:45 PM	25	521	0	0	183	53	65	1	14	0	0	0	862
	VOLUMES	242	4,472	2	1	1,832	381	534	1	95	2	1	0	7,563
	APPROACH %	5%	95%	0%	0%	83%	17%	85%	0%	15%	67%	33%	0%	
	APP/DEPART	4,716	/	5,006	2,214	/	1,929	630	/	4	3	/	624	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	134	2,326	0	0	997	193	263	0	42	0	1	0	3,956
	APPROACH %	5%	95%	0%	0%	84%	16%	86%	0%	14%	0%	100%	0%	
	PEAK HR FACTOR		0.956			0.913			0.838			0.250		0.983
	APP/DEPART	2,460	/	2,589	1,190	/	1,039	305	/	0	1	/	328	0



INTERSECTION TURNING MOVEMENT COUNTS

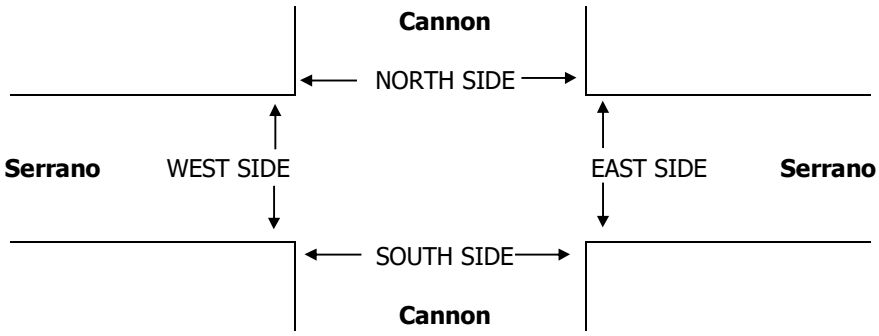
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Orange	PROJECT #:	SC3962
Wed, Apr 26, 23	NORTH & SOUTH:	Cannon	LOCATION #:	14
	EAST & WEST:	Serrano	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND Cannon			SOUTHBOUND Cannon			EASTBOUND Serrano			WESTBOUND Serrano			
	LANES:	NL X	NT 2	NR 1	SL 1	ST 2	SR X	EL X	ET X	ER X	WL 2	WT X	WR 1	TOTAL
AM	7:00 AM	0	56	35	5	243	0	0	0	0	246	0	10	595
	7:15 AM	0	86	59	4	348	0	0	0	0	267	0	17	781
	7:30 AM	0	115	60	9	384	0	0	0	0	276	0	26	870
	7:45 AM	0	134	93	8	351	0	0	0	0	267	0	42	895
	8:00 AM	0	129	96	13	339	0	0	0	0	263	0	50	890
	8:15 AM	0	149	107	21	329	0	0	0	0	229	0	27	862
	8:30 AM	0	130	77	15	252	0	0	0	0	215	0	27	716
	8:45 AM	0	100	74	14	172	0	0	0	0	173	0	12	545
	VOLUMES	0	899	601	89	2,418	0	0	0	0	1,936	0	211	6,154
	APPROACH %	0%	60%	40%	4%	96%	0%	0%	0%	0%	90%	0%	10%	
	APP/DEPART	1,500	/	1,110	2,507	/	4,354	0	/	690	2,147	/	0	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	0	527	356	51	1,403	0	0	0	0	1,035	0	145	3,517
	APPROACH %	0%	60%	40%	4%	96%	0%	0%	0%	0%	88%	0%	12%	
	PEAK HR FACTOR		0.862			0.925			0.000			0.942		0.982
	APP/DEPART	883	/	672	1,454	/	2,438	0	/	407	1,180	/	0	0
PM	4:00 PM	0	270	324	21	146	0	0	0	0	121	0	13	895
	4:15 PM	0	272	334	15	150	0	0	0	0	133	0	23	927
	4:30 PM	0	267	364	21	129	0	0	0	0	109	0	15	905
	4:45 PM	0	279	352	26	195	0	0	0	0	131	0	17	1,000
	5:00 PM	0	292	365	14	155	0	0	0	0	118	0	13	957
	5:15 PM	0	295	344	17	167	0	0	0	0	135	0	14	972
	5:30 PM	0	329	327	18	184	0	0	0	0	115	0	19	992
	5:45 PM	0	268	318	22	136	0	0	0	0	100	0	16	860
	VOLUMES	0	2,272	2,728	154	1,262	0	0	0	0	962	0	130	7,508
	APPROACH %	0%	45%	55%	11%	89%	0%	0%	0%	0%	88%	0%	12%	
	APP/DEPART	5,000	/	2,402	1,416	/	2,224	0	/	2,882	1,092	/	0	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	0	1,195	1,388	75	701	0	0	0	0	499	0	63	3,921
	APPROACH %	0%	46%	54%	10%	90%	0%	0%	0%	0%	89%	0%	11%	
	PEAK HR FACTOR		0.983			0.878			0.000			0.943		0.980
	APP/DEPART	2,583	/	1,258	776	/	1,200	0	/	1,463	562	/	0	0



INTERSECTION TURNING MOVEMENT COUNTS

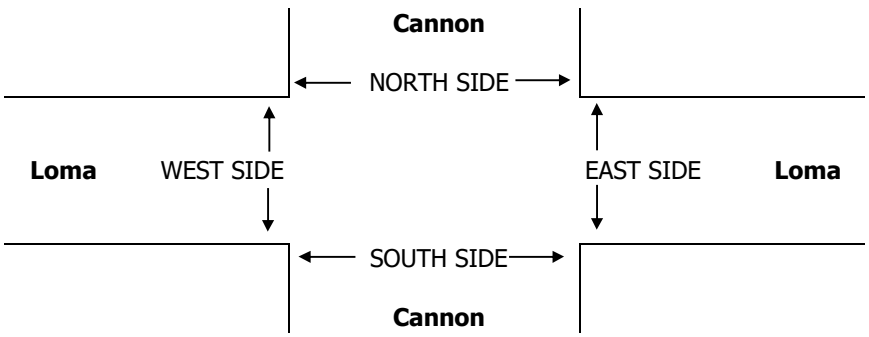
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:					
Wed, Apr 26, 23	LOCATION:	Villa Park - Orange	PROJECT #:	SC3962
	NORTH & SOUTH:	Cannon	LOCATION #:	15
	EAST & WEST:	Loma	CONTROL:	STOP E

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND Cannon			SOUTHBOUND Cannon			EASTBOUND Loma			WESTBOUND Loma			
	LANES:	NL 1	NT 2	NR X	SL X	ST 2	SR 0	EL 0	ET X	ER 0	WL X	WT X	WR X	TOTAL
AM	7:00 AM	3	63	0	0	242	5	5	0	6	0	0	0	324
	7:15 AM	1	90	0	0	347	5	9	0	5	0	0	0	457
	7:30 AM	5	136	0	0	379	8	7	0	14	0	0	0	549
	7:45 AM	11	160	0	0	352	14	10	0	7	0	0	0	554
	8:00 AM	5	174	0	0	350	13	7	0	12	0	0	0	561
	8:15 AM	7	169	0	0	338	8	10	0	12	0	0	0	544
	8:30 AM	11	146	0	0	256	5	10	0	11	0	0	0	439
	8:45 AM	10	102	0	0	188	6	8	0	8	0	0	0	322
	VOLUMES	53	1,040	0	0	2,452	64	66	0	75	0	0	0	3,750
	APPROACH %	5%	95%	0%	0%	97%	3%	47%	0%	53%	0%	0%	0%	
	APP/DEPART	1,093	/	1,106	2,516	/	2,527	141	/	0	0	/	117	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	28	639	0	0	1,419	43	34	0	45	0	0	0	2,208
	APPROACH %	4%	96%	0%	0%	97%	3%	43%	0%	57%	0%	0%	0%	
	PEAK HR FACTOR		0.932			0.944			0.898			0.000		0.984
	APP/DEPART	667	/	673	1,462	/	1,464	79	/	0	0	/	71	0
PM	4:00 PM	11	272	0	0	159	4	1	0	7	0	0	0	454
	4:15 PM	8	287	0	0	153	7	7	0	11	0	0	0	473
	4:30 PM	6	276	0	0	150	11	4	0	6	0	0	0	453
	4:45 PM	10	286	0	0	212	6	8	0	7	0	0	0	529
	5:00 PM	10	295	0	0	170	4	6	0	6	0	0	0	491
	5:15 PM	9	300	0	0	174	12	9	0	9	0	0	0	513
	5:30 PM	9	330	0	0	195	7	2	0	6	0	0	0	549
	5:45 PM	12	272	0	0	151	8	1	0	6	0	0	0	450
	VOLUMES	75	2,318	0	0	1,364	59	38	0	58	0	0	0	3,912
	APPROACH %	3%	97%	0%	0%	96%	4%	40%	0%	60%	0%	0%	0%	
	APP/DEPART	2,393	/	2,356	1,423	/	1,430	96	/	0	0	/	126	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	38	1,211	0	0	751	29	25	0	28	0	0	0	2,082
	APPROACH %	3%	97%	0%	0%	96%	4%	47%	0%	53%	0%	0%	0%	
	PEAK HR FACTOR		0.921			0.894			0.736			0.000		0.948
	APP/DEPART	1,249	/	1,236	780	/	784	53	/	0	0	/	62	0



Wednesday, April 26, 2023 CITY: Villa Park PROJECT: SC3962

ADT4 Villa Park Rd from N Wanda Rd to Center Dr. Suhsduhg#e|#DlpWG#OOF##who1#:47#586#:;;;

AM Period	EB		WB			PM Period	EB		WB		
0:00	25		12			12:00	166		166		
0:15	12		10			12:15	182		215		
0:30	13		7			12:30	165		232		
0:45	7	57	6	35	92	12:45	149	662	184	797	1459
1:00	5		7			13:00	150		169		
1:15	9		7			13:15	183		194		
1:30	5		4			13:30	149		204		
1:45	5	24	2	20	44	13:45	165	647	175	742	1389
2:00	3		3			14:00	171		220		
2:15	5		3			14:15	159		169		
2:30	5		4			14:30	185		202		
2:45	5	18	7	17	35	14:45	180	695	252	843	1538
3:00	1		5			15:00	186		248		
3:15	4		4			15:15	203		348		
3:30	2		13			15:30	209		288		
3:45	3	10	8	30	40	15:45	238	836	349	1233	2069
4:00	7		9			16:00	255		285		
4:15	6		13			16:15	280		329		
4:30	5		16			16:30	246		326		
4:45	7	25	30	68	93	16:45	259	1040	277	1217	2257
5:00	12		41			17:00	277		355		
5:15	17		52			17:15	251		347		
5:30	27		62			17:30	247		350		
5:45	26	82	93	248	330	17:45	243	1018	280	1332	2350
6:00	51		80			18:00	234		281		
6:15	72		125			18:15	210		250		
6:30	104		139			18:30	224		220		
6:45	142	369	175	519	888	18:45	172	840	147	898	1738
7:00	216		181			19:00	160		176		
7:15	215		198			19:15	168		130		
7:30	337		304			19:30	148		111		
7:45	342	1110	294	977	2087	19:45	156	632	95	512	1144
8:00	292		304			20:00	152		102		
8:15	286		271			20:15	156		82		
8:30	194		278			20:30	139		70		
8:45	195	967	223	1076	2043	20:45	157	604	50	304	908
9:00	154		203			21:00	127		70		
9:15	143		205			21:15	121		52		
9:30	156		205			21:30	106		56		
9:45	151	604	209	822	1426	21:45	97	451	40	218	669
10:00	167		168			22:00	82		29		
10:15	146		218			22:15	47		42		
10:30	144		178			22:30	56		26		
10:45	159	616	197	761	1377	22:45	38	223	21	118	341
11:00	135		187			23:00	29		20		
11:15	184		162			23:15	28		18		
11:30	152		174			23:30	17		14		
11:45	157	628	202	725	1353	23:45	19	93	13	65	158
Total Vol.		4510		5298	**9808**			7741		8279	**16020**

	Daily Totals EB	WB	**Combined**
	12251	13577	**25828**

	AM			**PM**		
Split %	46.0%	54.0%	**38.0%**	48.3%	51.7%	**62.0%**
Peak Hour	7:30	7:30	**7:30**	16:15	17:00	**16:45**
Volume	1257	1173	**2430**	1062	1332	**2363**
P.H.F.	0.92	0.96	**0.95**	0.95	0.94	**0.93**

cs@aimtd.com Tell. 714 253 7888

A32223

24-HOUR ROADWAY SEGMENT COUNTS (WITH FHWA CLASSIFICATION)

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wednesday, April 26, 2023 **CITY#** Orange

JOB #: SC3962 CLASS5 Villa Park Rd from Center Dr to Hewes St

AM	COMBINED													
TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL
0:00	0	28	1	0	1	0	0	0	0	0	0	0	0	30
0:15	0	19	1	0	0	0	0	0	0	0	0	0	0	20
0:30	0	17	0	0	0	0	0	0	0	0	0	0	0	17
0:45	0	9	0	0	0	0	0	0	0	0	0	0	0	9
1:00	0	11	0	0	0	0	0	0	0	0	0	0	0	11
1:15	0	10	0	0	1	0	0	0	0	0	0	0	0	11
1:30	0	9	3	0	0	0	0	0	0	0	0	0	0	12
1:45	0	5	0	0	0	0	0	0	0	0	0	0	0	5
2:00	0	6	1	0	0	0	0	0	0	0	0	0	0	7
2:15	0	6	0	0	0	0	0	0	0	0	0	0	0	6
2:30	0	5	1	0	0	0	0	0	0	0	0	0	0	6
2:45	0	7	2	0	1	0	0	0	0	0	0	0	0	10
3:00	0	7	1	0	0	0	0	0	0	0	0	0	0	8
3:15	0	6	0	0	1	0	0	0	0	0	0	0	0	7
3:30	0	8	0	0	1	0	0	0	0	0	0	0	0	9
3:45	0	10	0	0	0	0	0	0	0	0	0	0	0	10
4:00	0	7	1	0	0	0	0	0	0	0	0	0	0	8
4:15	0	15	1	0	1	0	0	0	0	0	0	0	0	17
4:30	0	17	2	0	1	0	0	0	0	0	0	0	0	20
4:45	0	23	4	0	2	0	0	0	0	0	0	0	0	29
5:00	0	26	4	0	4	0	0	0	0	0	0	0	0	34
5:15	0	52	9	0	1	0	0	0	0	0	0	0	0	62
5:30	0	68	8	0	2	0	0	0	0	0	0	0	0	78
5:45	1	67	10	0	1	2	0	0	1	0	0	0	0	82
6:00	0	93	19	0	2	0	0	0	0	0	0	0	0	114
6:15	0	146	23	0	15	1	0	0	0	0	0	0	0	185
6:30	1	179	33	0	21	1	0	0	1	1	0	0	0	237
6:45	0	209	43	1	25	6	0	0	0	0	1	0	0	285
7:00	0	271	28	1	25	2	0	0	0	0	0	0	0	327
7:15	2	350	37	2	28	0	0	0	0	1	0	0	0	420
7:30	1	443	46	0	31	3	0	0	0	0	0	0	0	524
7:45	0	542	65	0	26	1	0	0	1	0	1	0	0	636
8:00	3	465	62	0	20	3	0	0	0	0	2	0	0	555
8:15	0	469	56	0	13	2	0	0	0	0	0	0	0	540
8:30	2	371	49	1	28	1	0	0	0	0	0	0	0	452
8:45	0	317	36	4	23	1	0	1	1	1	1	0	0	385
9:00	2	266	39	1	12	2	0	0	0	1	0	0	0	323
9:15	0	283	38	4	11	3	0	0	1	0	1	0	0	341
9:30	0	248	49	1	11	2	0	1	0	0	0	0	0	312
9:45	0	251	46	1	8	4	0	0	1	0	1	0	0	312
10:00	0	276	44	1	17	1	0	0	0	0	0	0	0	339
10:15	0	240	46	1	19	2	0	0	0	0	0	0	0	308
10:30	0	202	39	2	10	2	0	0	0	0	0	0	0	255
10:45	1	244	43	0	7	3	0	0	0	0	0	0	0	298
11:00	0	244	47	0	13	2	0	0	0	0	0	0	0	306
11:15	0	253	27	1	16	2	0	0	0	0	0	0	0	299
11:30	0	248	38	1	11	4	0	1	1	0	0	0	0	304
11:45	0	259	45	0	9	1	0	0	0	0	0	0	0	314
TOTAL	13	7,307	1,047	22	418	51	0	3	7	4	7	0	0	8,879

AM PEAK HOUR	7:30 AM
AM PEAK VOLUME	2,255

PM	COMBINED													
Time	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL
12:00	2	245	24	0	8	2	0	0	2	0	1	0	0	284
12:15	0	279	37	0	13	3	0	0	2	0	1	0	0	335
12:30	0	285	26	0	13	2	0	0	0	0	0	0	0	326
12:45	1	251	41	1	6	1	0	0	0	0	0	0	0	301
13:00	1	249	33	0	16	4	0	0	0	0	0	0	0	303
13:15	1	295	30	1	10	1	0	0	1	0	0	0	0	339
13:30	0	255	27	0	7	5	0	0	1	0	0	0	0	295
13:45	0	313	20	0	6	2	0	0	0	0	0	0	0	341
14:00	2	281	35	1	12	1	0	0	2	0	0	0	0	334
14:15	3	242	31	0	10	3	0	1	1	0	2	0	0	293
14:30	0	304	39	4	14	3	0	0	0	0	0	0	0	364
14:45	0	351	40	0	15	3	0	0	1	0	0	0	0	410
15:00	0	392	52	1	21	3	0	0	0	0	0	0	0	469
15:15	4	425	45	0	20	3	0	0	0	0	3	0	0	500
15:30	4	501	34	0	26	0	0	0	0	0	0	0	0	565
15:45	0	439	45	0	16	2	0	1	1	0	1	0	0	505
16:00	0	474	55	1	15	4	0	1	2	0	0	0	0	552
16:15	3	567	63	1	7	2	0	0	0	0	0	0	0	643
16:30	4	468	47	1	18	0	0	0	0	0	0	0	0	538
16:45	2	472	56	1	14	2	0	0	1	0	0	0	0	548
17:00	3	542	50	0	5	0	0	0	0	0	0	0	0	600
17:15	2	522	49	1	8	0	0	0	0	0	0	0	0	582
17:30	1	498	31	0	10	0	0	1	0	0	0	0	0	541
17:45	4	443	47	0	6	2	0	0	0	0	0	0	0	502
18:00	2	498	52	0	6	1	0	0	0	0	0	0	0	559
18:15	1	373	31	0	4	1	0	0	0	0	0	0	0	410
18:30	2	377	37	0	3	0	0	1	0	0	0	0	0	420
18:45	2	303	38	0	5	0	0	0	0	0	0	0	0	348
19:00	1	258	28	0	1	0	0	0	0	0	0	0	0	288
19:15	2	245	11	0	4	0	0	0	0	0	0	0	0	262
19:30	1	210	16	0	0	0	0	0	0	0	0	0	0	227
19:45	0	211	23	0	0	0	0	0	0	0	0	0	0	234
20:00	2	167	20	0	1	0	0	0	0	0	0	0	0	190
20:15	0	162	13	0	0	0	0	0	0	0	0	0	0	175
20:30	0	155	17	0	1	0	0	0	0	0	0	0	0	173
20:45	0	165	16	0	1	0	0	0	0	0	0	0	0	182
21:00	1	153	17	0	1	0	0	0	0	0	0	0	0	172
21:15	0	146	16	0	0	0	0	0	0	0	0	0	0	162
21:30	0	135	8	0	1	0	0	0	0	0	0	0	0	144
21:45	0	103	5	0	0	0	0	0	0	0	0	0	0	108
22:00	0	91	8	0	0	0	0	0	0	0	0	0	0	99
22:15	0	77	8	0	0	0	0	0	0	0	0	0	0	85
22:30	2	58	7	0	1	0	0	0	0	0	0	0	0	68
22:45	0	47	9	0	0	0	0	0	0	0	0	0	0	56
23:00	0	42	3	0	0	0	0	0	0	0	0	0	0	45
23:15	0	29	4	0	1	0	0	0	0	0	0	0	0	34
23:30	0	17	3	0	0	0	0	0	0	0	0	0	0	20
23:45	0	28	1	0	1	0	0	0	0	0	0	0	0	30
TOTAL	53	13,143	1,348	13	327	50	0	5	14	0	8	0	0	14,961

PM PEAK HOUR	4:15 PM
PM PEAK VOLUME	2,329

CLASS 1	Class 1 — Motorcycles	**CLASS 8**	3 to 4 Axles, Single Trailer
CLASS 2	Passenger Cars	**CLASS 9**	5 Axles, Single Trailer
CLASS 3	2 Axles, 4-Tire Single Units	**CLASS 10**	6 or More Axles, Single Trailer
CLASS 4	Buses	**CLASS 11**	5 or Less Axles, Multi-Trailers
CLASS 5	2 Axles, 6-Tire Single Units	**CLASS 12**	6 Axles, Multi-Trailers
CLASS 6	3 Axles, Single Unit	**CLASS 13**	7 or More Axles, Multi-Trailers
CLASS 7	4 or More Axles, Single Unit		

TOTAL: AM+PM	66	20,450	2,395	35	745	101	0	8	21	4	15	0	0	23,840
% OF TOTAL	0.3%	85.8%	10.0%	0.1%	3.1%	0.4%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	100.0%

Wednesday, April 26, 2023 CITY: Orange PROJECT: SC3962

ADT7 Villa Park Rd from Hewes St to Cannon St. Suhsduhg#e|#DlpWG#OOF##who1#:47#586#:;;;

AM Period	EB		WB			PM Period	EB		WB		
0:00	19		11			12:00	140		174		
0:15	13		10			12:15	169		193		
0:30	11		8			12:30	174		199		
0:45	5	48	10	39	87	12:45	138	621	184	750	1371
1:00	4		6			13:00	154		169		
1:15	5		7			13:15	172		182		
1:30	9		2			13:30	144		176		
1:45	3	21	2	17	38	13:45	159	629	181	708	1337
2:00	3		5			14:00	154		210		
2:15	2		3			14:15	164		172		
2:30	5		1			14:30	199		220		
2:45	4	14	8	17	31	14:45	203	720	247	849	1569
3:00	1		4			15:00	219		316		
3:15	1		4			15:15	231		341		
3:30	2		5			15:30	258		377		
3:45	3	7	9	22	29	15:45	251	959	355	1389	2348
4:00	2		3			16:00	291		329		
4:15	4		16			16:15	300		397		
4:30	2		15			16:30	258		338		
4:45	8	16	22	56	72	16:45	258	1107	356	1420	2527
5:00	10		25			17:00	333		368		
5:15	22		42			17:15	284		388		
5:30	25		58			17:30	274		361		
5:45	25	82	59	184	266	17:45	241	1132	306	1423	2555
6:00	44		82			18:00	286		302		
6:15	76		114			18:15	192		223		
6:30	110		148			18:30	244		211		
6:45	137	367	184	528	895	18:45	189	911	186	922	1833
7:00	163		187			19:00	147		140		
7:15	231		239			19:15	161		120		
7:30	270		282			19:30	123		109		
7:45	331	995	396	1104	2099	19:45	147	578	101	470	1048
8:00	323		329			20:00	114		81		
8:15	337		309			20:15	117		72		
8:30	219		294			20:30	122		58		
8:45	203	1082	223	1155	2237	20:45	133	486	73	284	770
9:00	169		202			21:00	119		66		
9:15	138		214			21:15	119		59		
9:30	147		175			21:30	110		55		
9:45	138	592	184	775	1367	21:45	72	420	38	218	638
10:00	161		195			22:00	64		26		
10:15	140		189			22:15	50		40		
10:30	113		166			22:30	45		28		
10:45	128	542	184	734	1276	22:45	34	193	17	111	304
11:00	155		179			23:00	32		17		
11:15	152		181			23:15	19		13		
11:30	157		168			23:30	17		6		
11:45	153	617	199	727	1344	23:45	16	84	17	53	137
Total Vol.		4383		5358	**9741**			7840		8597	**16437**

Daily Totals

EB	WB	Combined
12223	13955	**26178**

	AM			PM		
Split %	45.0%	55.0%	**37.2%**	47.7%	52.3%	**62.8%**
Peak Hour	7:30	7:45	**7:30**	16:15	16:45	**16:45**
Volume	1261	1328	**2577**	1149	1473	**2622**
P.H.F.	0.94	0.84	**0.89**	0.86	0.95	**0.94**

cs@aimtd.com Tell. 714 253 7888

A32223

24-HOUR ROADWAY SEGMENT COUNTS (WITH FHWA CLASSIFICATION)

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wednesday, April 26, 2023 **CITY#** Orange

JOB #: SC3962 CLASS8 Santiago Canyon Rd from Cannon St to Orange Park Blvd

AM	COMBINED														PM	COMBINED													
TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL	Time	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL
0:00	0	11	1	0	3	0	0	0	0	0	0	0	0	15	12:00	3	241	26	3	6	1	1	0	2	0	1	0	0	284
0:15	0	14	1	0	0	0	0	0	0	0	0	0	0	15	12:15	0	254	35	0	10	1	1	0	2	0	1	0	0	304
0:30	0	12	0	0	0	0	0	0	0	0	0	0	0	12	12:30	1	251	26	1	9	3	1	0	0	0	0	0	0	292
0:45	0	5	1	0	0	0	0	0	0	0	0	0	0	6	12:45	4	283	36	2	7	0	1	0	0	0	0	0	0	333
1:00	0	10	0	0	0	0	0	0	0	0	0	0	0	10	13:00	3	261	32	1	13	2	0	0	0	0	0	0	0	312
1:15	0	3	0	0	1	0	0	0	0	0	0	0	0	4	13:15	3	350	42	1	7	1	0	0	0	0	0	0	0	404
1:30	0	6	0	0	0	0	0	0	0	0	0	0	0	6	13:30	2	291	29	1	8	2	0	0	1	0	0	0	0	334
1:45	0	2	0	0	0	0	0	0	0	0	0	0	0	2	13:45	0	279	26	0	7	1	0	0	1	0	0	0	0	314
2:00	1	4	0	0	0	0	0	0	0	0	0	0	0	5	14:00	1	303	41	1	9	1	0	0	1	0	0	0	0	357
2:15	0	3	0	0	0	0	0	0	0	0	0	0	0	3	14:15	3	289	32	0	7	2	1	1	1	0	2	0	0	338
2:30	0	10	0	0	0	0	0	0	0	0	0	0	0	10	14:30	1	325	46	3	18	1	0	1	0	0	0	0	0	395
2:45	0	6	1	0	0	0	0	0	0	0	0	0	0	7	14:45	2	454	41	1	20	3	1	0	0	0	1	0	0	523
3:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4	15:00	2	596	52	0	19	2	1	0	1	0	0	0	0	673
3:15	0	7	0	0	0	0	0	0	0	0	0	0	0	7	15:15	8	552	51	0	22	2	1	0	0	0	3	0	0	639
3:30	0	8	0	0	0	0	0	0	0	0	0	0	0	8	15:30	7	642	49	0	25	0	0	0	0	0	0	0	0	723
3:45	0	2	0	0	0	0	0	0	0	0	0	0	0	2	15:45	1	582	56	0	23	2	1	0	2	0	1	0	0	668
4:00	0	8	1	0	0	0	0	0	0	0	0	0	0	9	16:00	1	581	42	0	16	3	1	0	2	0	0	0	0	646
4:15	0	23	0	0	0	0	0	0	0	0	0	0	0	23	16:15	6	660	35	0	8	1	0	0	0	0	0	0	0	710
4:30	0	16	1	0	0	0	0	0	0	0	0	0	0	17	16:30	4	652	31	1	12	3	0	0	0	0	2	0	0	705
4:45	0	32	0	0	0	0	0	0	0	0	0	0	0	32	16:45	1	728	35	0	16	1	0	0	2	0	1	0	1	785
5:00	0	28	1	0	0	0	0	0	0	0	0	0	0	29	17:00	5	769	42	0	9	0	0	0	0	0	0	0	0	825
5:15	0	72	1	0	0	0	0	0	0	0	0	0	0	73	17:15	3	776	36	1	11	0	0	0	0	0	0	0	1	828
5:30	1	79	10	0	2	0	0	0	1	0	0	0	0	93	17:30	3	767	30	0	10	1	0	0	0	0	0	0	0	811
5:45	0	71	5	1	1	1	0	0	1	0	0	0	0	80	17:45	5	645	25	0	6	1	1	0	0	0	1	0	0	684
6:00	0	95	8	0	3	0	0	0	0	0	0	0	0	106	18:00	3	589	28	0	4	0	1	0	0	0	0	0	0	625
6:15	4	140	17	0	5	0	1	0	1	0	0	0	0	168	18:15	1	534	25	0	7	1	0	0	0	0	0	0	0	568
6:30	3	239	22	1	8	1	0	0	1	0	1	0	0	276	18:30	2	397	23	0	3	0	0	0	1	0	0	0	0	426
6:45	1	314	33	0	13	3	2	0	1	0	1	0	0	368	18:45	2	348	26	0	5	0	0	0	0	0	0	0	0	381
7:00	0	426	24	0	14	3	0	0	0	0	1	0	0	468	19:00	2	266	18	0	0	0	0	0	0	0	0	0	0	286
7:15	2	536	44	1	19	0	0	0	1	0	1	0	1	605	19:15	3	237	15	0	2	0	0	0	0	0	0	0	0	257
7:30	1	631	35	0	18	3	1	0	0	0	0	0	1	690	19:30	2	218	8	0	0	0	0	0	0	0	0	0	0	228
7:45	1	623	34	1	21	1	0	0	1	0	2	0	0	684	19:45	0	162	8	0	1	0	0	0	0	0	0	0	0	171
8:00	2	677	42	0	12	3	0	0	1	0	2	0	0	739	20:00	2	179	6	0	1	0	0	0	0	0	0	0	0	188
8:15	1	747	40	3	6	5	0	0	0	0	1	0	0	803	20:15	0	166	3	0	0	0	0	0	0	0	0	0	0	169
8:30	3	570	30	0	20	1	1	0	0	0	0	0	0	625	20:30	0	113	6	0	0	0	0	0	0	0	0	0	0	119
8:45	0	424	34	3	14	2	0	0	3	0	0	0	0	480	20:45	0	124	1	0	1	0	0	0	0	0	0	0	0	126
9:00	2	350	38	0	11	2	0	0	0	0	2	0	0	405	21:00	1	132	4	0	1	0	0	0	0	0	0	0	0	138
9:15	2	268	39	6	15	4	0	0	1	0	0	0	0	335	21:15	1	138	0	0	1	0	0	0	0	0	0	0	0	140
9:30	1	267	41	1	8	1	1	0	0	0	0	0	0	320	21:30	1	120	0	0	1	0	0	0	0	0	0	0	0	122
9:45	1	296	27	1	6	1	3	0	1	0	1	0	0	337	21:45	0	78	2	0	0	0	0	0	0	0	0	0	0	80
10:00	0	310	36	1	5	0	1	0	0	0	0	0	0	353	22:00	1	87	4	0	0	0	0	0	0	0	0	0	0	92
10:15	0	271	32	3	7	2	0	0	0	0	0	0	0	315	22:15	0	47	3	0	0	0	0	0	0	0	0	0	0	50
10:30	0	233	32	3	7	0	3	0	0	0	0	0	0	278	22:30	2	41	1	0	0	0	0	0	0	0	0	0	0	44
10:45	1	198	27	0	8	0	1	0	0	0	1	0	0	236	22:45	0	44	2	0	0	0	0	0	0	0	0	0	0	46
11:00	4	216	36	0	3	0	1	0	0	0	0	0	0	260	23:00	0	43	2	0	0	0	0	0	0	0	0	0	0	45
11:15	0	249	36	1	9	1	1	0	0	0	0	0	0	297	23:15	0	26	0	0	0	0	0	0	0	0	0	0	0	26
11:30	2	316	38	0	2	1	0	1	0	0	0	0	0	360	23:30	1	17	0	0	0	0	0	0	0	0	0	0	0	18
11:45	0	319	47	1	8	1	0	0	0	0	0	0	0	376	23:45	0	22	0	0	0	0	0	0	0	0	0	0	0	22
TOTAL	33	9,151	815	27	249	36	16	1	13	0	13	0	2	10,356	TOTAL	93	15,659	1,081	16	325	35	12	2	16	0	13	0	2	17,254

AM PEAK HOUR	7:30 AM
AM PEAK VOLUME	2,916

PM PEAK HOUR	4:45 PM
PM PEAK VOLUME	3,249

CLASS 1	Class 1 — Motorcycles	**CLASS 8**	3 to 4 Axles, Single Trailer
CLASS 2	Passenger Cars	**CLASS 9**	5 Axles, Single Trailer
CLASS 3	2 Axles, 4-Tire Single Units	**CLASS 10**	6 or More Axles, Single Trailer
CLASS 4	Buses	**CLASS 11**	5 or Less Axles, Multi-Trailers
CLASS 5	2 Axles, 6-Tire Single Units	**CLASS 12**	6 Axles, Multi-Trailers
CLASS 6	3 Axles, Single Unit	**CLASS 13**	7 or More Axles, Multi-Trailers
CLASS 7	4 or More Axles, Single Unit		

TOTAL: AM+PM	126	24,810	1,896	43	574	71	28	3	29	0	26	0	4	27,610
% OF TOTAL	0.5%	89.9%	6.9%	0.2%	2.1%	0.3%	0.1%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	100.0%

Wednesday, April 26, 2023 CITY: Villa Park - Orange PROJECT: SC3962

ADT15 Taft Ave from Center Dr to Santiago Blvd. Suhsduhg#e|#DlpWG#OOF##who1#:47#586#:;;;

AM Period	EB		WB			PM Period	EB		WB		
0:00	8		1			12:00	71		63		
0:15	4		4			12:15	94		60		
0:30	0		1			12:30	119		85		
0:45	0	12	0	6	18	12:45	162	446	57	265	711
1:00	1		0			13:00	195		107		
1:15	1		0			13:15	146		182		
1:30	1		1			13:30	151		149		
1:45	1	4	0	1	5	13:45	125	617	135	573	1190
2:00	1		2			14:00	78		89		
2:15	0		0			14:15	84		65		
2:30	0		0			14:30	76		66		
2:45	0	1	0	2	3	14:45	80	318	81	301	619
3:00	0		1			15:00	130		88		
3:15	0		4			15:15	180		87		
3:30	0		0			15:30	157		181		
3:45	0	0	0	5	5	15:45	117	584	130	486	1070
4:00	0		2			16:00	99		93		
4:15	0		2			16:15	108		91		
4:30	0		5			16:30	114		94		
4:45	0	0	6	15	15	16:45	161	482	102	380	862
5:00	0		5			17:00	182		103		
5:15	4		8			17:15	160		122		
5:30	4		8			17:30	127		121		
5:45	5	13	10	31	44	17:45	156	625	109	455	1080
6:00	12		13			18:00	119		121		
6:15	34		32			18:15	96		99		
6:30	27		28			18:30	96		86		
6:45	40	113	34	107	220	18:45	89	400	89	395	795
7:00	59		44			19:00	82		90		
7:15	104		76			19:15	50		83		
7:30	135		99			19:30	50		86		
7:45	224	522	127	346	868	19:45	52	234	57	316	550
8:00	309		198			20:00	40		47		
8:15	326		183			20:15	41		31		
8:30	123		147			20:30	26		22		
8:45	101	859	93	621	1480	20:45	24	131	17	117	248
9:00	178		97			21:00	38		17		
9:15	175		126			21:15	28		52		
9:30	82		78			21:30	25		44		
9:45	48	483	56	357	840	21:45	21	112	9	122	234
10:00	46		49			22:00	9		1		
10:15	45		79			22:15	11		8		
10:30	44		62			22:30	13		9		
10:45	71	206	57	247	453	22:45	9	42	4	22	64
11:00	72		70			23:00	9		6		
11:15	55		102			23:15	7		5		
11:30	57		73			23:30	4		2		
11:45	70	254	69	314	568	23:45	4	24	0	13	37
Total Vol.		2467		2052	**4519**			4015		3445	**7460**

	Daily Totals		
	EB	WB	**Combined**
	6482	5497	**11979**

	AM			**PM**		
Split %	54.6%	45.4%	**37.7%**	53.8%	46.2%	**62.3%**
Peak Hour	7:30	7:45	**7:45**	12:45	13:00	**13:00**
Volume	994	655	**1637**	654	573	**1190**
P.H.F.	0.76	0.83	**0.80**	0.84	0.79	**0.91**

cs@aimtd.com Tell. 714 253 7888

Wednesday, April 26, 2023 CITY: Villa Park PROJECT: SC3962

ADT14 Taft Ave from Cannon St to Center Dr.

Suhsduhg#e|#DlpWG#OOF##who1#:47#586#:;;;

AM Period	EB		WB			PM Period	EB		WB		
0:00	5		1			12:00	37		54		
0:15	5		2			12:15	49		52		
0:30	1		1			12:30	39		55		
0:45	0	11	0	4	15	12:45	58	183	52	213	396
1:00	2		0			13:00	62		37		
1:15	0		0			13:15	62		61		
1:30	1		0			13:30	57		57		
1:45	0	3	0	0	3	13:45	61	242	40	195	437
2:00	1		2			14:00	60		48		
2:15	0		0			14:15	51		64		
2:30	0		0			14:30	51		55		
2:45	0	1	0	2	3	14:45	39	201	62	229	430
3:00	0		0			15:00	54		67		
3:15	0		3			15:15	57		65		
3:30	0		0			15:30	100		65		
3:45	0	0	1	4	4	15:45	53	264	63	260	524
4:00	0		1			16:00	69		65		
4:15	1		3			16:15	69		79		
4:30	0		4			16:30	77		68		
4:45	0	1	7	15	16	16:45	58	273	96	308	581
5:00	1		4			17:00	51		79		
5:15	2		5			17:15	81		73		
5:30	2		5			17:30	65		77		
5:45	6	11	7	21	32	17:45	71	268	77	306	574
6:00	11		11			18:00	61		61		
6:15	14		20			18:15	53		58		
6:30	13		17			18:30	65		47		
6:45	14	52	29	77	129	18:45	57	236	38	204	440
7:00	20		27			19:00	48		31		
7:15	27		41			19:15	44		32		
7:30	31		59			19:30	51		35		
7:45	68	146	83	210	356	19:45	32	175	35	133	308
8:00	74		81			20:00	44		24		
8:15	69		76			20:15	30		17		
8:30	52		72			20:30	25		10		
8:45	35	230	65	294	524	20:45	20	119	18	69	188
9:00	37		50			21:00	25		12		
9:15	41		49			21:15	23		14		
9:30	43		47			21:30	24		9		
9:45	37	158	52	198	356	21:45	17	89	4	39	128
10:00	32		53			22:00	10		2		
10:15	30		55			22:15	13		6		
10:30	30		49			22:30	9		7		
10:45	31	123	50	207	330	22:45	11	43	4	19	62
11:00	46		48			23:00	7		2		
11:15	30		53			23:15	5		2		
11:30	36		47			23:30	5		0		
11:45	39	151	57	205	356	23:45	4	21	0	4	25
Total Vol.	887		1237		**2124**		2114		1979		**4093**

	Daily Totals		
	EB	WB	**Combined**
	3001	3216	**6217**

	AM			**PM**		
Split %	41.8%	58.2%	**34.2%**	51.6%	48.4%	**65.8%**
Peak Hour	7:45	7:45	**7:45**	15:30	16:45	**16:30**
Volume	263	312	**575**	291	325	**583**
P.H.F.	0.89	0.94	**0.93**	0.73	0.85	**0.95**

cs@aimtd.com Tell. 714 253 7888

A32223

24-HOUR ROADWAY SEGMENT COUNTS (WITH FHWA CLASSIFICATION)

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wednesday, April 26, 2023 **CITY#** Orange

JOB #: SC3962 CLASS12 Serrano Ave from Cannon St to Orange Park Blvd

AM	COMBINED														PM	COMBINED													
TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL	Time	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL
0:00	0	21	1	0	0	0	0	0	0	0	0	0	0	22	12:00	0	187	20	1	1	1	1	0	0	0	0	0	0	211
0:15	0	11	0	0	0	0	0	0	0	0	0	0	0	11	12:15	0	216	23	2	7	1	1	0	0	0	0	0	0	250
0:30	0	8	1	0	0	0	0	0	0	0	0	0	0	9	12:30	1	211	29	1	2	1	0	0	0	0	0	0	0	245
0:45	0	5	0	0	0	0	0	0	0	0	0	0	0	5	12:45	1	196	19	1	3	0	0	0	0	0	0	0	0	220
1:00	0	8	0	0	0	0	0	0	0	0	0	0	0	8	13:00	3	189	17	0	5	2	0	0	0	0	0	0	0	216
1:15	0	4	0	0	0	0	0	0	0	0	0	0	0	4	13:15	3	234	24	0	3	0	0	0	0	0	0	0	0	264
1:30	0	7	0	0	0	0	0	0	0	0	0	0	0	7	13:30	1	192	33	0	4	0	1	0	0	0	0	0	0	231
1:45	0	3	0	0	0	0	0	0	0	0	0	0	0	3	13:45	0	191	18	0	6	0	0	0	0	0	0	0	0	215
2:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3	14:00	4	221	29	0	2	0	0	0	0	0	0	0	0	256
2:15	0	4	0	0	0	0	0	0	0	0	0	0	0	4	14:15	0	235	28	0	5	0	0	0	0	0	0	0	0	268
2:30	0	8	1	0	1	0	0	0	0	0	0	0	0	10	14:30	1	233	34	1	7	0	0	0	0	0	0	0	0	276
2:45	0	3	0	0	0	0	0	0	0	0	0	0	0	3	14:45	1	236	28	3	6	0	0	0	0	0	0	0	0	274
3:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3	15:00	0	273	32	0	5	1	0	0	0	0	0	0	0	311
3:15	0	3	3	0	0	0	0	0	0	0	0	0	0	6	15:15	0	316	43	2	3	1	0	0	0	0	0	0	0	365
3:30	0	7	0	0	0	0	0	0	0	0	0	0	0	7	15:30	2	377	44	2	7	0	0	0	0	0	0	0	0	432
3:45	0	4	0	0	0	0	0	0	0	0	0	0	0	4	15:45	1	376	34	5	9	0	0	0	0	0	0	0	0	425
4:00	1	6	1	0	0	0	0	0	0	0	0	0	0	8	16:00	1	438	29	3	8	0	0	0	0	0	0	0	0	479
4:15	0	11	2	0	0	0	0	0	0	0	0	0	0	13	16:15	1	458	41	1	3	1	0	0	0	0	0	0	0	505
4:30	1	17	4	0	0	0	0	0	0	0	0	0	0	22	16:30	3	467	31	0	6	0	0	0	0	0	0	2	0	509
4:45	0	24	1	0	0	0	0	0	0	0	0	0	0	25	16:45	0	477	39	1	7	0	0	0	1	0	1	0	0	526
5:00	0	32	0	0	1	0	0	0	0	0	0	0	0	33	17:00	0	473	33	0	4	0	0	0	0	0	0	0	0	510
5:15	0	39	3	0	2	0	0	0	0	0	0	0	0	44	17:15	0	471	38	0	1	0	0	0	0	0	0	0	0	510
5:30	0	46	2	0	0	0	0	0	0	0	0	0	0	48	17:30	0	448	27	0	4	0	0	0	0	0	0	0	0	479
5:45	0	60	3	0	0	0	0	0	0	0	0	0	0	63	17:45	1	417	35	0	3	0	0	0	0	0	0	0	0	456
6:00	0	94	10	0	0	0	0	0	0	0	0	0	0	104	18:00	0	417	35	0	3	0	0	0	0	0	0	0	0	455
6:15	2	143	6	0	1	0	0	0	0	0	0	0	0	152	18:15	1	371	23	0	5	0	1	0	0	0	0	0	0	401
6:30	1	167	12	3	3	0	0	0	0	0	0	0	0	186	18:30	1	332	12	0	4	0	0	0	0	0	0	0	0	349
6:45	0	198	9	2	3	0	0	0	1	0	0	0	0	213	18:45	2	341	14	0	1	0	0	0	0	0	0	0	0	358
7:00	1	281	8	3	3	0	0	0	0	0	0	0	0	296	19:00	0	225	10	0	1	0	0	0	0	0	0	0	0	236
7:15	1	326	18	1	1	0	0	0	0	0	0	0	0	347	19:15	0	210	11	0	0	0	0	0	0	0	0	0	0	221
7:30	1	342	22	2	3	1	0	0	0	0	0	0	0	371	19:30	0	189	12	0	0	0	0	0	0	0	0	0	0	201
7:45	0	369	32	3	6	0	0	0	0	0	0	0	0	410	19:45	0	191	8	0	3	0	0	0	0	0	0	0	0	202
8:00	3	399	14	2	4	0	0	0	0	0	0	0	0	422	20:00	0	180	4	0	2	0	0	0	0	0	0	0	0	186
8:15	2	350	23	1	7	1	0	0	0	0	0	0	0	384	20:15	0	125	7	0	0	0	0	0	0	0	0	0	0	132
8:30	0	306	19	1	8	0	0	0	0	0	0	0	0	334	20:30	0	125	7	0	2	0	0	0	0	0	0	0	0	134
8:45	1	244	19	2	7	0	0	0	0	0	0	0	0	273	20:45	0	144	8	0	0	0	0	0	0	0	0	0	0	152
9:00	0	197	24	2	4	1	0	0	0	0	0	0	0	228	21:00	0	113	7	0	0	0	0	0	0	0	0	0	0	120
9:15	0	186	23	0	4	0	0	0	0	0	0	0	0	213	21:15	1	121	4	0	0	0	0	0	0	0	0	0	0	126
9:30	2	215	21	0	9	0	0	0	0	0	0	0	0	247	21:30	1	134	1	0	0	0	0	0	0	0	0	0	0	136
9:45	0	190	30	0	6	1	0	0	0	0	0	0	0	227	21:45	0	81	2	0	0	0	0	0	0	0	0	0	0	83
10:00	0	215	30	0	7	0	2	0	0	0	0	0	0	254	22:00	0	59	5	0	0	0	0	0	0	0	0	0	0	64
10:15	1	183	29	0	6	0	0	0	0	0	0	0	0	219	22:15	0	60	4	0	0	0	0	0	0	0	0	0	0	64
10:30	0	169	22	0	6	2	0	0	0	0	0	0	0	199	22:30	0	55	2	0	0	0	0	0	0	0	0	0	0	57
10:45	0	171	27	0	10	0	0	0	0	0	0	0	0	208	22:45	0	32	1	0	0	0	0	0	0	0	0	0	0	33
11:00	3	186	19	0	7	0	1	0	0	0	0	0	0	216	23:00	0	30	2	0	0	0	0	0	0	0	0	0	0	32
11:15	3	194	22	0	9	1	0	0	0	0	0	0	0	229	23:15	0	31	1	0	0	0	0	0	0	0	0	0	0	32
11:30	3	219	26	2	12	0	1	0	0	0	0	0	0	263	23:30	0	13	1	0	0	0	0	0	0	0	0	0	0	14
11:45	0	188	26	2	3	1	0	0	0	0	0	0	0	220	23:45	0	23	2	0	0	0	0	0	0	0	0	0	0	25
TOTAL	26	5,869	513	26	133	8	4	0	1	0	0	0	0	6,580	TOTAL	30	11,134	911	23	132	8	4	0	1	0	3	0	0	12,246

AM PEAK HOUR	7:30 AM	**PM PEAK HOUR**	4:30 PM
AM PEAK VOLUME	1,587	**PM PEAK VOLUME**	2,055

TOTAL: AM+PM	56	17,003	1,424	49	265	16	8	0	2	0	3	0	0	18,826
% OF TOTAL	0.3%	90.3%	7.6%	0.3%	1.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%

CLASS 1	Class 1 — Motorcycles	**CLASS 8**	3 to 4 Axles, Single Trailer
CLASS 2	Passenger Cars	**CLASS 9**	5 Axles, Single Trailer
CLASS 3	2 Axles, 4-Tire Single Units	**CLASS 10**	6 or More Axles, Single Trailer
CLASS 4	Buses	**CLASS 11**	5 or Less Axles, Multi-Trailers
CLASS 5	2 Axles, 6-Tire Single Units	**CLASS 12**	6 Axles, Multi-Trailers
CLASS 6	3 Axles, Single Unit	**CLASS 13**	7 or More Axles, Multi-Trailers
CLASS 7	4 or More Axles, Single Unit		

A32223

24-HOUR ROADWAY SEGMENT COUNTS (WITH FHWA CLASSIFICATION)

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wednesday, April 26, 2023 **CITY#** Orange

JOB #: SC3962 CLASS1 Santiago Blvd from Meats Ave to Taft Ave

AM	COMBINED														PM	COMBINED													
TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL	Time	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL
0:00	0	15	3	0	0	0	0	0	0	0	0	0	0	18	12:00	0	206	38	1	4	1	0	0	1	0	0	0	0	251
0:15	0	12	0	0	0	0	0	0	0	0	0	0	0	12	12:15	0	245	39	1	4	1	0	0	0	0	0	0	0	290
0:30	0	6	0	0	0	0	0	0	0	0	0	0	0	6	12:30	1	241	42	0	1	0	0	1	0	0	0	0	0	286
0:45	0	7	0	0	0	0	0	0	0	0	0	0	0	7	12:45	0	304	63	1	6	1	0	0	0	0	0	0	0	375
1:00	0	8	2	0	0	0	0	0	0	0	0	0	0	10	13:00	1	274	48	1	1	0	0	0	0	0	0	0	0	325
1:15	0	4	1	0	0	0	0	0	0	0	0	0	0	5	13:15	2	302	38	2	7	0	0	0	0	0	0	0	0	351
1:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13:30	0	315	34	0	7	0	0	0	0	0	0	0	0	356
1:45	0	9	0	0	1	0	0	0	0	0	0	0	0	10	13:45	0	282	51	0	7	0	0	0	0	0	0	0	0	340
2:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4	14:00	2	219	45	1	3	0	0	0	0	0	0	0	0	270
2:15	0	6	0	0	0	0	0	0	0	0	0	0	0	6	14:15	3	233	44	1	9	1	0	0	0	0	0	0	0	291
2:30	0	4	0	0	0	0	0	0	0	0	0	0	0	4	14:30	1	208	49	1	5	1	0	0	0	0	0	0	0	265
2:45	0	5	2	0	0	0	0	0	0	0	0	0	0	7	14:45	0	272	36	0	9	0	0	0	1	0	0	0	0	318
3:00	0	2	1	0	0	0	0	0	0	0	0	0	0	3	15:00	0	242	55	1	7	0	0	0	0	0	0	0	0	305
3:15	0	2	1	0	0	0	0	0	0	0	0	0	0	3	15:15	0	268	59	0	8	0	0	0	0	0	0	0	0	335
3:30	0	1	0	0	0	0	0	0	0	0	0	0	0	1	15:30	1	346	76	1	8	0	0	0	0	0	0	0	0	432
3:45	0	2	2	0	0	0	0	0	0	0	0	0	0	4	15:45	0	298	57	0	4	0	0	0	0	0	0	0	0	359
4:00	0	3	2	0	0	0	0	0	0	0	0	0	0	5	16:00	0	314	61	1	4	0	0	0	0	0	0	0	0	380
4:15	0	11	3	0	0	0	0	0	0	0	0	0	0	14	16:15	0	318	71	1	6	1	0	0	0	0	0	0	0	397
4:30	0	10	2	0	0	0	0	0	0	0	0	0	0	12	16:30	0	359	56	0	7	1	0	0	0	0	0	0	0	423
4:45	1	15	5	0	1	0	0	0	0	0	0	0	0	22	16:45	0	359	62	0	10	0	0	0	0	0	0	0	0	431
5:00	0	13	7	0	0	0	0	0	0	0	0	0	0	20	17:00	0	379	63	1	5	0	0	0	0	0	0	0	0	448
5:15	0	28	4	1	0	1	0	0	0	0	0	0	0	34	17:15	1	381	63	1	4	1	0	0	0	0	0	0	0	451
5:30	0	31	4	0	0	0	0	0	0	0	0	0	0	35	17:30	0	377	54	0	7	0	0	0	0	0	0	0	0	438
5:45	0	39	17	0	0	0	0	0	0	0	0	0	0	56	17:45	2	379	67	1	5	1	0	0	0	0	0	0	0	455
6:00	0	61	17	1	1	0	0	0	0	0	0	0	0	80	18:00	0	355	43	1	3	0	0	1	0	0	0	0	0	403
6:15	0	70	19	1	2	0	0	0	0	0	0	0	0	92	18:15	2	287	53	0	4	0	0	0	0	0	0	0	0	346
6:30	0	75	27	0	6	0	0	0	1	0	0	0	0	109	18:30	0	265	35	1	3	0	0	1	0	0	0	0	0	305
6:45	0	100	25	0	7	0	0	0	0	0	0	0	0	132	18:45	3	248	37	0	3	0	0	0	0	0	0	0	0	291
7:00	0	152	24	1	6	0	0	0	0	0	0	0	0	183	19:00	1	233	29	1	2	0	0	0	0	0	0	0	0	266
7:15	1	167	30	1	8	0	0	0	0	0	0	0	0	207	19:15	0	207	29	1	2	0	0	0	0	0	0	0	0	239
7:30	0	236	41	0	5	0	0	0	0	0	0	0	0	282	19:30	0	191	27	0	2	0	0	0	0	0	0	0	0	220
7:45	0	295	46	2	2	0	0	0	0	0	0	0	0	345	19:45	0	159	27	0	2	0	0	0	0	0	0	0	0	188
8:00	0	324	58	1	2	1	0	0	0	0	0	0	0	386	20:00	0	131	24	1	2	0	0	0	0	0	0	0	0	158
8:15	0	266	41	0	0	0	0	0	0	0	0	0	0	307	20:15	0	133	16	1	2	0	0	0	0	0	0	0	0	152
8:30	0	243	38	1	5	0	0	0	0	0	0	0	0	287	20:30	0	108	15	1	0	0	0	0	0	0	0	0	0	124
8:45	1	226	38	1	6	2	0	0	0	0	0	0	0	274	20:45	0	103	13	0	0	0	0	0	0	0	0	0	0	116
9:00	2	174	29	1	6	0	0	0	0	0	0	0	0	212	21:00	0	97	13	0	0	0	0	0	0	0	0	0	0	110
9:15	2	232	55	1	5	0	0	0	0	0	0	0	0	295	21:15	0	92	14	1	0	0	0	0	0	0	0	0	0	107
9:30	1	180	36	0	8	0	0	0	1	0	0	0	0	226	21:30	0	87	10	0	0	0	0	0	0	0	0	0	0	97
9:45	1	187	36	0	7	0	0	0	0	0	0	0	0	231	21:45	0	77	7	0	0	0	0	0	0	0	0	0	0	84
10:00	0	171	42	1	1	0	0	0	0	0	0	0	0	215	22:00	0	54	8	0	0	0	0	0	0	0	0	0	0	62
10:15	0	179	42	1	2	0	0	0	0	0	0	0	0	224	22:15	0	62	13	0	0	0	0	0	0	0	0	0	0	75
10:30	0	167	35	0	6	2	0	0	0	0	0	0	0	210	22:30	0	37	4	0	0	0	0	0	0	0	0	0	0	41
10:45	0	183	43	0	1	0	0	0	0	0	0	0	0	227	22:45	0	31	7	0	0	0	0	0	0	0	0	0	0	38
11:00	1	172	46	1	7	0	0	0	0	0	0	0	0	227	23:00	0	29	3	0	0	0	0	0	0	0	0	0	0	32
11:15	1	185	44	1	0	0	0	0	0	0	0	0	0	231	23:15	0	17	4	0	0	0	0	0	0	0	0	0	0	21
11:30	0	175	36	0	7	0	0	0	0	0	0	0	0	218	23:30	1	12	1	0	0	0	0	0	0	0	0	0	0	14
11:45	0	219	37	0	9	0	0	1	0	0	0	0	0	266	23:45	0	19	2	0	0	0	0	0	0	0	0	0	0	21
TOTAL	11	4,676	941	16	111	6	0	1	2	0	0	0	0	5,764	TOTAL	21	10,155	1,705	24	163	9	0	3	2	0	0	0	0	12,082

AM PEAK HOUR	7:45 AM
AM PEAK VOLUME	1,325

PM PEAK HOUR	5:00 PM
PM PEAK VOLUME	1,792

CLASS 1	Class 1 — Motorcycles	**CLASS 8**	3 to 4 Axles, Single Trailer
CLASS 2	Passenger Cars	**CLASS 9**	5 Axles, Single Trailer
CLASS 3	2 Axles, 4-Tire Single Units	**CLASS 10**	6 or More Axles, Single Trailer
CLASS 4	Buses	**CLASS 11**	5 or Less Axles, Multi-Trailers
CLASS 5	2 Axles, 6-Tire Single Units	**CLASS 12**	6 Axles, Multi-Trailers
CLASS 6	3 Axles, Single Unit	**CLASS 13**	7 or More Axles, Multi-Trailers
CLASS 7	4 or More Axles, Single Unit		

TOTAL: AM+PM	32	14,831	2,646	40	274	15	0	4	4	0	0	0	0	17,846
% OF TOTAL	0.2%	83.1%	14.8%	0.2%	1.5%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%

Wednesday, April 26, 2023 CITY: Villa Park - Orange PROJECT: SC3962

ADT2 Santiago Blvd from Taft Ave to Villa Park Rd. Suhsduhg#e|#DlpWG#OOF##who1#:47#586#:;;;

AM Period	NB		SB			PM Period	NB		SB		
0:00	13		10			12:00	136		166		
0:15	10		8			12:15	164		168		
0:30	4		5			12:30	242		157		
0:45	7	34	5	28	62	12:45	244	786	186	677	1463
1:00	10		2			13:00	174		167		
1:15	3		4			13:15	229		232		
1:30	0		0			13:30	190		177		
1:45	7	20	2	8	28	13:45	185	778	229	805	1583
2:00	2		4			14:00	163		163		
2:15	5		1			14:15	187		180		
2:30	0		1			14:30	143		157		
2:45	3	10	6	12	22	14:45	162	655	161	661	1316
3:00	2		1			15:00	222		167		
3:15	2		3			15:15	256		169		
3:30	2		1			15:30	250		225		
3:45	4	10	3	8	18	15:45	220	948	205	766	1714
4:00	4		4			16:00	240		178		
4:15	8		16			16:15	269		168		
4:30	9		8			16:30	265		163		
4:45	10	31	11	39	70	16:45	287	1061	158	667	1728
5:00	11		14			17:00	299		182		
5:15	17		20			17:15	314		223		
5:30	14		46			17:30	325		196		
5:45	41	83	39	119	202	17:45	279	1217	198	799	2016
6:00	38		48			18:00	280		171		
6:15	64		69			18:15	231		165		
6:30	57		70			18:30	202		164		
6:45	73	232	90	277	509	18:45	169	882	140	640	1522
7:00	107		127			19:00	178		156		
7:15	124		145			19:15	120		122		
7:30	203		204			19:30	104		136		
7:45	205	639	247	723	1362	19:45	96	498	102	516	1014
8:00	254		229			20:00	90		100		
8:15	221		208			20:15	95		107		
8:30	179		155			20:30	94		77		
8:45	169	823	145	737	1560	20:45	63	342	72	356	698
9:00	166		133			21:00	79		62		
9:15	180		162			21:15	68		73		
9:30	109		157			21:30	57		64		
9:45	137	592	143	595	1187	21:45	61	265	38	237	502
10:00	115		158			22:00	39		36		
10:15	122		138			22:15	41		40		
10:30	129		123			22:30	24		23		
10:45	153	519	138	557	1076	22:45	19	123	16	115	238
11:00	130		148			23:00	16		23		
11:15	126		132			23:15	7		9		
11:30	119		161			23:30	10		11		
11:45	151	526	138	579	1105	23:45	10	43	8	51	94
Total Vol.	3519		3682		**7201**		7598		6290		**13888**

Daily Totals

NB	SB	**Combined**
11117	9972	**21089**

	AM			**PM**		
Split %	48.9%	51.1%	**34.1%**	54.7%	45.3%	**65.9%**
Peak Hour	7:30	7:30	**7:30**	16:45	13:00	**17:00**
Volume	883	888	**1771**	1225	805	**2016**
P.H.F.	0.87	0.90	**0.92**	0.97	0.87	**0.94**

cs@aimtd.com Tell. 714 253 7888

Wednesday, April 26, 2023 CITY: Villa Park - Orange PROJECT: SC3962

ADT3 N Wanda Rd from E Garfield Ave to E Collins Ave. Suhsduhg#e|#DlpWG#OOF##who1#:47#586#:;;;

AM Period	NB		SB			PM Period	NB		SB		
0:00	4		17			12:00	125		166		
0:15	8		18			12:15	135		149		
0:30	4		5			12:30	174		183		
0:45	2	18	4	44	62	12:45	189	623	163	661	1284
1:00	7		2			13:00	137		140		
1:15	1		9			13:15	176		180		
1:30	1		1			13:30	130		152		
1:45	3	12	0	12	24	13:45	123	566	202	674	1240
2:00	0		4			14:00	116		134		
2:15	4		6			14:15	127		169		
2:30	2		2			14:30	119		149		
2:45	1	7	1	13	20	14:45	110	472	141	593	1065
3:00	1		4			15:00	141		161		
3:15	1		1			15:15	146		146		
3:30	2		4			15:30	163		190		
3:45	3	7	3	12	19	15:45	115	565	181	678	1243
4:00	5		2			16:00	171		152		
4:15	9		6			16:15	159		165		
4:30	17		4			16:30	167		179		
4:45	13	44	5	17	61	16:45	186	683	163	659	1342
5:00	16		7			17:00	183		184		
5:15	15		8			17:15	199		160		
5:30	28		13			17:30	174		150		
5:45	41	100	12	40	140	17:45	158	714	158	652	1366
6:00	48		35			18:00	150		145		
6:15	61		31			18:15	123		154		
6:30	54		43			18:30	106		142		
6:45	72	235	54	163	398	18:45	111	490	131	572	1062
7:00	89		81			19:00	110		130		
7:15	95		83			19:15	61		107		
7:30	156		150			19:30	61		117		
7:45	212	552	198	512	1064	19:45	63	295	85	439	734
8:00	239		208			20:00	56		82		
8:15	188		148			20:15	59		92		
8:30	151		153			20:30	60		83		
8:45	121	699	129	638	1337	20:45	43	218	79	336	554
9:00	129		116			21:00	43		64		
9:15	139		114			21:15	40		63		
9:30	109		121			21:30	35		61		
9:45	116	493	119	470	963	21:45	33	151	42	230	381
10:00	105		118			22:00	23		41		
10:15	109		114			22:15	17		51		
10:30	119		103			22:30	12		32		
10:45	113	446	128	463	909	22:45	9	61	14	138	199
11:00	120		132			23:00	10		22		
11:15	99		125			23:15	7		11		
11:30	92		137			23:30	5		19		
11:45	124	435	146	540	975	23:45	3	25	10	62	87
Total Vol.		3048		2924	**5972**			4863		5694	**10557**

	Daily Totals		
	NB	SB	**Combined**
	7911	8618	**16529**

	AM			**PM**		
Split %	51.0%	49.0%	**36.1%**	46.1%	53.9%	**63.9%**
Peak Hour	7:30	7:45	**7:30**	16:45	16:15	**16:30**
Volume	795	707	**1499**	742	691	**1421**
P.H.F.	0.83	0.85	**0.84**	0.96	0.94	**0.97**

cs@aimtd.com Tell. 714 253 7888

Wednesday, April 26, 2023 CITY: Orange PROJECT: SC3962

ADT6 Hewes St from Villa Park Rd to E Spring St. Suhsduhg#e|#DlpWG#OOF##who1#:47#586#:;;;

AM Period	NB		SB			PM Period	NB		SB		
0:00	3		5			12:00	65		55		
0:15	4		3			12:15	56		53		
0:30	0		2			12:30	73		66		
0:45	1	8	5	15	23	12:45	73	267	72	246	513
1:00	0		1			13:00	73		69		
1:15	1		2			13:15	70		81		
1:30	2		1			13:30	67		64		
1:45	0	3	0	4	7	13:45	65	275	96	310	585
2:00	0		3			14:00	59		73		
2:15	1		0			14:15	63		56		
2:30	2		0			14:30	99		84		
2:45	1	4	1	4	8	14:45	97	318	95	308	626
3:00	2		1			15:00	102		96		
3:15	1		1			15:15	115		90		
3:30	2		0			15:30	118		98		
3:45	3	8	3	5	13	15:45	124	459	117	401	860
4:00	1		2			16:00	113		81		
4:15	1		4			16:15	99		93		
4:30	3		2			16:30	109		89		
4:45	6	11	3	11	22	16:45	120	441	106	369	810
5:00	7		2			17:00	125		84		
5:15	3		5			17:15	128		94		
5:30	7		16			17:30	112		96		
5:45	16	33	6	29	62	17:45	117	482	88	362	844
6:00	17		19			18:00	116		67		
6:15	24		27			18:15	92		73		
6:30	45		42			18:30	85		66		
6:45	52	138	56	144	282	18:45	65	358	72	278	636
7:00	44		71			19:00	53		56		
7:15	69		103			19:15	52		47		
7:30	90		144			19:30	49		50		
7:45	134	337	181	499	836	19:45	43	197	41	194	391
8:00	133		174			20:00	38		35		
8:15	130		162			20:15	22		34		
8:30	74		123			20:30	53		30		
8:45	68	405	75	534	939	20:45	34	147	38	137	284
9:00	66		70			21:00	32		25		
9:15	71		74			21:15	41		31		
9:30	41		55			21:30	32		21		
9:45	44	222	58	257	479	21:45	18	123	22	99	222
10:00	38		67			22:00	14		17		
10:15	55		66			22:15	12		11		
10:30	45		55			22:30	8		15		
10:45	51	189	55	243	432	22:45	12	46	7	50	96
11:00	56		47			23:00	7		7		
11:15	49		66			23:15	4		8		
11:30	49		64			23:30	7		4		
11:45	60	214	47	224	438	23:45	5	23	8	27	50
Total Vol.		1572		1969	**3541**			3136		2781	**5917**

	Daily Totals		
	NB	SB	**Combined**
	4708	4750	**9458**

	AM			**PM**		
Split %	44.4%	55.6%	**37.4%**	53.0%	47.0%	**62.6%**
Peak Hour	7:30	7:30	**7:30**	16:45	15:00	**16:45**
Volume	487	661	**1148**	485	401	**865**
P.H.F.	0.91	0.91	**0.91**	0.98	0.86	**0.96**

cs@aimtd.com Tell. 714 253 7888

A32223

24-HOUR ROADWAY SEGMENT COUNTS (WITH FHWA CLASSIFICATION)

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wednesday, April 26, 2023 **CITY#** Orange

JOB #: SC3962 CLASS13 Cannon St from Serrano Ave to Via Escola

AM	COMBINED														PM	COMBINED													
TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL	Time	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL
0:00	0	17	1	0	0	0	0	0	0	0	0	0	0	18	12:00	1	196	8	0	2	1	0	0	0	0	0	0	0	208
0:15	0	13	0	0	0	0	0	0	1	0	0	0	0	14	12:15	0	184	14	0	3	0	0	0	0	0	0	0	0	201
0:30	0	8	0	0	0	0	0	0	0	0	0	0	0	8	12:30	1	223	26	1	5	0	0	0	0	0	0	0	0	256
0:45	0	5	0	0	0	0	0	0	0	0	0	0	0	5	12:45	2	224	16	0	1	0	0	0	0	0	0	0	0	243
1:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4	13:00	0	215	14	5	9	0	0	0	0	0	0	0	0	243
1:15	0	3	0	0	0	0	0	0	0	0	0	0	0	3	13:15	1	247	18	1	4	0	0	0	0	0	0	0	0	271
1:30	0	3	0	0	0	0	0	0	0	0	0	0	0	3	13:30	1	204	12	1	3	1	0	0	0	0	0	0	0	222
1:45	0	2	0	0	0	0	0	0	0	0	0	0	0	2	13:45	0	215	27	1	3	0	0	0	0	0	0	0	0	246
2:00	0	7	0	0	0	0	0	0	0	0	0	0	0	7	14:00	1	207	28	3	7	0	0	0	0	0	0	0	0	246
2:15	0	2	0	0	0	0	0	0	0	0	0	0	0	2	14:15	0	217	22	0	5	0	0	0	0	0	0	0	0	244
2:30	0	6	1	0	0	0	0	0	0	0	0	0	0	7	14:30	0	208	36	2	6	0	0	0	0	0	0	0	0	252
2:45	0	6	0	0	0	0	0	0	0	0	0	0	0	6	14:45	1	300	18	0	8	1	0	0	0	0	0	0	0	328
3:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3	15:00	3	354	28	1	2	1	0	0	0	0	1	0	0	390
3:15	0	8	0	0	0	0	0	0	0	0	0	0	0	8	15:15	1	307	15	0	3	1	0	0	0	0	0	0	0	327
3:30	0	5	0	0	0	0	0	0	0	0	0	0	0	5	15:30	3	410	23	0	7	0	0	0	0	0	0	0	0	443
3:45	0	6	0	0	0	0	0	0	0	0	0	0	0	6	15:45	0	422	24	0	9	0	0	0	0	0	0	0	0	455
4:00	1	9	0	0	0	0	0	0	0	0	0	0	0	10	16:00	1	418	21	1	9	0	0	0	0	0	0	0	0	450
4:15	0	18	0	0	0	0	0	0	0	0	0	0	0	18	16:15	5	433	19	0	3	0	0	0	0	0	0	0	0	460
4:30	0	17	0	0	0	0	0	0	0	0	0	0	0	17	16:30	2	409	17	0	4	0	0	0	0	0	0	0	0	432
4:45	0	38	0	0	0	0	0	0	0	0	0	0	0	38	16:45	1	492	22	0	2	0	0	0	0	0	0	0	0	517
5:00	0	34	0	0	2	0	0	0	0	0	0	0	0	36	17:00	3	457	12	0	2	0	0	0	0	0	0	0	0	474
5:15	0	54	2	0	1	0	0	0	0	0	0	0	0	57	17:15	3	469	20	0	1	0	0	0	0	0	0	0	0	493
5:30	0	54	5	0	1	0	0	0	0	0	0	0	0	60	17:30	4	526	14	1	5	0	0	0	0	0	0	0	0	550
5:45	0	61	2	0	1	0	0	0	0	0	0	0	0	64	17:45	2	420	17	1	2	0	0	0	0	0	0	0	0	442
6:00	0	79	1	0	0	0	0	0	0	0	0	0	0	80	18:00	1	400	12	0	0	0	0	0	0	0	0	0	0	413
6:15	2	118	5	0	2	0	0	0	0	0	0	0	0	127	18:15	1	374	14	0	1	0	0	0	0	0	0	0	0	390
6:30	1	193	10	0	3	0	0	0	0	0	0	0	0	207	18:30	1	331	5	1	1	1	0	0	0	0	0	0	0	340
6:45	0	266	14	2	7	0	0	0	0	0	0	0	0	289	18:45	1	270	10	0	0	0	0	0	0	0	0	0	0	281
7:00	0	299	9	1	5	0	0	0	0	0	0	0	0	314	19:00	2	209	9	0	0	0	0	0	0	0	0	0	0	220
7:15	1	423	21	0	9	1	0	0	0	0	0	0	0	455	19:15	0	190	12	0	1	0	0	0	0	0	0	0	0	203
7:30	1	498	25	1	8	1	0	0	0	0	0	0	0	534	19:30	1	161	5	0	1	0	0	0	0	0	0	0	0	168
7:45	1	492	28	3	11	0	0	0	0	0	0	0	0	535	19:45	0	131	5	0	2	0	0	0	0	0	0	0	0	138
8:00	0	492	29	2	8	0	0	0	0	0	0	0	0	531	20:00	0	136	4	0	0	0	0	0	0	0	0	0	0	140
8:15	2	481	30	0	11	2	0	0	0	0	0	0	0	526	20:15	0	143	3	0	1	0	0	0	0	0	0	0	0	147
8:30	3	391	19	1	10	0	0	0	0	0	0	0	0	424	20:30	0	110	6	1	0	0	0	0	0	0	0	0	0	117
8:45	0	275	10	1	10	1	0	0	0	0	1	0	0	298	20:45	1	111	3	0	0	0	0	0	0	0	0	0	0	115
9:00	1	278	26	0	3	1	0	0	0	0	1	0	0	310	21:00	1	114	0	0	0	0	0	0	0	0	0	0	0	115
9:15	0	238	29	3	4	0	0	0	0	0	0	0	0	274	21:15	1	106	1	0	1	0	0	0	0	0	0	0	0	109
9:30	1	223	24	1	3	0	0	0	0	0	0	0	0	252	21:30	1	81	3	0	0	0	0	0	0	0	0	0	0	85
9:45	1	225	14	0	9	0	0	0	0	0	0	0	0	249	21:45	0	56	1	0	0	0	0	0	0	0	0	0	0	57
10:00	0	210	26	0	7	0	0	0	0	0	0	0	0	243	22:00	0	70	1	0	0	0	0	0	0	0	0	0	0	71
10:15	0	197	22	1	8	0	0	0	0	0	0	0	0	228	22:15	0	52	1	0	0	0	0	0	0	0	0	0	0	53
10:30	0	196	22	1	3	0	0	0	0	0	0	0	0	222	22:30	1	46	2	0	0	0	0	0	0	0	0	0	0	49
10:45	1	168	25	0	10	0	0	0	0	0	0	0	0	204	22:45	0	26	0	0	0	0	0	0	0	0	0	0	0	26
11:00	2	198	20	0	4	0	0	0	0	0	0	0	0	224	23:00	0	33	1	0	0	0	0	0	0	0	0	0	0	34
11:15	1	185	31	0	7	0	0	0	0	0	0	0	0	224	23:15	0	22	0	0	0	0	0	0	0	0	0	0	0	22
11:30	1	213	16	3	1	0	0	0	0	0	0	0	0	234	23:30	0	18	0	0	0	0	0	0	0	0	0	0	0	18
11:45	0	214	22	2	3	0	0	0	0	0	0	0	0	241	23:45	0	15	0	0	0	0	0	0	0	0	0	0	0	15
TOTAL	20	6,935	489	22	151	6	0	0	1	0	2	0	0	7,626	TOTAL	48	10,962	569	20	113	6	0	0	0	0	1	0	0	11,719

AM PEAK HOUR	7:30 AM
AM PEAK VOLUME	2,126

PM PEAK HOUR	4:45 PM
PM PEAK VOLUME	2,034

CLASS 1	Class 1 — Motorcycles	**CLASS 8**	3 to 4 Axles, Single Trailer
CLASS 2	Passenger Cars	**CLASS 9**	5 Axles, Single Trailer
CLASS 3	2 Axles, 4-Tire Single Units	**CLASS 10**	6 or More Axles, Single Trailer
CLASS 4	Buses	**CLASS 11**	5 or Less Axles, Multi-Trailers
CLASS 5	2 Axles, 6-Tire Single Units	**CLASS 12**	6 Axles, Multi-Trailers
CLASS 6	3 Axles, Single Unit	**CLASS 13**	7 or More Axles, Multi-Trailers
CLASS 7	4 or More Axles, Single Unit		

TOTAL: AM+PM	68	17,897	1,058	42	264	12	0	0	1	0	3	0	0	19,345
% OF TOTAL	0.4%	92.5%	5.5%	0.2%	1.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%

Wednesday, April 26, 2023 CITY: Orange PROJECT: SC3962

ADT11 Cannon St from Santiago Taft Ave to Serrano Ave. Suhsduhg#e|#DlpWG#OOF##who1#:47#586#:;;;

AM Period	NB		SB			PM Period	NB		SB		
0:00	22		12			12:00	176		185		
0:15	9		12			12:15	199		212		
0:30	13		4			12:30	211		230		
0:45	5	49	5	33	82	12:45	218	804	197	824	1628
1:00	5		7			13:00	201		208		
1:15	3		4			13:15	256		211		
1:30	6		4			13:30	177		210		
1:45	2	16	3	18	34	13:45	225	859	196	825	1684
2:00	3		5			14:00	238		200		
2:15	2		4			14:15	238		202		
2:30	6		9			14:30	250		214		
2:45	5	16	2	20	36	14:45	314	1040	236	852	1892
3:00	1		5			15:00	403		234		
3:15	1		7			15:15	424		206		
3:30	3		9			15:30	556		241		
3:45	3	8	7	28	36	15:45	518	1901	272	953	2854
4:00	4		14			16:00	594		267		
4:15	7		22			16:15	606		283		
4:30	5		30			16:30	631		238		
4:45	18	34	37	103	137	16:45	631	2462	326	1114	3576
5:00	17		42			17:00	657		273		
5:15	20		75			17:15	639		302		
5:30	25		77			17:30	656		299		
5:45	28	90	93	287	377	17:45	586	2538	236	1110	3648
6:00	38		128			18:00	545		240		
6:15	59		196			18:15	508		193		
6:30	67		304			18:30	416		187		
6:45	90	254	388	1016	1270	18:45	350	1819	201	821	2640
7:00	91		489			19:00	275		119		
7:15	145		615			19:15	246		144		
7:30	175		660			19:30	187		138		
7:45	227	638	618	2382	3020	19:45	184	892	106	507	1399
8:00	225		602			20:00	169		91		
8:15	256		558			20:15	153		76		
8:30	207		467			20:30	144		65		
8:45	174	862	345	1972	2834	20:45	141	607	76	308	915
9:00	169		293			21:00	124		85		
9:15	166		265			21:15	140		71		
9:30	159		292			21:30	145		46		
9:45	160	654	272	1122	1776	21:45	74	483	48	250	733
10:00	160		287			22:00	76		43		
10:15	174		233			22:15	58		49		
10:30	135		242			22:30	56		30		
10:45	146	615	212	974	1589	22:45	33	223	16	138	361
11:00	174		222			23:00	45		15		
11:15	168		247			23:15	33		19		
11:30	217		222			23:30	18		12		
11:45	225	784	194	885	1669	23:45	21	117	17	63	180
Total Vol.		4020		8840	**12860**			13745		7765	**21510**

	Daily Totals		
	NB	SB	**Combined**
	17765	16605	**34370**

	AM			**PM**		
Split %	31.3%	68.7%	**37.4%**	63.9%	36.1%	**62.6%**
Peak Hour	7:45	7:15	**7:30**	16:45	16:45	**16:45**
Volume	915	2495	**3321**	2583	1200	**3783**
P.H.F.	0.89	0.95	**0.98**	0.98	0.92	**0.99**

cs@aimtd.com Tell. 714 253 7888

A32223

24-HOUR ROADWAY SEGMENT COUNTS (WITH FHWA CLASSIFICATION)

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wednesday, April 26, 2023 **CITY#** Orange

JOB #: SC3962 CLASS10 Cannon St from Santiago Canyon Rd to Taft Ave

AM	COMBINED														PM	COMBINED													
TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL	Time	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL
0:00	0	31	1	0	0	0	0	0	0	0	0	0	0	32	12:00	1	276	22	1	4	0	2	0	0	0	0	0	0	306
0:15	0	12	1	0	0	0	0	0	0	0	0	0	0	13	12:15	0	314	36	1	10	1	1	0	0	0	0	0	0	363
0:30	0	15	1	0	0	0	0	0	0	0	0	0	0	16	12:30	1	354	33	1	3	1	0	0	0	0	0	0	0	393
0:45	0	12	0	0	0	0	0	0	0	0	0	0	0	12	12:45	3	315	31	3	4	0	0	0	0	0	0	0	0	356
1:00	0	9	0	0	0	0	0	0	0	0	0	0	0	9	13:00	2	281	32	4	8	2	0	0	0	0	0	0	0	329
1:15	0	9	0	0	0	0	0	0	0	0	0	0	0	9	13:15	3	389	40	1	4	0	0	0	0	0	0	0	0	437
1:30	0	8	0	0	0	0	0	0	0	0	0	0	0	8	13:30	2	312	32	1	5	0	1	0	0	0	0	0	0	353
1:45	0	6	0	0	0	0	0	0	0	0	0	0	0	6	13:45	0	345	36	1	7	0	0	0	0	0	0	0	0	389
2:00	0	7	0	0	0	0	0	0	0	0	0	0	0	7	14:00	3	339	36	2	8	0	0	0	0	0	0	0	0	388
2:15	0	7	0	0	0	0	0	0	0	0	0	0	0	7	14:15	0	344	48	1	6	0	0	0	0	0	0	0	0	399
2:30	0	8	0	0	0	0	0	0	0	0	0	0	0	8	14:30	1	367	51	1	17	0	0	0	0	0	0	0	0	437
2:45	0	11	0	0	0	0	0	0	0	0	0	0	0	11	14:45	2	478	35	2	10	1	0	0	0	0	0	0	0	528
3:00	0	5	0	0	0	0	0	0	0	0	0	0	0	5	15:00	2	585	58	1	6	2	1	0	0	0	0	0	0	655
3:15	0	7	0	0	1	0	0	0	0	0	0	0	0	8	15:15	3	617	54	2	7	0	0	0	0	0	0	0	0	683
3:30	0	11	0	0	0	0	0	0	0	0	0	0	0	11	15:30	3	699	54	1	11	0	0	0	0	0	0	0	0	768
3:45	0	10	0	0	0	0	0	0	0	0	0	0	0	10	15:45	1	682	52	3	12	0	0	0	0	0	0	0	0	750
4:00	1	12	1	0	0	0	0	0	0	0	0	0	0	14	16:00	2	701	43	4	5	0	0	0	0	0	0	0	1	756
4:15	0	31	0	0	0	0	0	0	0	0	0	0	0	31	16:15	5	764	32	0	4	1	0	0	0	0	0	0	0	806
4:30	0	29	1	0	0	0	0	0	0	0	0	0	0	30	16:30	3	754	40	1	4	0	0	0	0	0	2	0	0	804
4:45	0	50	0	0	0	0	0	0	0	0	0	0	0	50	16:45	1	839	38	1	2	0	0	0	1	0	1	0	2	885
5:00	1	46	1	0	0	0	0	0	0	0	0	0	0	48	17:00	2	859	43	0	4	0	0	0	0	0	0	0	0	908
5:15	0	90	2	0	1	0	0	0	0	0	0	0	0	93	17:15	3	794	29	0	6	0	0	0	0	0	0	0	0	832
5:30	0	88	10	0	1	0	0	0	1	0	0	0	0	100	17:30	5	847	35	1	3	0	0	0	0	0	0	0	0	891
5:45	1	106	4	0	1	0	0	0	0	0	0	0	0	112	17:45	3	734	31	1	5	0	0	0	0	0	0	0	0	774
6:00	0	137	8	0	1	0	0	0	0	0	0	0	0	146	18:00	1	698	36	0	2	0	0	0	0	0	0	0	0	737
6:15	3	213	10	0	1	0	0	0	1	0	0	0	0	228	18:15	2	626	42	0	4	1	0	0	0	0	0	0	0	675
6:30	2	330	22	3	4	0	0	0	0	0	0	0	0	361	18:30	0	515	29	2	2	0	0	0	0	0	0	0	0	548
6:45	0	417	29	3	7	0	0	0	1	0	0	0	0	457	18:45	1	444	29	0	1	0	0	0	0	0	0	0	0	475
7:00	0	482	21	2	7	0	0	0	0	0	0	0	0	512	19:00	2	350	22	0	0	0	0	0	0	0	0	0	0	374
7:15	4	656	26	3	9	0	0	0	0	0	1	0	0	699	19:15	1	308	24	0	1	0	0	0	0	0	0	0	0	334
7:30	0	721	28	2	11	0	0	0	0	0	1	0	0	763	19:30	1	252	15	0	1	0	0	0	0	0	0	0	0	269
7:45	1	745	40	3	9	0	0	0	0	0	0	0	0	798	19:45	0	254	10	0	1	0	0	0	0	0	0	0	0	265
8:00	2	716	40	4	8	0	0	0	1	0	0	0	2	773	20:00	0	219	4	0	1	0	0	0	0	0	0	0	0	224
8:15	2	734	42	2	7	3	0	0	0	0	0	0	0	790	20:15	0	201	6	0	1	0	0	0	0	0	0	0	0	208
8:30	3	666	29	1	10	0	0	0	0	0	0	0	0	709	20:30	0	176	11	1	0	0	0	0	0	0	0	0	0	188
8:45	1	454	30	4	6	1	0	0	0	0	1	0	0	497	20:45	0	189	5	0	0	0	0	0	0	0	0	0	0	194
9:00	1	391	36	1	7	0	0	0	0	0	1	0	0	437	21:00	1	172	2	0	0	0	0	0	0	0	0	0	0	175
9:15	0	336	38	3	4	0	0	0	0	0	0	0	0	381	21:15	2	193	2	0	1	0	0	0	0	0	0	0	0	198
9:30	2	356	38	0	9	0	0	0	0	0	0	0	0	405	21:30	1	175	2	0	0	0	0	0	0	0	0	0	0	178
9:45	1	342	32	0	12	2	0	0	0	0	0	0	0	389	21:45	0	114	1	0	0	0	0	0	0	0	0	0	0	115
10:00	0	368	40	0	7	0	2	0	0	0	0	0	0	417	22:00	1	105	5	0	0	0	0	0	0	0	0	0	0	111
10:15	0	337	36	1	7	0	0	0	0	0	0	0	0	381	22:15	0	87	6	0	0	0	0	0	0	0	0	0	0	93
10:30	0	280	32	1	7	0	1	0	0	0	0	0	0	321	22:30	2	74	1	0	0	0	0	0	0	0	0	0	0	77
10:45	2	283	31	0	13	1	0	0	0	0	0	0	0	330	22:45	0	47	1	0	0	0	0	0	0	0	0	0	0	48
11:00	5	309	33	0	7	0	1	0	0	0	0	0	0	355	23:00	0	58	1	0	0	0	0	0	0	0	0	0	0	59
11:15	1	311	35	0	9	0	0	0	0	0	0	0	0	356	23:15	0	45	0	0	0	0	0	0	0	0	0	0	0	45
11:30	2	364	32	6	8	1	1	0	0	0	0	0	0	414	23:30	0	29	0	0	0	0	0	0	0	0	0	0	0	29
11:45	0	329	37	2	11	0	1	0	0	0	0	0	0	380	23:45	0	33	1	0	0	0	0	0	0	0	0	0	0	34
TOTAL	35	10,897	767	41	185	8	6	0	4	0	4	0	2	11,949	TOTAL	66	18,353	1,196	37	170	9	5	0	1	0	3	0	3	19,843

AM PEAK HOUR	7:30 AM
AM PEAK VOLUME	3,124

PM PEAK HOUR	4:45 PM
PM PEAK VOLUME	3,516

CLASS 1	Class 1 — Motorcycles	**CLASS 8**	3 to 4 Axles, Single Trailer
CLASS 2	Passenger Cars	**CLASS 9**	5 Axles, Single Trailer
CLASS 3	2 Axles, 4-Tire Single Units	**CLASS 10**	6 or More Axles, Single Trailer
CLASS 4	Buses	**CLASS 11**	5 or Less Axles, Multi-Trailers
CLASS 5	2 Axles, 6-Tire Single Units	**CLASS 12**	6 Axles, Multi-Trailers
CLASS 6	3 Axles, Single Unit	**CLASS 13**	7 or More Axles, Multi-Trailers
CLASS 7	4 or More Axles, Single Unit		

TOTAL: AM+PM	101	29,250	1,963	78	355	17	11	0	5	0	7	0	5	31,792
% OF TOTAL	0.3%	92.0%	6.2%	0.2%	1.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%

Wednesday, April 26, 2023 CITY: Orange PROJECT: SC3962

ADT9 N Cannon St from Santiago Canyon Rd to E Avenida Palmar. Suhsduhg#e|#DlpWG#OOF##who1#:47#586#:;;;

AM Period	NB		SB			PM Period	NB		SB		
0:00	2		6			12:00	38		42		
0:15	0		4			12:15	58		52		
0:30	4		0			12:30	52		58		
0:45	1	7	0	10	17	12:45	42	190	36	188	378
1:00	0		2			13:00	33		23		
1:15	1		1			13:15	38		40		
1:30	0		0			13:30	34		43		
1:45	0	1	1	4	5	13:45	53	158	38	144	302
2:00	2		1			14:00	47		42		
2:15	1		1			14:15	35		39		
2:30	0		0			14:30	42		43		
2:45	1	4	1	3	7	14:45	41	165	48	172	337
3:00	0		0			15:00	57		32		
3:15	0		0			15:15	72		53		
3:30	2		1			15:30	72		57		
3:45	2	4	0	1	5	15:45	61	262	43	185	447
4:00	2		4			16:00	77		54		
4:15	2		1			16:15	81		49		
4:30	2		2			16:30	71		55		
4:45	8	14	5	12	26	16:45	101	330	61	219	549
5:00	8		1			17:00	104		53		
5:15	6		2			17:15	78		67		
5:30	9		7			17:30	117		65		
5:45	5	28	7	17	45	17:45	105	404	65	250	654
6:00	8		9			18:00	101		42		
6:15	20		25			18:15	64		37		
6:30	28		47			18:30	47		58		
6:45	29	85	48	129	214	18:45	54	266	35	172	438
7:00	30		73			19:00	39		31		
7:15	37		73			19:15	30		42		
7:30	61		110			19:30	22		31		
7:45	91	219	137	393	612	19:45	30	121	26	130	251
8:00	81		67			20:00	29		23		
8:15	51		69			20:15	26		31		
8:30	40		82			20:30	26		29		
8:45	39	211	52	270	481	20:45	19	100	27	110	210
9:00	45		46			21:00	19		19		
9:15	42		39			21:15	16		26		
9:30	36		46			21:30	11		30		
9:45	34	157	35	166	323	21:45	7	53	17	92	145
10:00	34		32			22:00	14		13		
10:15	31		33			22:15	8		22		
10:30	38		42			22:30	12		8		
10:45	40	143	36	143	286	22:45	3	37	9	52	89
11:00	35		35			23:00	6		7		
11:15	33		34			23:15	4		3		
11:30	30		44			23:30	4		6		
11:45	36	134	50	163	297	23:45	3	17	4	20	37
Total Vol.		1007		1311	**2318**			2103		1734	**3837**

	Daily Totals		
	NB	SB	**Combined**
	3110	3045	**6155**

	AM			**PM**		
Split %	43.4%	56.6%	**37.7%**	54.8%	45.2%	**62.3%**
Peak Hour	7:30	7:00	**7:30**	17:00	17:00	**17:00**
Volume	284	393	**667**	404	250	**654**
P.H.F.	0.78	0.72	**0.73**	0.89	0.93	**0.90**

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Attachment B: Analysis Results

Attachment B Analysis Results

Existing Roadway Segment LOS

	Segment	Lanes	ADT	Capacity[2]	V/C	LOS
1.	Villa Park Road between Wanda Road and Center Drive	4	25,828	37,500	0.69	B
2.	Villa Park Road between Center Drive and Hewes Street	4	23,840	37,500	0.64	B
3.	Villa Park Road between Hewes Street and Cannon Street	4	26,178	37,500	0.7	B
4.	Santiago Canyon Road east of Cannon Street	4	27,610	37,500	0.74	C
5.	Taft Avenue between Santiago Boulevard and Center Drive	2	11,979	22,000	0.54	A
6.	Taft Avenue between Center Drive and Cannon Street	2	6,217	22,000	0.28	A
7.	Serrano Avenue east of Cannon Road	4	18,826	37,500	0.5	A
8.	Santiago Boulevard north of Taft Avenue	4	17,846	37,500	0.48	A
9.	Wanda Road between Villa Park Road and Taft Avenue	4	21,089	37,500	0.56	A
10.	Wanda Road south of Villa Park Road	3	16,529	25,000	0.66	B
11.	Hewes Street south of Villa Park Road	4	9,458	25,000	0.38	A
12.	Cannon Street north of Serrano Avenue	4	19,345	37,500	0.52	A
13.	Cannon Street between Taft Avenue and Serrano Avenue	4	34,370	37,500	0.92	**E**
14.	Cannon Street between Villa Park Road and Taft Avenue	4	31,792	37,500	0.85	**D**
15.	Cannon Street south of Santiago Canyon Road	4	6,155	25,500	0.25	A

Note(s):

1. **Bold** symbolizes segment operates below OCTA MPAH LOS standards.
2. Capacities for LOS E were referenced for arterial types from the MPAH.

Source: Fehr & Peers, 2023.

Existing Intersection LOS

	Intersection	Control	Methodology	Peak Hour	V/C / Delay	LOS
1.	Wanda Road and Villa Park Road	Signalized	ICU / HCM	AM PM	0.743 / 44 0.731 / 44	C / D C / D
2.	Kathleen Lane and Villa Park Road	TWSC	HCM	AM PM	21 15	C B
3.	Morrow Circle and Villa Park Road	TWSC	HCM	AM PM	**43** **56**	**E** **F**
4.	Prado Woods Drive and Villa Park Road	TWSC	HCM	AM PM	32 **40**	D **E**
5.	Kenwick Drive and Villa Park Road	TWSC	HCM	AM PM	**35** 15	**E** C
6.	Radec Court and Villa Park Road	TWSC	HCM	AM PM	**36** **59**	**E** **F**
7.	Center Drive and Villa Park Road	Signalized	ICU / HCM	AM PM	0.533 / 15 0.511 / 6	A / B A / A
8.	Park Villa Lane and Villa Park Road	TWSC	HCM	AM PM	**39** **48**	**E** **E**
9.	Lemon Street and Villa Park Road	Signalized	ICU / HCM	AM PM	0.390 / 5 0.497 / 5	A / A A / A
10.	Hewes Street and Villa Park Road	Signalized	ICU / HCM	AM PM	0.767 / 46 0.605 / 20	C / D B / B
11.	Linda Vista Street and Villa Park Road	TWSC	HCM	AM PM	**>100** **>100**	**F** **F**
12.	Cannon Street and Santiago Canyon Road	Signalized	ICU / HCM	AM PM	0.694 / 45 0.758 / **61**	B / D C / **E**
13.	Cannon Street and Taft Avenue	Signalized	ICU / HCM	AM PM	0.893 / **63** **0.900** / 55	D / **E** **E** / D
14.	Cannon Street and Serrano Avenue	Signalized	ICU / HCM	AM PM	0.758 / 23 **0.909** / 29	C / C **E** / C
15.	Cannon Street and Loma Street	TWSC	HCM	AM PM	**85** 33	**F** D

Note(s):

1. ">100" is reported for highly congested movements where more than 100 seconds is reported.
2. **Bold** symbolizes segment operates below Jurisdictions' LOS standards.

Source: Fehr & Peers, 2023.

Existing Multimodal LOS

Intersection	Mode	Peak Hour	Delay	LOS
1. Wanda Rod and Villa Park Road	Bike/Pedestrian	AM	52.4/56	D / E
		PM	38.7/60.4	D / E
9. Lemon Street and Villa Park Road	Bike/Pedestrian	AM	5.8/7.7	A / A
		PM	5.7/9.3	A / A
10. Hewes Street and Villa Park Road	Bike/Pedestrian	AM	56.9/56.5	E / E
		PM	60.6/68.1	E / E
12. Cannon Street and Santiago Canyon Road	Bike/Pedestrian	AM	15.6/45.1	B / D
		PM	36.5/49.5	D / D

Source: Fehr & Peers, 2023.

Existing 95th Percentile Queues

Intersection	Movement	Storage (ft)	Peak Hour	Queue (ft)
12. Cannon Street and Santiago Canyon Road	EBL	425	AM	225
			PM	<u>425</u>
	EBT	675	AM	550
			PM	200
	WBL	225	AM	50
			PM	50
	WBT	>1000	AM	275
			PM	750
	WBR	700	AM	0
			PM	500
	NBL	150	AM	**200**
			PM	125
	NBT	500	AM	100
			PM	250
	SBL	550	AM	**600**
			PM	200
	SBT	>1000	AM	450
			PM	200
	SBR	400	AM	300
			PM	150

Notes:
1. Queues were calculated using HCM 7th methodologies and are rounded up to the nearest 25-foot increment.
2. "EB" = eastbound, "WB" = westbound, "NB" = northbound, "SB" = southbound, "L" = left, "T" = through, "R" = right.
3. **Bold** symbolizes movement exceeds available storage capacity.
4. <u>Underlined</u> symbolizes movement is at capacity.

Source: Fehr & Peers, 2023.

Future Year Roadway Segment LOS

	Segment	Lanes	ADT	Capacity[2]	V/C	LOS
1.	Villa Park Road between Wanda Road and Center Drive	4	27,670	37,500	0.74	C
2.	Villa Park Road between Center Drive and Hewes Street	4	25,700	37,500	0.69	B
3.	Villa Park Road between Hewes Street and Cannon Street	4	30,400	37,500	0.81	**D**
4.	Santiago Canyon Road east of Cannon Street	4	30,170	37,500	0.8	**D**
5.	Taft Avenue between Santiago Boulevard and Center Drive	2	11,700	22,000	0.53	A
6.	Taft Avenue between Center Drive and Cannon Street	2	5,530	22,000	0.25	A
7.	Serrano Avenue east of Cannon Road	4	19,270	37,500	0.51	A
8.	Santiago Boulevard north of Taft Avenue	4	18,250	37,500	0.49	A
9.	Wanda Road between Villa Park Road and Taft Avenue	4	21,910	37,500	0.58	A
10.	Wanda Road south of Villa Park Road	4	16,160	25,000	0.65	B
11.	Hewes Street south of Villa Park Road	4	11,770	25,000	0.47	A
12.	Cannon Street north of Serrano Avenue	4	22,660	37,500	0.6	B
13.	Cannon Street between Taft Avenue and Serrano Avenue	5	39,120	46,900	0.83	**D**
14.	Cannon Street between Villa Park Road and Taft Avenue	5	36,890	46,900	0.79	C
15.	Cannon Street south of Santiago Canyon Road	4	7,800	25,500	0.31	A

Note(s):

1. **Bold** symbolizes segment operates below County's LOS standards.
2. Capacities for LOS E were referenced for arterial types from the MPAH.

Source: Fehr & Peers, 2023.

Future Year Intersection LOS

	Intersection	Control	Methodology	Peak Hour	V/C / Delay	LOS
1.	Wanda Rod and Villa Park Road	Signalized	ICU / HCM	AM PM	0.836 / 37 0.774 / 45	D / D C / D
2.	Kathleen Lane and Villa Park Road	TWSC	HCM	AM PM	**64** 15	**F** C
3.	Morrow Circle and Villa Park Road	TWSC	HCM	AM PM	**63** **64**	**F** **F**
4.	Prado Woods Drive and Villa Park Road	TWSC	HCM	AM PM	**50** **79**	**F** **F**
5.	Kenwick Drive and Villa Park Road	TWSC	HCM	AM PM	**63** 15	**F** C
6.	Radec Court and Villa Park Road	TWSC	HCM	AM PM	**60** **>100**	**F** **F**
7.	Center Drive and Villa Park Road	Signalized	ICU / HCM	AM PM	0.585 / 11 0.547 / 7	A / B A / A
8.	Park Villa Lane and Villa Park Road	TWSC	HCM	AM PM	**49** **57**	**E** **F**
9.	Lemon Street and Villa Park Road	Signalized	ICU / HCM	AM PM	0.450 / 5 0.524 / 6	A / A A / A
10.	Hewes Street and Villa Park Road	Signalized	ICU / HCM	AM PM	**0.955 / 70** 0.889 / 25	**E / E** D / C
11.	Linda Vista Street and Villa Park Road	TWSC	HCM	AM PM	**>100** **>100**	**F** **F**
12.	Cannon Street and Santiago Canyon Road	Signalized	ICU / HCM	AM PM	**0.914** / 49 **0.935** / 47	**E** / D **E** / D
13.	Cannon Street and Taft Avenue	Signalized	ICU / HCM	AM PM	**1.064 / >100** 0.783 / 39	**F / F** C / D
14.	Cannon Street and Serrano Avenue	Signalized	ICU / HCM	AM PM	**0.910** / 39 0.696 / 13	**E** / D B / B
15.	Cannon Street and Loma Street	TWSC	HCM	AM PM	**>100** **83**	**F** **F**

Note(s):

1. ">100" is reported for highly congested movements where more than 100 seconds is reported.
2. **Bold** symbolizes segment operates below Jurisdictions' LOS standards.

Source: Fehr & Peers, 2023.

Future Year Multi-modal LOS

Intersection	Mode	Peak Hour	Delay	LOS
1. Wanda Rod and Villa Park Road	Bike/Pedestrian	AM	14.2/73	B / E
		PM	47.8/60.4	D / E
9. Lemon Street and Villa Park Road	Bike/Pedestrian	AM	5.8/8.3	A / A
		PM	6.2/9.6	A / A
10. Hewes Street and Villa Park Road	Bike/Pedestrian	AM	62.7/63.9	E / E
		PM	58.7/65.6	E / E
12. Cannon Street and Santiago Canyon Road	Bike/Pedestrian	AM	22.8/42.2	B / D
		PM	64.3/76.8	E / E

Source: Fehr & Peers, 2023.

Future Year 95th Percentile Queues

Intersection	Movement	Storage (ft)	Peak Hour	Queue (ft)
10. Hewes Street and Villa Park Road	EBT	>1000	AM PM	1,025 475
	WBL	250	AM PM	**1,075** **350**
	WBT	550	AM PM	425 175
	NBL	550	AM PM	450 275
	NBR	550	AM PM	125 225
12. Cannon Street and Santiago Canyon Road	EBL	425	AM PM	175 **675**
	EBT	675	AM PM	375 250
	WBL	225	AM PM	50 50
	WBT	>1000	AM PM	325 925
	WBR	700	AM PM	0 625
	NBL	150	AM PM	**225** 125
	NBT	500	AM PM	125 350
	SBL	550	AM PM	475 250
	SBT	>1000	AM PM	475 275
	SBR	400	AM PM	**1,025** **600**

Notes:
1. Queues were calculated using HCM 7th methodologies and are rounded up to the nearest 25-foot increment.
2. "EB" = eastbound, "WB" = westbound, "NB" = northbound, "SB" = southbound, "L" = left, "T" = through, "R" = right.
3. **Bold** symbolizes movement is at or exceeds available storage capacity.

Source: Fehr & Peers, 2023.

Attachment C: Intersection Level of Service Analysis Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	300	959	302	60	983	130	212	453	130	168	342	378
Future Volume (veh/h)	300	959	302	60	983	130	212	453	130	168	342	378
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	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1634	1634	1634	1634	1634	1634	1687	1687	1687	1687	1687	1687
Adj Flow Rate, veh/h	319	1020	198	64	1046	100	226	482	118	179	364	352
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, %	5	5	5	5	5	5	1	1	1	1	1	1
Cap, veh/h	471	1406	867	114	1113	699	277	710	172	233	426	592
Arrive On Green	0.16	0.45	0.45	0.07	0.36	0.36	0.17	0.28	0.25	0.15	0.25	0.25
Sat Flow, veh/h	3018	3104	1382	1556	3104	1384	1606	2538	617	1606	1687	1424
Grp Volume(v), veh/h	319	1020	198	64	1046	100	226	303	297	179	364	352
Grp Sat Flow(s),veh/h/ln	1509	1552	1382	1556	1552	1384	1606	1602	1553	1606	1687	1424
Q Serve(g_s), s	13.0	34.8	8.1	5.2	42.4	2.7	17.6	21.8	22.3	13.9	26.7	6.5
Cycle Q Clear(g_c), s	13.0	34.8	8.1	5.2	42.4	2.7	17.6	21.8	22.3	13.9	26.7	6.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.40	1.00		1.00
Lane Grp Cap(c), veh/h	471	1406	867	114	1113	699	277	448	434	233	426	592
V/C Ratio(X)	0.68	0.73	0.23	0.56	0.94	0.14	0.82	0.68	0.68	0.77	0.86	0.59
Avail Cap(c_a), veh/h	485	1406	867	227	1113	699	282	448	434	271	432	598
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.8	29.0	10.6	58.3	40.3	6.7	51.8	41.6	42.4	53.4	46.3	12.4
Incr Delay (d2), s/veh	2.9	3.3	0.6	1.6	15.9	0.4	15.4	3.3	3.7	8.8	14.5	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	13.1	2.5	2.1	18.1	1.0	8.2	8.9	8.9	6.2	12.8	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.7	32.3	11.2	59.9	56.3	7.1	67.2	44.9	46.1	62.3	60.9	13.5
LnGrp LOS	D	C	B	E	E	A	E	D	D	E	E	B
Approach Vol, veh/h		1537			1210			826			895	
Approach Delay, s/veh		34.2			52.4			51.4			42.5	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.9	49.0	23.6	34.5	10.5	61.4	20.0	38.1
Change Period (Y+Rc), s	5.5	* 5.5	4.0	5.5	4.0	5.5	4.0	5.5
Max Green Setting (Gmax), s	18.0	* 44	20.0	29.5	16.0	45.5	19.0	30.5
Max Q Clear Time (g_c+I1), s	15.0	44.4	19.6	28.7	7.2	36.8	15.9	24.3
Green Ext Time (p_c), s	0.2	0.0	0.0	0.2	0.0	2.1	0.1	0.7

Intersection Summary	
HCM 6th Ctrl Delay	44.0
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

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

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	1249	1134	0	1	9
Future Vol, veh/h	8	1249	1134	0	1	9
Conflicting Peds, #/hr	5	0	0	5	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	70	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	5	5	0	0	0
Mvmt Flow	9	1419	1289	0	1	10

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1294	0	-	0	2022	650
Stage 1	-	-	-	-	1294	-
Stage 2	-	-	-	-	728	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	542	-	-	-	52	417
Stage 1	-	-	-	-	225	-
Stage 2	-	-	-	-	444	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	539	-	-	-	51	415
Mov Cap-2 Maneuver	-	-	-	-	51	-
Stage 1	-	-	-	-	220	-
Stage 2	-	-	-	-	442	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	20.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	539	-	-	-	242
HCM Lane V/C Ratio	0.017	-	-	-	0.047
HCM Control Delay (s)	11.8	-	-	-	20.6
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1245	5	2	1130	4	7
Future Vol, veh/h	1245	5	2	1130	4	7
Conflicting Peds, #/hr	0	5	5	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	5	0	0	5	0	0
Mvmt Flow	1415	6	2	1284	5	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1426	0	2066	713
Stage 1	-	-	-	-	1420	-
Stage 2	-	-	-	-	646	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	483	-	48	379
Stage 1	-	-	-	-	193	-
Stage 2	-	-	-	-	489	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	481	-	48	377
Mov Cap-2 Maneuver	-	-	-	-	48	-
Stage 1	-	-	-	-	192	-
Stage 2	-	-	-	-	487	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	42.7
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	108	-	-	481	-
HCM Lane V/C Ratio	0.116	-	-	0.005	-
HCM Control Delay (s)	42.7	-	-	12.5	-
HCM Lane LOS	E	-	-	B	-
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	14	1238	1119	3	4	13
Future Vol, veh/h	14	1238	1119	3	4	13
Conflicting Peds, #/hr	5	0	0	5	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	5	5	0	0	0
Mvmt Flow	16	1423	1286	3	5	15

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1294	0	-	0	2035	648
Stage 1	-	-	-	-	1291	-
Stage 2	-	-	-	-	744	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	542	-	-	-	51	418
Stage 1	-	-	-	-	226	-
Stage 2	-	-	-	-	436	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	539	-	-	-	49	416
Mov Cap-2 Maneuver	-	-	-	-	49	-
Stage 1	-	-	-	-	218	-
Stage 2	-	-	-	-	434	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	32.4
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	539	-	-	-	151
HCM Lane V/C Ratio	0.03	-	-	-	0.129
HCM Control Delay (s)	11.9	-	-	-	32.4
HCM Lane LOS	B	-	-	-	D
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	1238	1115	0	3	7
Future Vol, veh/h	4	1238	1115	0	3	7
Conflicting Peds, #/hr	5	0	0	5	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	5	5	0	0	0
Mvmt Flow	5	1440	1297	0	3	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1302	0	-	0	2032	654
Stage 1	-	-	-	-	1302	-
Stage 2	-	-	-	-	730	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	539	-	-	-	51	414
Stage 1	-	-	-	-	223	-
Stage 2	-	-	-	-	443	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	536	-	-	-	50	412
Mov Cap-2 Maneuver	-	-	-	-	50	-
Stage 1	-	-	-	-	220	-
Stage 2	-	-	-	-	441	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	35.4
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	536	-	-	-	130
HCM Lane V/C Ratio	0.009	-	-	-	0.089
HCM Control Delay (s)	11.8	-	-	-	35.4
HCM Lane LOS	B	-	-	-	E
HCM 95th %tile Q(veh)	0	-	-	-	0.3

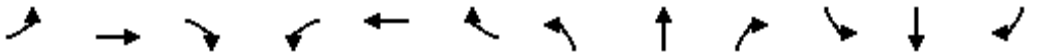
Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1240	1	1	1115	1	2
Future Vol, veh/h	1240	1	1	1115	1	2
Conflicting Peds, #/hr	0	5	5	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	125	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	5	0	0	5	0	0
Mvmt Flow	1442	1	1	1297	0	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1448	0	2098	726
Stage 1	-	-	-	-	1447	-
Stage 2	-	-	-	-	651	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	474	-	46	372
Stage 1	-	-	-	-	186	-
Stage 2	-	-	-	-	486	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	472	-	46	370
Mov Cap-2 Maneuver	-	-	-	-	46	-
Stage 1	-	-	-	-	185	-
Stage 2	-	-	-	-	485	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	36.1
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	119	-	-	472	-
HCM Lane V/C Ratio	0.028	-	-	0.002	-
HCM Control Delay (s)	36.1	-	-	12.6	-
HCM Lane LOS	E	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	1067	114	42	921	49	59	102	55	44	119	136
Future Volume (veh/h)	61	1067	114	42	921	49	59	102	55	44	119	136
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		1.00	1.00		0.99	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	1700	1634	1700	1700	1634	1700	1700	1700	1700	1700	1700	1700
Adj Flow Rate, veh/h	75	1317	119	52	1137	40	73	126	48	54	147	126
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	0	5	0	0	5	0	0	0	0	0	0	0
Cap, veh/h	138	1672	758	108	1615	747	293	363	138	387	260	223
Arrive On Green	0.09	0.54	0.54	0.07	0.52	0.52	0.31	0.31	0.27	0.31	0.31	0.31
Sat Flow, veh/h	1619	3104	1408	1619	3104	1435	1119	1169	445	1223	836	717
Grp Volume(v), veh/h	75	1317	119	52	1137	40	73	0	174	54	0	273
Grp Sat Flow(s),veh/h/ln	1619	1552	1408	1619	1552	1435	1119	0	1615	1223	0	1553
Q Serve(g_s), s	2.9	22.3	2.8	2.0	18.2	0.9	3.8	0.0	5.5	2.3	0.0	9.6
Cycle Q Clear(g_c), s	2.9	22.3	2.8	2.0	18.2	0.9	13.5	0.0	5.5	7.9	0.0	9.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		0.46
Lane Grp Cap(c), veh/h	138	1672	758	108	1615	747	293	0	501	387	0	482
V/C Ratio(X)	0.54	0.79	0.16	0.48	0.70	0.05	0.25	0.00	0.35	0.14	0.00	0.57
Avail Cap(c_a), veh/h	541	2046	928	541	2046	946	635	0	995	761	0	957
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.7	12.1	7.6	29.5	11.9	7.8	24.5	0.0	17.7	20.5	0.0	18.9
Incr Delay (d2), s/veh	1.2	1.7	0.1	1.2	0.8	0.0	0.6	0.0	0.6	0.2	0.0	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	1.1	6.2	0.7	0.8	5.0	0.2	1.0	0.0	2.0	0.7	0.0	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.0	13.8	7.7	30.7	12.7	7.8	25.2	0.0	18.3	20.7	0.0	20.4
LnGrp LOS	C	B	A	C	B	A	C	A	B	C	A	C
Approach Vol, veh/h		1511			1229			247			327	
Approach Delay, s/veh		14.2			13.3			20.3			20.4	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.5	37.6		22.5	6.7	36.4		22.5				
Change Period (Y+Rc), s	3.0	5.5		4.5	3.0	5.5		4.5				
Max Green Setting (Gmax), s	20.0	40.0		38.0	20.0	40.0		38.0				
Max Q Clear Time (g_c+I1), s	4.0	24.3		15.5	4.9	20.2		11.6				
Green Ext Time (p_c), s	0.0	7.8		1.8	0.0	7.7		2.8				

Intersection Summary												
HCM 6th Ctrl Delay			14.9									
HCM 6th LOS			B									

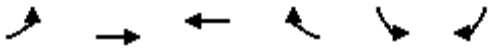
Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1160	6	5	1010	2	2
Future Vol, veh/h	1160	6	5	1010	2	2
Conflicting Peds, #/hr	0	5	5	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	140	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	5	0	0	5	0	0
Mvmt Flow	1289	7	6	1122	2	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1301	0	1867	650
Stage 1	-	-	-	-	1294	-
Stage 2	-	-	-	-	573	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	539	-	66	417
Stage 1	-	-	-	-	225	-
Stage 2	-	-	-	-	533	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	536	-	65	415
Mov Cap-2 Maneuver	-	-	-	-	65	-
Stage 1	-	-	-	-	224	-
Stage 2	-	-	-	-	527	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	38.5
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	112	-	-	536	-
HCM Lane V/C Ratio	0.04	-	-	0.01	-
HCM Control Delay (s)	38.5	-	-	11.8	-
HCM Lane LOS	E	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	69	1093	977	105	113	38
Future Volume (veh/h)	69	1093	977	105	113	38
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1700	1634	1634	1700	1700	1700
Adj Flow Rate, veh/h	78	1242	1110	94	86	89
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	5	5	0	0	0
Cap, veh/h	171	2206	1786	808	284	253
Arrive On Green	0.11	0.71	0.58	0.58	0.18	0.18
Sat Flow, veh/h	1619	3186	3186	1404	1619	1441
Grp Volume(v), veh/h	78	1242	1110	94	86	89
Grp Sat Flow(s),veh/h/ln	1619	1552	1552	1404	1619	1441
Q Serve(g_s), s	1.7	7.3	8.9	1.1	1.7	2.0
Cycle Q Clear(g_c), s	1.7	7.3	8.9	1.1	1.7	2.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	171	2206	1786	808	284	253
V/C Ratio(X)	0.46	0.56	0.62	0.12	0.30	0.35
Avail Cap(c_a), veh/h	940	3556	3556	1608	1610	1433
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.8	2.6	5.3	3.6	13.5	13.7
Incr Delay (d2), s/veh	0.7	0.2	0.4	0.1	0.8	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.1	0.7	0.1	0.6	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	16.5	2.9	5.6	3.7	14.4	14.9
LnGrp LOS	B	A	A	A	B	B
Approach Vol, veh/h		1320	1204		175	
Approach Delay, s/veh		3.7	5.5		14.6	
Approach LOS		A	A		B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	5.1	24.0		8.6		29.1
Change Period (Y+Rc), s	3.0	5.5		4.5		5.5
Max Green Setting (Gmax), s	20.0	40.0		35.0		40.0
Max Q Clear Time (g_c+I1), s	3.7	10.9		4.0		9.3
Green Ext Time (p_c), s	0.0	7.6		0.9		10.6

Intersection Summary	
HCM 6th Ctrl Delay	5.2
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	995	211	450	880	202	285
Future Volume (vph)	995	211	450	880	202	285
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700
Total Lost time (s)	2.5	2.5	1.0	2.5	1.5	1.5
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3076	1355	1538	3076	1568	1403
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3076	1355	1538	3076	1568	1403
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	1118	237	506	989	227	320
RTOR Reduction (vph)	0	43	0	0	0	270
Lane Group Flow (vph)	1118	194	506	989	227	50
Confl. Peds. (#/hr)		2			1	
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	5%	5%	5%	5%	3%	3%
Turn Type	NA	Perm	Prot	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases		2				
Actuated Green, G (s)	49.7	49.7	34.0	89.7	15.5	15.5
Effective Green, g (s)	54.7	54.7	39.0	94.7	20.5	20.5
Actuated g/C Ratio	0.42	0.42	0.30	0.73	0.16	0.16
Clearance Time (s)	7.5	7.5	6.0	7.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	2.0	2.0
Lane Grp Cap (vph)	1294	570	461	2240	247	221
v/s Ratio Prot	c0.36		c0.33	0.32	c0.14	0.04
v/s Ratio Perm		0.14				
v/c Ratio	0.86	0.34	1.10	0.44	0.92	0.23
Uniform Delay, d1	34.3	25.5	45.5	7.1	53.9	47.8
Progression Factor	1.00	1.00	1.14	0.71	1.00	1.00
Incremental Delay, d2	7.8	1.6	67.1	0.5	35.2	0.2
Delay (s)	42.1	27.1	119.0	5.5	89.2	48.0
Level of Service	D	C	F	A	F	D
Approach Delay (s)	39.5			43.9	65.1	
Approach LOS	D			D	E	

Intersection Summary			
HCM 2000 Control Delay	45.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	21.4

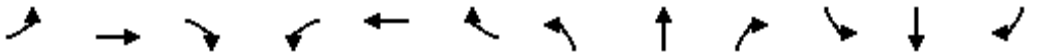
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	68	1173	39	5	1218	99	9	1	21	27	0	103
Future Vol, veh/h	68	1173	39	5	1218	99	9	1	21	27	0	103
Conflicting Peds, #/hr	5	0	5	5	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	115	-	100	140	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	5	5	0	0	5	5	0	0	0	3	3	3
Mvmt Flow	74	1275	42	5	1324	108	10	1	23	29	0	112

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1437	0	0	1322	0	0	2100	2875	643	2125	2809	667
Stage 1	-	-	-	-	-	-	1428	1428	-	1339	1339	-
Stage 2	-	-	-	-	-	-	672	1447	-	786	1470	-
Critical Hdwy	4.2	-	-	4.1	-	-	7.5	6.5	6.9	7.56	6.56	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.56	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.56	5.56	-
Follow-up Hdwy	2.25	-	-	2.2	-	-	3.5	4	3.3	3.53	4.03	3.33
Pot Cap-1 Maneuver	453	-	-	529	-	-	30	17	421	~ 28	18	399
Stage 1	-	-	-	-	-	-	144	203	-	160	218	-
Stage 2	-	-	-	-	-	-	416	198	-	349	188	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	451	-	-	526	-	-	19	14	419	~ 22	15	397
Mov Cap-2 Maneuver	-	-	-	-	-	-	19	14	-	~ 22	15	-
Stage 1	-	-	-	-	-	-	120	169	-	133	215	-
Stage 2	-	-	-	-	-	-	296	195	-	274	156	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0	157.7	$ 410.4
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	52	451	-	-	526	-	-	87
HCM Lane V/C Ratio	0.648	0.164	-	-	0.01	-	-	1.624
HCM Control Delay (s)	157.7	14.5	-	-	11.9	-	-	$ 410.4
HCM Lane LOS	F	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	2.6	0.6	-	-	0	-	-	11.4

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	364	766	91	16	469	366	139	109	36	1294	319	714
Future Volume (veh/h)	364	766	91	16	469	366	139	109	36	1294	319	714
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1634	1634	1634	1660	1660	1660	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	375	790	88	16	484	0	143	112	11	1334	329	636
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, %	5	5	5	3	3	3	2	2	2	2	2	2
Cap, veh/h	507	863	96	86	621		217	398	39	2151	753	877
Arrive On Green	0.06	0.10	0.10	0.05	0.20	0.00	0.14	0.14	0.10	0.45	0.45	0.45
Sat Flow, veh/h	3018	2811	313	1581	3154	1407	1594	2924	283	4781	1673	1413
Grp Volume(v), veh/h	375	436	442	16	484	0	143	60	63	1334	329	636
Grp Sat Flow(s),veh/h/ln	1509	1552	1572	1581	1577	1407	1594	1590	1618	1594	1673	1413
Q Serve(g_s), s	15.9	36.2	36.2	1.3	18.9	0.0	11.1	4.4	4.6	27.7	17.5	40.4
Cycle Q Clear(g_c), s	15.9	36.2	36.2	1.3	18.9	0.0	11.1	4.4	4.6	27.7	17.5	40.4
Prop In Lane	1.00		0.20	1.00		1.00	1.00		0.18	1.00		1.00
Lane Grp Cap(c), veh/h	507	476	482	86	621		217	216	220	2151	753	877
V/C Ratio(X)	0.74	0.92	0.92	0.19	0.78		0.66	0.28	0.29	0.62	0.44	0.73
Avail Cap(c_a), veh/h	662	476	482	208	692		292	291	296	2151	753	877
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.6	56.7	56.8	58.7	49.5	0.0	53.3	50.4	50.8	27.3	24.5	17.1
Incr Delay (d2), s/veh	2.0	21.9	21.8	0.4	4.4	0.0	1.3	0.3	0.3	1.4	1.8	5.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	17.9	18.1	0.5	7.6	0.0	4.5	1.8	1.9	10.3	7.1	13.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.6	78.7	78.5	59.1	53.9	0.0	54.6	50.7	51.1	28.6	26.3	22.3
LnGrp LOS	E	E	E	E	D		D	D	D	C	C	C
Approach Vol, veh/h		1253			500	A		266			2299	
Approach Delay, s/veh		73.2			54.1			52.9			26.6	
Approach LOS		E			D			D			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	23.3	27.1		60.7	8.4	42.0		18.9				
Change Period (Y+Rc), s	5.0	5.5		6.0	5.5	* 6.5		5.5				
Max Green Setting (Gmax), s	25.0	24.5		39.0	13.0	* 36		19.5				
Max Q Clear Time (g_c+I1), s	17.9	20.9		42.4	3.3	38.2		13.1				
Green Ext Time (p_c), s	0.4	0.7		0.0	0.0	0.0		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		44.9	
HCM 6th LOS		D	

Notes

User approved volume balancing among the lanes for turning movement.

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

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
12: Cannon St & Santiago Canyon Road Alt2

02/28/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1000	540	80	20	1040	1530	80	460	20	500	250	530
Future Volume (veh/h)	1000	540	80	20	1040	1530	80	460	20	500	250	530
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1687	1687	1687	1687	1687	1687
Adj Flow Rate, veh/h	1042	562	75	21	1083	0	83	479	19	521	260	492
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	1	1	1	1	1	1
Cap, veh/h	804	2867	381	93	2573		139	625	25	623	541	1500
Arrive On Green	0.26	1.00	1.00	0.06	0.81	0.00	0.09	0.20	0.16	0.20	0.32	0.32
Sat Flow, veh/h	3092	2815	375	1594	3180	1418	1606	3140	124	3116	1687	2482
Grp Volume(v), veh/h	1042	317	320	21	1083	0	83	244	254	521	260	492
Grp Sat Flow(s),veh/h/ln	1546	1590	1600	1594	1590	1418	1606	1602	1662	1558	1687	1241
Q Serve(g_s), s	31.2	0.0	0.0	1.5	11.8	0.0	6.0	17.3	17.4	19.3	14.9	11.8
Cycle Q Clear(g_c), s	31.2	0.0	0.0	1.5	11.8	0.0	6.0	17.3	17.4	19.3	14.9	11.8
Prop In Lane	1.00		0.23	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	804	1619	1629	93	2573		139	319	331	623	541	1500
V/C Ratio(X)	1.30	0.20	0.20	0.23	0.42		0.60	0.76	0.77	0.84	0.48	0.33
Avail Cap(c_a), veh/h	804	1619	1629	139	2573		139	320	332	623	541	1500
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.81	0.81	0.81	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.4	0.0	0.0	53.9	3.3	0.0	52.8	45.4	45.6	46.1	32.7	11.9
Incr Delay (d2), s/veh	140.8	0.2	0.2	0.5	0.5	0.0	4.8	9.5	9.3	9.1	0.2	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	27.1	0.1	0.1	0.6	2.3	0.0	2.6	7.6	7.9	8.0	5.9	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	185.2	0.2	0.2	54.3	3.8	0.0	57.6	54.9	54.9	55.2	33.0	12.0
LnGrp LOS	F	A	A	D	A		E	D	D	E	C	B
Approach Vol, veh/h		1679			1104			581			1273	
Approach Delay, s/veh		115.0			4.8			55.3			34.0	
Approach LOS		F			A			E			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	34.0	101.1	11.0	39.9	7.5	127.6	26.0	24.9
Change Period (Y+Rc), s	5.0	* 6.5	5.0	6.0	5.0	6.5	6.0	* 5.5
Max Green Setting (Gmax), s	29.0	* 31	6.0	33.0	6.0	52.5	20.0	* 20
Max Q Clear Time (g_c+I1), s	33.2	13.8	8.0	16.9	3.5	2.0	21.3	19.4
Green Ext Time (p_c), s	0.0	4.3	0.0	1.9	0.0	2.1	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	59.0
HCM 6th LOS	E

Notes

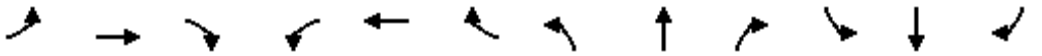
User approved pedestrian interval to be less than phase max green.

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

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
12: Cannon St & Santiago Canyon Road Alt3

02/28/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1000	540	80	20	1040	1530	80	460	20	500	250	530
Future Volume (veh/h)	1000	540	80	20	1040	1530	80	460	20	500	250	530
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1687	1687	1687	1687	1687	1687
Adj Flow Rate, veh/h	1042	562	75	21	1083	0	83	479	19	521	260	0
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	1	1	1	1	1	1
Cap, veh/h	804	2867	381	93	2573		139	625	25	623	1028	
Arrive On Green	0.26	1.00	1.00	0.06	0.81	0.00	0.09	0.20	0.16	0.20	0.32	0.00
Sat Flow, veh/h	3092	2815	375	1594	3180	1418	1606	3140	124	3116	3205	1429
Grp Volume(v), veh/h	1042	317	320	21	1083	0	83	244	254	521	260	0
Grp Sat Flow(s),veh/h/ln	1546	1590	1600	1594	1590	1418	1606	1602	1662	1558	1602	1429
Q Serve(g_s), s	31.2	0.0	0.0	1.5	11.8	0.0	6.0	17.3	17.4	19.3	7.2	0.0
Cycle Q Clear(g_c), s	31.2	0.0	0.0	1.5	11.8	0.0	6.0	17.3	17.4	19.3	7.2	0.0
Prop In Lane	1.00		0.23	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	804	1619	1629	93	2573		139	319	331	623	1028	
V/C Ratio(X)	1.30	0.20	0.20	0.23	0.42		0.60	0.76	0.77	0.84	0.25	
Avail Cap(c_a), veh/h	804	1619	1629	139	2573		139	320	332	623	1028	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.81	0.81	0.81	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	44.4	0.0	0.0	53.9	3.3	0.0	52.8	45.4	45.6	46.1	30.1	0.0
Incr Delay (d2), s/veh	140.8	0.2	0.2	0.5	0.5	0.0	4.8	9.5	9.3	9.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	27.1	0.1	0.1	0.6	2.3	0.0	2.6	7.6	7.9	8.0	2.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	185.2	0.2	0.2	54.3	3.8	0.0	57.6	54.9	54.9	55.2	30.2	0.0
LnGrp LOS	F	A	A	D	A		E	D	D	E	C	
Approach Vol, veh/h		1679			1104			581			781	
Approach Delay, s/veh		115.0			4.8			55.3			46.9	
Approach LOS		F			A			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	34.0	101.1	11.0	39.9	7.5	127.6	26.0	24.9
Change Period (Y+Rc), s	5.0	* 6.5	5.0	6.0	5.0	6.5	6.0	* 5.5
Max Green Setting (Gmax), s	29.0	* 31	6.0	33.0	6.0	52.5	20.0	* 20
Max Q Clear Time (g_c+I1), s	33.2	13.8	8.0	9.2	3.5	2.0	21.3	19.4
Green Ext Time (p_c), s	0.0	4.3	0.0	0.9	0.0	2.1	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	64.4
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

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

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	2	109	1	2	1	67	771	1	1	2217	230
Future Volume (veh/h)	145	2	109	1	2	1	67	771	1	1	2217	230
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	0.99		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1700	1700	1700	1700	1700	1700	1700	1673	1700	1700	1673	1700
Adj Flow Rate, veh/h	148	2	97	1	2	1	68	787	1	1	2262	232
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, %	0	0	0	0	0	0	0	2	0	0	2	0
Cap, veh/h	113	1	302	26	47	16	121	2565	3	44	2152	216
Arrive On Green	0.11	0.14	0.14	0.11	0.14	0.14	0.07	0.79	0.79	0.03	0.74	0.74
Sat Flow, veh/h	530	7	1404	0	345	115	1619	3258	4	1619	2910	292
Grp Volume(v), veh/h	150	0	97	4	0	0	68	384	404	1	1215	1279
Grp Sat Flow(s),veh/h/ln	538	0	1404	461	0	0	1619	1590	1673	1619	1590	1612
Q Serve(g_s), s	0.0	0.0	10.2	0.0	0.0	0.0	7.1	11.9	11.9	0.1	129.4	129.4
Cycle Q Clear(g_c), s	20.0	0.0	10.2	20.0	0.0	0.0	7.1	11.9	11.9	0.1	129.4	129.4
Prop In Lane	0.99		1.00	0.25		0.25	1.00		0.00	1.00		0.18
Lane Grp Cap(c), veh/h	102	0	302	78	0	0	121	1252	1317	44	1176	1192
V/C Ratio(X)	1.47	0.00	0.32	0.05	0.00	0.00	0.56	0.31	0.31	0.02	1.03	1.07
Avail Cap(c_a), veh/h	102	0	302	78	0	0	132	1252	1317	88	1176	1192
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	79.8	0.0	58.1	66.6	0.0	0.0	78.2	5.2	5.2	82.9	22.8	22.8
Incr Delay (d2), s/veh	255.2	0.0	0.6	0.3	0.0	0.0	2.0	0.6	0.6	0.1	35.2	47.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.0	0.0	3.7	0.2	0.0	0.0	3.0	3.7	3.8	0.0	52.6	57.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	335.0	0.0	58.7	66.8	0.0	0.0	80.2	5.9	5.8	83.0	58.0	70.7
LnGrp LOS	F	A	E	E	A	A	F	A	A	F	F	F
Approach Vol, veh/h		247			4			856			2495	
Approach Delay, s/veh		226.5			66.8			11.7			64.5	
Approach LOS		F			E			B			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.2	144.8		25.0	13.8	136.2		25.0
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	5.3	134.0		20.0	10.0	129.0		20.0
Max Q Clear Time (g_c+I1), s	2.1	13.9		22.0	9.1	131.4		22.0
Green Ext Time (p_c), s	0.0	1.3		0.0	0.0	0.0		0.0

Intersection Summary		
HCM 6th Ctrl Delay		63.1
HCM 6th LOS		E

Notes

User approved pedestrian interval to be less than phase max green.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1035	145	561	356	51	1413
Future Volume (veh/h)	1035	145	561	356	51	1413
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	1056	106	572	308	52	1442
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	1181	690	1527	1247	142	1806
Arrive On Green	0.38	0.40	0.48	0.48	0.09	0.57
Sat Flow, veh/h	3092	1418	3263	1418	1594	3263
Grp Volume(v), veh/h	1056	106	572	308	52	1442
Grp Sat Flow(s),veh/h/ln	1546	1418	1590	1418	1594	1590
Q Serve(g_s), s	32.1	4.1	11.4	3.4	3.1	35.8
Cycle Q Clear(g_c), s	32.1	4.1	11.4	3.4	3.1	35.8
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	1181	690	1527	1247	142	1806
V/C Ratio(X)	0.89	0.15	0.37	0.25	0.37	0.80
Avail Cap(c_a), veh/h	1527	849	1527	1247	228	1806
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.0	14.2	16.5	0.9	42.9	17.1
Incr Delay (d2), s/veh	5.0	0.0	0.7	0.5	0.6	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.9	4.5	3.9	4.4	1.2	12.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	34.0	14.3	17.2	1.4	43.5	20.9
LnGrp LOS	C	B	B	A	D	C
Approach Vol, veh/h	1162		880			1494
Approach Delay, s/veh	32.2		11.7			21.6
Approach LOS	C		B			C

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	9.6	49.6		40.8		59.2
Change Period (Y+Rc), s	5.0	6.0		5.3		6.0
Max Green Setting (Gmax), s	10.6	27.0		46.7		42.0
Max Q Clear Time (g_c+I1), s	5.1	13.4		34.1		37.8
Green Ext Time (p_c), s	0.0	2.5		1.4		2.5

Intersection Summary	
HCM 6th Ctrl Delay	22.6
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	34	45	28	678	1419	43
Future Vol, veh/h	34	45	28	678	1419	43
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	200	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	35	46	29	692	1448	44

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1857	729	1497	0	-	0
Stage 1	1453	-	-	-	-	-
Stage 2	404	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	67	370	454	-	-	-
Stage 1	185	-	-	-	-	-
Stage 2	649	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	62	368	452	-	-	-
Mov Cap-2 Maneuver	62	-	-	-	-	-
Stage 1	172	-	-	-	-	-
Stage 2	646	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	84.5	0.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	452	-	118	-	-
HCM Lane V/C Ratio	0.063	-	0.683	-	-
HCM Control Delay (s)	13.5	-	84.5	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.2	-	3.6	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	839	0	0	2327
Future Vol, veh/h	0	0	839	0	0	2327
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	0	0	912	0	0	2529

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2177	456	0	0	912	0
Stage 1	912	-	-	-	-	-
Stage 2	1265	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	41	557	-	-	755	-
Stage 1	357	-	-	-	-	-
Stage 2	233	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	41	557	-	-	755	-
Mov Cap-2 Maneuver	41	-	-	-	-	-
Stage 1	357	-	-	-	-	-
Stage 2	233	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	755	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	917	2448	0
Future Vol, veh/h	0	0	0	917	2448	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	0	0	0	997	2661	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	3160	1331	2661	0	-	0
Stage 1	2661	-	-	-	-	-
Stage 2	499	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	8	147	160	-	-	-
Stage 1	40	-	-	-	-	-
Stage 2	581	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	8	147	160	-	-	-
Mov Cap-2 Maneuver	8	-	-	-	-	-
Stage 1	40	-	-	-	-	-
Stage 2	581	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	160	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	706	0	0	1464
Future Vol, veh/h	0	0	706	0	0	1464
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	125	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	0	0	767	0	0	1591

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	384	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	620	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	620	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	0	-
HCM Lane LOS	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	-

MPAH Amendment Study - Villa Park Rd

Vistro File: N:\...\Villa Park_v6.vistro
Report File: N:\...\01_EXAM.pdf

Scenario 1 Existing AM Peak Hour
7/21/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Villa Park Rd & Wanda Rd	Signalized	ICU 2	WB Thru	0.743	-	C
7	Villa Park Rd & Center Dr	Signalized	ICU 2	EB Thru	0.553	-	A
9	Villa Park Rd & Lemon St	Signalized	ICU 2	EB Thru	0.390	-	A
10	Villa Park Rd & Hewes St	Signalized	ICU 2	EB Thru	0.767	-	C
12	Santiago Canyon Rd & Cannon St	Signalized	ICU 2	SB Right	0.694	-	B
13	Taft Ave & Cannon St	Signalized	ICU 2	SB Right	0.893	-	D
14	Serrano Ave & Cannon St	Signalized	ICU 2	SB Thru	0.758	-	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Villa Park Rd & Wanda Rd

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.743

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	2	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	175.00	100.00	100.00	225.00	100.00	300.00	150.00	100.00	175.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	212	453	130	168	342	378	300	959	302	60	983	130
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	212	453	130	168	342	378	300	959	302	60	983	130
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	53	113	33	42	86	95	75	240	76	15	246	33
Total Analysis Volume [veh/h]	212	453	130	168	342	378	300	959	302	60	983	130
Pedestrian Volume [ped/h]	3			0			3			10		
Bicycle Volume [bicycles/h]	0			0			2			8		

Intersection Settings

Cycle Length [s]	130
Lost time [s]	7.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	4	1	6	6	5	2	2
Auxiliary Signal Groups						1,4			3,6			2,7
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.17	0.17	0.10	0.20	0.13	0.09	0.28	0.05	0.04	0.29	0.00
Intersection LOS	C											
Intersection V/C	0.743											

Intersection Level Of Service Report
Intersection 7: Villa Park Rd & Center Dr

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.553

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	150.00	100.00	100.00	140.00	100.00	100.00	160.00	100.00	100.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	59	102	55	44	119	136	61	1067	114	42	921	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	59	102	55	44	119	136	61	1067	114	42	921	49
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	26	14	11	30	34	15	267	29	11	230	12
Total Analysis Volume [veh/h]	59	102	55	44	119	136	61	1067	114	42	921	49
Pedestrian Volume [ped/h]	1			4			9			1		
Bicycle Volume [bicycles/h]	3			0			1			0		

Intersection Settings

Cycle Length [s]	111
Lost time [s]	6.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.09	0.09	0.03	0.15	0.15	0.04	0.31	0.07	0.02	0.27	0.03
Intersection LOS	A											
Intersection V/C	0.553											

Intersection Level Of Service Report
Intersection 9: Villa Park Rd & Lemon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.390

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1
Entry Pocket Length [ft]	115.00	100.00	180.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

Volumes

Name						
Base Volume Input [veh/h]	113	38	69	1093	977	105
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	113	38	69	1093	977	105
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	10	17	273	244	26
Total Analysis Volume [veh/h]	113	38	69	1093	977	105
Pedestrian Volume [ped/h]	5		5		0	
Bicycle Volume [bicycles/h]	2		2		0	

Intersection Settings

Cycle Length [s]	108
Lost time [s]	5.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	4	0	1	6	2	0
Auxiliary Signal Groups						
Lead / Lag	Lag	-	Lead	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.04	0.04	0.32	0.29	0.06
Intersection LOS	A					
Intersection V/C	0.390					

Intersection Level Of Service Report
Intersection 10: Villa Park Rd & Hewes St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.767

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	215.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	202	0	285	0	1	0	0	995	211	450	880	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	202	0	285	0	1	0	0	995	211	450	880	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	0	71	0	0	0	0	249	53	113	220	0
Total Analysis Volume [veh/h]	202	0	285	0	1	0	0	995	211	450	880	0
Pedestrian Volume [ped/h]	2			0			1			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Cycle Length [s]	130
Lost time [s]	7.00

Phasing & Timing

Control Type	Split	Permiss	Split	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	4	0	0	0	8	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.00	0.17	0.00	0.00	0.00	0.00	0.29	0.12	0.26	0.26	0.00
Intersection LOS	C											
Intersection V/C	0.767											

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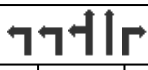
Version 2022 (SP 0-2)

Intersection Level Of Service Report

Intersection 12: Santiago Canyon Rd & Cannon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.694

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	2	0	1	2	0	0	1	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	375.00	100.00	250.00	325.00	100.00	100.00	150.00	100.00	450.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	139	109	36	1294	319	714	364	766	91	16	469	366
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	139	109	36	1294	319	714	364	766	91	16	469	366
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	27	9	324	80	179	91	192	23	4	117	92
Total Analysis Volume [veh/h]	139	109	36	1294	319	714	364	766	91	16	469	366
Pedestrian Volume [ped/h]	0			0			6			0		
Bicycle Volume [bicycles/h]	3			0			0			1		

Intersection Settings

Cycle Length [s]	130
Lost time [s]	7.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna
Signal Group	0	8	0	0	4	4	1	6	0	5	2	0
Auxiliary Signal Groups						1,4						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lag	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.04	0.04	0.25	0.19	0.31	0.11	0.25	0.25	0.01	0.14	0.00
Intersection LOS	B											
Intersection V/C	0.694											

Intersection Level Of Service Report
Intersection 13: Taft Ave & Cannon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.893

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	225.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	67	771	1	1	2217	230	145	2	109	1	2	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	67	771	1	1	2217	230	145	2	109	1	2	1
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	193	0	0	554	58	36	1	27	0	1	0
Total Analysis Volume [veh/h]	67	771	1	1	2217	230	145	2	109	1	2	1
Pedestrian Volume [ped/h]	5			0			5			0		
Bicycle Volume [bicycles/h]	2			0			2			0		

Intersection Settings

Cycle Length [s]	175
Lost time [s]	9.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	4	0	4	0
Auxiliary Signal Groups									4,5			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.23	0.23	0.00	0.72	0.72	0.09	0.09	0.02	0.00	0.00	0.00
Intersection LOS	D											
Intersection V/C	0.893											

Intersection Level Of Service Report
Intersection 14: Serrano Ave & Cannon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.758

Intersection Setup

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	150.00	275.00	100.00	350.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name						
Base Volume Input [veh/h]	561	356	51	1413	1035	145
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	561	356	51	1413	1035	145
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	140	89	13	353	259	36
Total Analysis Volume [veh/h]	561	356	51	1413	1035	145
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

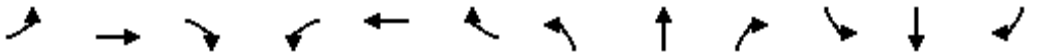
Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Split	Overlap
Signal Group	2	2	1	6	4	4
Auxiliary Signal Groups		2,4				1,4
Lead / Lag	-	-	Lead	-	Lag	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.17	0.00	0.03	0.42	0.30	0.06
Intersection LOS	C					
Intersection V/C	0.758					



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	376	895	232	59	953	317	150	532	60	114	366	279
Future Volume (veh/h)	376	895	232	59	953	317	150	532	60	114	366	279
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.98	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	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	392	932	140	61	993	293	156	554	57	119	381	240
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	488	1274	729	245	1295	732	195	810	83	170	441	601
Arrive On Green	0.16	0.40	0.40	0.15	0.41	0.41	0.12	0.28	0.25	0.11	0.26	0.26
Sat Flow, veh/h	3092	3180	1399	1594	3180	1418	1594	2904	298	1594	1673	1400
Grp Volume(v), veh/h	392	932	140	61	993	293	156	303	308	119	381	240
Grp Sat Flow(s),veh/h/ln	1546	1590	1399	1594	1590	1418	1594	1590	1612	1594	1673	1400
Q Serve(g_s), s	17.1	34.8	4.1	4.7	37.7	17.6	13.3	23.7	23.9	10.1	30.4	16.6
Cycle Q Clear(g_c), s	17.1	34.8	4.1	4.7	37.7	17.6	13.3	23.7	23.9	10.1	30.4	16.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.18	1.00		1.00
Lane Grp Cap(c), veh/h	488	1274	729	245	1295	732	195	444	450	170	441	601
V/C Ratio(X)	0.80	0.73	0.19	0.25	0.77	0.40	0.80	0.68	0.69	0.70	0.86	0.40
Avail Cap(c_a), veh/h	629	1274	729	245	1295	732	195	444	450	249	512	660
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.9	35.6	7.1	52.2	35.8	20.7	59.8	44.9	45.3	60.4	49.1	27.7
Incr Delay (d2), s/veh	4.4	3.7	0.6	0.2	4.4	1.6	19.4	3.5	3.6	1.9	11.5	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	6.9	13.8	1.5	1.9	15.0	6.0	6.4	9.7	9.9	4.2	14.0	5.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.3	39.3	7.7	52.4	40.2	22.3	79.2	48.5	48.9	62.3	60.7	27.9
LnGrp LOS	E	D	A	D	D	C	E	D	D	E	E	C
Approach Vol, veh/h		1464			1347			767			740	
Approach Delay, s/veh		42.2			36.8			54.9			50.3	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.6	59.3	18.0	39.1	23.9	59.0	16.0	41.1
Change Period (Y+Rc), s	4.0	5.5	4.0	5.5	5.5	* 5.5	4.0	5.5
Max Green Setting (Gmax), s	26.0	41.5	14.0	39.5	14.0	* 54	19.0	34.5
Max Q Clear Time (g_c+I1), s	19.1	39.7	15.3	32.4	6.7	36.8	12.1	25.9
Green Ext Time (p_c), s	0.5	0.7	0.0	1.2	0.0	2.3	0.1	0.9

Intersection Summary	
HCM 6th Ctrl Delay	44.2
HCM 6th LOS	D

Notes

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

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	1065	1347	0	0	2
Future Vol, veh/h	4	1065	1347	0	0	2
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	70	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	4	1158	1464	0	0	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1465	0	-	0	2052	733
Stage 1	-	-	-	-	1465	-
Stage 2	-	-	-	-	587	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	467	-	-	-	49	368
Stage 1	-	-	-	-	182	-
Stage 2	-	-	-	-	524	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	467	-	-	-	48	368
Mov Cap-2 Maneuver	-	-	-	-	48	-
Stage 1	-	-	-	-	180	-
Stage 2	-	-	-	-	523	-

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	467	-	-	-	368
HCM Lane V/C Ratio	0.009	-	-	-	0.006
HCM Control Delay (s)	12.8	-	-	-	14.8
HCM Lane LOS	B	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1064	1	2	1343	4	1
Future Vol, veh/h	1064	1	2	1343	4	1
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	1157	1	2	1460	4	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1159	0	1892	580
Stage 1	-	-	-	-	1158	-
Stage 2	-	-	-	-	734	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	610	-	63	463
Stage 1	-	-	-	-	265	-
Stage 2	-	-	-	-	441	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	609	-	63	463
Mov Cap-2 Maneuver	-	-	-	-	63	-
Stage 1	-	-	-	-	265	-
Stage 2	-	-	-	-	440	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	56
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	76	-	-	609	-
HCM Lane V/C Ratio	0.072	-	-	0.004	-
HCM Control Delay (s)	56	-	-	10.9	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	18	1047	1341	4	2	4
Future Vol, veh/h	18	1047	1341	4	2	4
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	20	1138	1458	4	2	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1463	0	-	0	2068	730
Stage 1	-	-	-	-	1459	-
Stage 2	-	-	-	-	609	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	468	-	-	-	48	369
Stage 1	-	-	-	-	183	-
Stage 2	-	-	-	-	511	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	468	-	-	-	46	369
Mov Cap-2 Maneuver	-	-	-	-	46	-
Stage 1	-	-	-	-	175	-
Stage 2	-	-	-	-	510	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	39.8
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	468	-	-	-	110
HCM Lane V/C Ratio	0.042	-	-	-	0.059
HCM Control Delay (s)	13	-	-	-	39.8
HCM Lane LOS	B	-	-	-	E
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	1043	1337	3	0	8
Future Vol, veh/h	6	1043	1337	3	0	8
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	7	1134	1453	3	0	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1457	0	-	0	2035	728
Stage 1	-	-	-	-	1454	-
Stage 2	-	-	-	-	581	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	470	-	-	-	51	370
Stage 1	-	-	-	-	185	-
Stage 2	-	-	-	-	528	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	470	-	-	-	50	370
Mov Cap-2 Maneuver	-	-	-	-	50	-
Stage 1	-	-	-	-	182	-
Stage 2	-	-	-	-	527	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	15
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	470	-	-	-	370
HCM Lane V/C Ratio	0.014	-	-	-	0.024
HCM Control Delay (s)	12.8	-	-	-	15
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

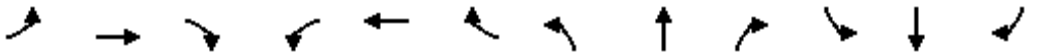
Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1041	2	1	1339	1	0
Future Vol, veh/h	1041	2	1	1339	1	0
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	125	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	1119	2	1	1440	1	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1122	0	1842	561
Stage 1	-	-	-	-	1120	-
Stage 2	-	-	-	-	722	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	630	-	68	476
Stage 1	-	-	-	-	278	-
Stage 2	-	-	-	-	447	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	629	-	68	476
Mov Cap-2 Maneuver	-	-	-	-	68	-
Stage 1	-	-	-	-	278	-
Stage 2	-	-	-	-	446	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	58.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	68	-	-	629	-
HCM Lane V/C Ratio	0.016	-	-	0.002	-
HCM Control Delay (s)	58.8	-	-	10.7	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	0	-	-	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	950	12	17	1256	85	16	38	16	44	30	68
Future Volume (veh/h)	79	950	12	17	1256	85	16	38	16	44	30	68
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1700	1673	1700	1700	1673	1700	1700	1700	1700	1700	1700	1700
Adj Flow Rate, veh/h	86	1033	11	18	1365	78	17	41	3	48	33	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	0	0	2	0	0	0	0	0	0	0
Cap, veh/h	170	2158	957	90	2000	906	326	225	16	327	175	58
Arrive On Green	0.11	0.68	0.68	0.06	0.63	0.63	0.14	0.14	0.09	0.14	0.14	0.14
Sat Flow, veh/h	1619	3180	1410	1619	3180	1440	1384	1565	115	1384	1213	404
Grp Volume(v), veh/h	86	1033	11	18	1365	78	17	0	44	48	0	44
Grp Sat Flow(s),veh/h/ln	1619	1590	1410	1619	1590	1440	1384	0	1679	1384	0	1618
Q Serve(g_s), s	2.3	7.0	0.1	0.5	12.6	1.0	0.5	0.0	1.0	1.4	0.0	1.1
Cycle Q Clear(g_c), s	2.3	7.0	0.1	0.5	12.6	1.0	1.6	0.0	1.0	2.5	0.0	1.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		0.25
Lane Grp Cap(c), veh/h	170	2158	957	90	2000	906	326	0	242	327	0	233
V/C Ratio(X)	0.51	0.48	0.01	0.20	0.68	0.09	0.05	0.00	0.18	0.15	0.00	0.19
Avail Cap(c_a), veh/h	785	3040	1347	785	3040	1376	1363	0	1501	1365	0	1446
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.1	3.5	2.3	20.4	5.4	3.3	17.7	0.0	17.1	18.1	0.0	17.0
Incr Delay (d2), s/veh	0.9	0.2	0.0	0.4	0.4	0.0	0.1	0.0	0.5	0.3	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.6	0.0	0.2	1.7	0.1	0.1	0.0	0.4	0.4	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.0	3.6	2.4	20.8	5.9	3.3	17.8	0.0	17.6	18.4	0.0	17.6
LnGrp LOS	B	A	A	C	A	A	B	A	B	B	A	B
Approach Vol, veh/h		1130			1461			61			92	
Approach Delay, s/veh		4.9			5.9			17.6			18.0	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	3.6	33.0		8.6	5.8	30.7		8.6				
Change Period (Y+Rc), s	3.0	5.5		4.5	3.0	5.5		4.5				
Max Green Setting (Gmax), s	20.0	40.0		38.0	20.0	40.0		38.0				
Max Q Clear Time (g_c+I1), s	2.5	9.0		3.6	4.3	14.6		4.5				
Green Ext Time (p_c), s	0.0	8.1		0.4	0.0	10.6		0.5				

Intersection Summary			
HCM 6th Ctrl Delay		6.1	
HCM 6th LOS		A	

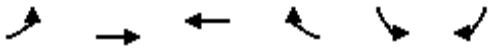
Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1005	5	3	1352	6	2
Future Vol, veh/h	1005	5	3	1352	6	2
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	140	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	1069	5	3	1438	6	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1075	0	1795	536
Stage 1	-	-	-	-	1070	-
Stage 2	-	-	-	-	725	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	656	-	73	494
Stage 1	-	-	-	-	295	-
Stage 2	-	-	-	-	446	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	655	-	73	494
Mov Cap-2 Maneuver	-	-	-	-	73	-
Stage 1	-	-	-	-	295	-
Stage 2	-	-	-	-	444	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	47.6
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	93	-	-	655	-
HCM Lane V/C Ratio	0.092	-	-	0.005	-
HCM Control Delay (s)	47.6	-	-	10.5	-
HCM Lane LOS	E	-	-	B	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	98	909	1313	102	61	42
Future Volume (veh/h)	98	909	1313	102	61	42
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.98	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1700	1673	1673	1700	1700	1700
Adj Flow Rate, veh/h	102	947	1368	91	54	55
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	2	2	0	0	0
Cap, veh/h	193	2464	2003	888	203	181
Arrive On Green	0.12	0.77	0.63	0.63	0.13	0.13
Sat Flow, veh/h	1619	3263	3263	1409	1619	1441
Grp Volume(v), veh/h	102	947	1368	91	54	55
Grp Sat Flow(s),veh/h/ln	1619	1590	1590	1409	1619	1441
Q Serve(g_s), s	2.6	4.1	12.1	1.1	1.3	1.5
Cycle Q Clear(g_c), s	2.6	4.1	12.1	1.1	1.3	1.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	193	2464	2003	888	203	181
V/C Ratio(X)	0.53	0.38	0.68	0.10	0.27	0.30
Avail Cap(c_a), veh/h	821	3182	3182	1410	1407	1252
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.9	1.6	5.2	3.2	17.1	17.2
Incr Delay (d2), s/veh	0.8	0.1	0.4	0.1	1.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.9	0.1	0.5	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	18.7	1.7	5.6	3.2	18.1	18.5
LnGrp LOS	B	A	A	A	B	B
Approach Vol, veh/h		1049	1459		109	
Approach Delay, s/veh		3.3	5.5		18.3	
Approach LOS		A	A		B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	6.3	29.5		7.4		35.7
Change Period (Y+Rc), s	3.0	5.5		4.5		5.5
Max Green Setting (Gmax), s	20.0	40.0		35.0		40.0
Max Q Clear Time (g_c+I1), s	4.6	14.1		3.5		6.1
Green Ext Time (p_c), s	0.1	9.9		0.5		7.4

Intersection Summary	
HCM 6th Ctrl Delay	5.1
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	838	132	240	1274	141	312
Future Volume (vph)	838	132	240	1274	141	312
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700
Total Lost time (s)	2.5	2.5	1.0	2.5	1.5	1.5
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3167	1398	1583	3167	1568	1403
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3167	1398	1583	3167	1568	1403
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	891	140	255	1355	150	332
RTOR Reduction (vph)	0	23	0	0	0	285
Lane Group Flow (vph)	891	117	255	1355	150	47
Confl. Bikes (#/hr)		3				
Heavy Vehicles (%)	2%	2%	2%	2%	3%	3%
Turn Type	NA	Perm	Prot	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases		2				
Actuated Green, G (s)	81.3	81.3	23.7	111.0	15.0	15.0
Effective Green, g (s)	86.3	86.3	28.7	116.0	20.0	20.0
Actuated g/C Ratio	0.62	0.62	0.20	0.83	0.14	0.14
Clearance Time (s)	7.5	7.5	6.0	7.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	2.0	2.0
Lane Grp Cap (vph)	1952	861	324	2624	224	200
v/s Ratio Prot	0.28		c0.16	c0.43	c0.10	0.03
v/s Ratio Perm		0.08				
v/c Ratio	0.46	0.14	0.79	0.52	0.67	0.24
Uniform Delay, d1	14.3	11.2	52.8	3.6	56.9	53.2
Progression Factor	1.00	1.00	0.86	1.00	1.00	1.00
Incremental Delay, d2	0.8	0.3	8.0	0.5	5.8	0.2
Delay (s)	15.1	11.6	53.3	4.1	62.6	53.5
Level of Service	B	B	D	A	E	D
Approach Delay (s)	14.6			11.9	56.3	
Approach LOS	B			B	E	

Intersection Summary			
HCM 2000 Control Delay	19.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

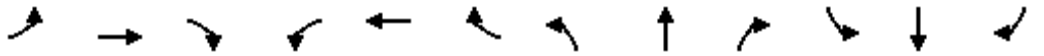
Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	1120	22	2	1489	13	6	0	6	9	0	19
Future Vol, veh/h	8	1120	22	2	1489	13	6	0	6	9	0	19
Conflicting Peds, #/hr	1	0	1	1	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	115	-	100	140	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	0	0	2	2	0	0	0	3	3	3
Mvmt Flow	9	1217	24	2	1618	14	7	0	7	10	0	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1633	0	0	1242	0	0	2049	2873	610	2250	2883	810
Stage 1	-	-	-	-	-	-	1236	1236	-	1623	1623	-
Stage 2	-	-	-	-	-	-	813	1637	-	627	1260	-
Critical Hdwy	4.14	-	-	4.1	-	-	7.5	6.5	6.9	7.56	6.56	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.56	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.56	5.56	-
Follow-up Hdwy	2.22	-	-	2.2	-	-	3.5	4	3.3	3.53	4.03	3.33
Pot Cap-1 Maneuver	393	-	-	568	-	-	33	17	442	22	16	321
Stage 1	-	-	-	-	-	-	190	250	-	106	158	-
Stage 2	-	-	-	-	-	-	343	160	-	436	238	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	393	-	-	567	-	-	30	17	442	21	16	321
Mov Cap-2 Maneuver	-	-	-	-	-	-	30	17	-	21	16	-
Stage 1	-	-	-	-	-	-	185	244	-	103	157	-
Stage 2	-	-	-	-	-	-	320	159	-	420	232	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	87.8	125.1
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	56	393	-	-	567	-	-	57
HCM Lane V/C Ratio	0.233	0.022	-	-	0.004	-	-	0.534
HCM Control Delay (s)	87.8	14.4	-	-	11.4	-	-	125.1
HCM Lane LOS	F	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0.8	0.1	-	-	0	-	-	2.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	706	356	73	13	996	1477	70	320	10	415	199	438
Future Volume (veh/h)	706	356	73	13	996	1477	70	320	10	415	199	438
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1687	1687	1687	1687	1687	1687
Adj Flow Rate, veh/h	735	371	68	14	1038	0	73	333	9	376	286	351
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	1	1	1	1	1	1
Cap, veh/h	844	1128	205	268	1016		218	432	12	713	749	714
Arrive On Green	0.09	0.14	0.14	0.17	0.32	0.00	0.14	0.14	0.10	0.22	0.22	0.22
Sat Flow, veh/h	3092	2681	486	1594	3180	1418	1606	3186	86	3213	3373	1409
Grp Volume(v), veh/h	735	218	221	14	1038	0	73	167	175	376	286	351
Grp Sat Flow(s),veh/h/ln	1546	1590	1578	1594	1590	1418	1606	1602	1670	1606	1687	1409
Q Serve(g_s), s	32.9	17.4	17.7	1.0	44.7	0.0	5.8	14.1	14.2	14.4	10.1	23.1
Cycle Q Clear(g_c), s	32.9	17.4	17.7	1.0	44.7	0.0	5.8	14.1	14.2	14.4	10.1	23.1
Prop In Lane	1.00		0.31	1.00		1.00	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	844	669	664	268	1016		218	217	227	713	749	714
V/C Ratio(X)	0.87	0.33	0.33	0.05	1.02		0.33	0.77	0.77	0.53	0.38	0.49
Avail Cap(c_a), veh/h	881	669	664	268	1016		218	217	227	872	916	784
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.3	42.4	42.5	48.9	47.6	0.0	54.8	58.4	58.5	48.0	46.3	23.1
Incr Delay (d2), s/veh	8.7	1.3	1.3	0.0	33.9	0.0	0.3	13.9	13.7	0.2	0.1	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	14.6	7.6	7.7	0.4	21.7	0.0	2.3	6.5	6.8	5.7	4.2	7.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.0	43.7	43.9	48.9	81.6	0.0	55.1	72.3	72.3	48.2	46.4	23.2
LnGrp LOS	E	D	D	D	F		E	E	E	D	D	C
Approach Vol, veh/h		1174			1052	A		415			1013	
Approach Delay, s/veh		60.2			81.1			69.3			39.1	
Approach LOS		E			F			E			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	40.3	46.6		33.1	24.9	62.0		20.0				
Change Period (Y+Rc), s	5.0	5.5		6.0	5.5	* 6.5		5.5				
Max Green Setting (Gmax), s	37.0	32.5		34.0	13.0	* 56		14.5				
Max Q Clear Time (g_c+I1), s	34.9	46.7		25.1	3.0	19.7		16.2				
Green Ext Time (p_c), s	0.4	0.0		1.9	0.0	1.4		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		61.4	
HCM 6th LOS		E	

Notes

User approved volume balancing among the lanes for turning movement.

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

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	263	0	42	0	1	0	134	2369	0	0	1010	193
Future Volume (veh/h)	263	0	42	0	1	0	134	2369	0	0	1010	193
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		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1700	1700	1700	1700	1700	1700	1700	1687	1700	1700	1687	1700
Adj Flow Rate, veh/h	268	0	14	0	1	0	137	2417	0	0	1031	188
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, %	0	0	0	0	0	0	0	1	0	0	1	0
Cap, veh/h	339	0	457	0	345	0	195	2192	0	92	1693	308
Arrive On Green	0.18	0.00	0.20	0.00	0.20	0.00	0.12	0.68	0.00	0.00	1.00	1.00
Sat Flow, veh/h	1435	0	1418	0	1700	0	1619	3289	0	1619	2697	491
Grp Volume(v), veh/h	268	0	14	0	1	0	137	2417	0	0	612	607
Grp Sat Flow(s),veh/h/ln	1435	0	1418	0	1700	0	1619	1602	0	1619	1602	1585
Q Serve(g_s), s	26.8	0.0	1.0	0.0	0.1	0.0	12.2	102.6	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	26.9	0.0	1.0	0.0	0.1	0.0	12.2	102.6	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.31
Lane Grp Cap(c), veh/h	305	0	457	0	345	0	195	2192	0	92	1006	995
V/C Ratio(X)	0.88	0.00	0.03	0.00	0.00	0.00	0.70	1.10	0.00	0.00	0.61	0.61
Avail Cap(c_a), veh/h	305	0	457	0	345	0	257	2192	0	103	1006	995
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	60.7	0.0	35.0	0.0	47.7	0.0	63.4	23.7	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	23.9	0.0	0.0	0.0	0.0	0.0	3.0	53.8	0.0	0.0	2.7	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.6	0.0	0.4	0.0	0.0	0.0	5.1	49.6	0.0	0.0	0.8	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	84.5	0.0	35.0	0.0	47.7	0.0	66.5	77.5	0.0	0.0	2.7	2.8
LnGrp LOS	F	A	D	A	D	A	E	F	A	A	A	A
Approach Vol, veh/h		282			1			2554			1219	
Approach Delay, s/veh		82.1			47.7			76.9			2.8	
Approach LOS		F			D			E			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.0	108.0		32.0	19.2	98.8		32.0
Change Period (Y+Rc), s	6.0	* 6		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	5.0	* 1E2		27.0	20.0	87.0		27.0
Max Q Clear Time (g_c+I1), s	10.0	104.6		28.9	14.2	2.0		2.1
Green Ext Time (p_c), s	0.0	0.0		0.0	0.1	2.4		0.0

Intersection Summary	
HCM 6th Ctrl Delay	54.9
HCM 6th LOS	D

Notes

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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	499	63	1244	1388	75	704
Future Volume (veh/h)	499	63	1244	1388	75	704
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1687	1687	1687	1687	1687	1687
Adj Flow Rate, veh/h	509	19	1269	1351	77	718
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1
Cap, veh/h	592	393	2167	1265	135	2436
Arrive On Green	0.19	0.19	0.90	0.92	0.08	0.76
Sat Flow, veh/h	3116	1429	3289	1429	1606	3289
Grp Volume(v), veh/h	509	19	1269	1351	77	718
Grp Sat Flow(s),veh/h/ln	1558	1429	1602	1429	1606	1602
Q Serve(g_s), s	23.7	1.5	12.7	104.2	6.9	10.4
Cycle Q Clear(g_c), s	23.7	1.5	12.7	104.2	6.9	10.4
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	592	393	2167	1265	135	2436
V/C Ratio(X)	0.86	0.05	0.59	1.07	0.57	0.29
Avail Cap(c_a), veh/h	592	393	2167	1265	203	2436
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.8	39.9	3.1	1.7	66.1	5.6
Incr Delay (d2), s/veh	11.7	0.0	1.2	45.7	1.4	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	10.2	1.4	2.6	51.5	2.9	3.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	70.5	39.9	4.3	47.4	67.5	5.9
LnGrp LOS	E	D	A	F	E	A
Approach Vol, veh/h	528		2620			795
Approach Delay, s/veh	69.4		26.5			11.8
Approach LOS	E		C			B

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	13.6	106.4		30.0		120.0
Change Period (Y+Rc), s	5.0	6.0		5.3		6.0
Max Green Setting (Gmax), s	15.0	94.0		24.7		114.0
Max Q Clear Time (g_c+I1), s	8.9	106.2		25.7		12.4
Green Ext Time (p_c), s	0.0	0.0		0.0		3.1

Intersection Summary	
HCM 6th Ctrl Delay	29.3
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	25	28	38	1269	751	29
Future Vol, veh/h	25	28	38	1269	751	29
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	200	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	26	29	40	1336	791	31

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1540	397	823	0	-	0
Stage 1	792	-	-	-	-	-
Stage 2	748	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	108	608	816	-	-	-
Stage 1	412	-	-	-	-	-
Stage 2	434	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	102	607	815	-	-	-
Mov Cap-2 Maneuver	102	-	-	-	-	-
Stage 1	391	-	-	-	-	-
Stage 2	434	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	33.3	0.3	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	815	-	182	-	-
HCM Lane V/C Ratio	0.049	-	0.307	-	-
HCM Control Delay (s)	9.6	-	33.3	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q(veh)	0.2	-	1.2	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	2503	0	0	1052
Future Vol, veh/h	0	0	2503	0	0	1052
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	2721	0	0	1143

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	3293	1361	0	0	2721	0
Stage 1	2721	-	-	-	-	-
Stage 2	572	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	7	141	-	-	151	-
Stage 1	37	-	-	-	-	-
Stage 2	534	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	7	141	-	-	151	-
Mov Cap-2 Maneuver	7	-	-	-	-	-
Stage 1	37	-	-	-	-	-
Stage 2	534	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	151	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	2632	1203	0
Future Vol, veh/h	0	0	0	2632	1203	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	0	2861	1308	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2739	654	1308	0	-	0
Stage 1	1308	-	-	-	-	-
Stage 2	1431	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	17	414	536	-	-	-
Stage 1	221	-	-	-	-	-
Stage 2	190	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	17	414	536	-	-	-
Mov Cap-2 Maneuver	17	-	-	-	-	-
Stage 1	221	-	-	-	-	-
Stage 2	190	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	536	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	1307	0	0	779
Future Vol, veh/h	0	0	1307	0	0	779
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	125	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	1421	0	0	847

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	711	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	380	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	380	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	0	-
HCM Lane LOS	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	-

MPAH Amendment Study - Villa Park Rd

Vistro File: N:\...\Villa Park_v6.vistro
Report File: N:\...\02_EXPM.pdf

Scenario 2 Exisitng PM Peak Hour
7/21/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Villa Park Rd & Wanda Rd	Signalized	ICU 2	WB Thru	0.731	-	C
7	Villa Park Rd & Center Dr	Signalized	ICU 2	WB Thru	0.511	-	A
9	Villa Park Rd & Lemon St	Signalized	ICU 2	WB Thru	0.497	-	A
10	Villa Park Rd & Hewes St	Signalized	ICU 2	WB Thru	0.605	-	B
12	Santiago Canyon Rd & Cannon St	Signalized	ICU 2	WB Thru	0.758	-	C
13	Taft Ave & Cannon St	Signalized	ICU 2	NB Thru	0.900	-	E
14	Serrano Ave & Cannon St	Signalized	ICU 2	NB Right	0.909	-	E

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Villa Park Rd & Wanda Rd

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.731

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	2	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	175.00	100.00	100.00	225.00	100.00	300.00	150.00	100.00	175.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	150	532	60	114	366	279	376	895	232	59	953	317
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	150	532	60	114	366	279	376	895	232	59	953	317
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	133	15	29	92	70	94	224	58	15	238	79
Total Analysis Volume [veh/h]	150	532	60	114	366	279	376	895	232	59	953	317
Pedestrian Volume [ped/h]	0			0			0			1		
Bicycle Volume [bicycles/h]	1			0			1			11		

Intersection Settings

Cycle Length [s]	140
Lost time [s]	7.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	4	1	6	6	5	2	2
Auxiliary Signal Groups						1,4			3,6			2,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lag	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.17	0.17	0.07	0.22	0.05	0.11	0.26	0.05	0.03	0.28	0.12
Intersection LOS	C											
Intersection V/C	0.731											

Intersection Level Of Service Report
Intersection 7: Villa Park Rd & Center Dr

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.511

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	150.00	100.00	100.00	140.00	100.00	100.00	160.00	100.00	100.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	16	38	16	44	30	68	79	950	12	17	1256	85
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	38	16	44	30	68	79	950	12	17	1256	85
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	10	4	11	8	17	20	238	3	4	314	21
Total Analysis Volume [veh/h]	16	38	16	44	30	68	79	950	12	17	1256	85
Pedestrian Volume [ped/h]	0			1			0			0		
Bicycle Volume [bicycles/h]	3			0			5			0		

Intersection Settings

Cycle Length [s]	111
Lost time [s]	6.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.03	0.03	0.03	0.06	0.06	0.05	0.28	0.01	0.01	0.37	0.05
Intersection LOS	A											
Intersection V/C	0.511											

Intersection Level Of Service Report
Intersection 9: Villa Park Rd & Lemon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.497

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1
Entry Pocket Length [ft]	115.00	100.00	180.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

Volumes

Name						
Base Volume Input [veh/h]	61	42	98	909	1313	102
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	61	42	98	909	1313	102
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	11	25	227	328	26
Total Analysis Volume [veh/h]	61	42	98	909	1313	102
Pedestrian Volume [ped/h]	1		1		0	
Bicycle Volume [bicycles/h]	2		2		0	

Intersection Settings

Cycle Length [s]	108
Lost time [s]	5.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	4	0	1	6	2	0
Auxiliary Signal Groups						
Lead / Lag	Lag	-	Lead	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.03	0.06	0.27	0.39	0.06
Intersection LOS	A					
Intersection V/C	0.497					

Intersection Level Of Service Report
Intersection 10: Villa Park Rd & Hewes St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.605

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	215.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	141	0	312	0	6	0	0	838	132	240	1274	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	141	0	312	0	6	0	0	838	132	240	1274	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	0	78	0	2	0	0	210	33	60	319	0
Total Analysis Volume [veh/h]	141	0	312	0	6	0	0	838	132	240	1274	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			0			6			0		

Intersection Settings

Cycle Length [s]	140
Lost time [s]	7.00

Phasing & Timing

Control Type	Split	Permiss	Split	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	4	0	0	0	8	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.00	0.18	0.00	0.00	0.00	0.00	0.25	0.08	0.14	0.37	0.00
Intersection LOS	B											
Intersection V/C	0.605											

Generated with PTV VISTRO

Version 2022 (SP 0-2)

Intersection Level Of Service Report

Intersection 12: Santiago Canyon Rd & Cannon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.758

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	2	0	1	2	0	0	1	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	375.00	100.00	250.00	325.00	100.00	100.00	150.00	100.00	450.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	70	320	10	415	199	438	706	356	73	13	996	1477
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	320	10	415	199	438	706	356	73	13	996	1477
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	80	3	104	50	110	177	89	18	3	249	369
Total Analysis Volume [veh/h]	70	320	10	415	199	438	706	356	73	13	996	1477
Pedestrian Volume [ped/h]	1			0			1			0		
Bicycle Volume [bicycles/h]	3			3			1			1		

Intersection Settings

Cycle Length [s]	140
Lost time [s]	7.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna
Signal Group	0	8	0	0	4	4	1	6	0	5	2	0
Auxiliary Signal Groups						1,4						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.10	0.10	0.12	0.06	0.05	0.21	0.13	0.13	0.01	0.29	0.00
Intersection LOS	C											
Intersection V/C	0.758											

Intersection Level Of Service Report
Intersection 13: Taft Ave & Cannon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	E
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.900

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	225.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	134	2369	0	0	1010	193	263	0	42	0	1	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	134	2369	0	0	1010	193	263	0	42	0	1	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	592	0	0	253	48	66	0	11	0	0	0
Total Analysis Volume [veh/h]	134	2369	0	0	1010	193	263	0	42	0	1	0
Pedestrian Volume [ped/h]	1			0			1			0		
Bicycle Volume [bicycles/h]	2			0			2			0		

Intersection Settings

Cycle Length [s]	150
Lost time [s]	8.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	4	0	4	0
Auxiliary Signal Groups									4,5			
Lead / Lag	Lead	-	-	Lag	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.70	0.00	0.00	0.35	0.35	0.15	0.00	0.00	0.00	0.00	0.00
Intersection LOS	E											
Intersection V/C	0.900											

Intersection Level Of Service Report
Intersection 14: Serrano Ave & Cannon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	E
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.909

Intersection Setup

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	150.00	275.00	100.00	350.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name						
Base Volume Input [veh/h]	1244	1388	75	704	499	63
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1244	1388	75	704	499	63
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	311	347	19	176	125	16
Total Analysis Volume [veh/h]	1244	1388	75	704	499	63
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

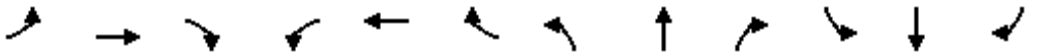
Cycle Length [s]	150
Lost time [s]	8.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Split	Overlap
Signal Group	2	2	1	6	4	4
Auxiliary Signal Groups		2,4				1,4
Lead / Lag	-	-	Lead	-	Lag	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.37	0.67	0.04	0.21	0.15	0.00
Intersection LOS	E					
Intersection V/C	0.909					



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	310	980	310	60	1140	160	230	460	130	200	390	380
Future Volume (veh/h)	310	980	310	60	1140	160	230	460	130	200	390	380
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	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1634	1634	1634	1634	1634	1634	1687	1687	1687	1687	1687	1687
Adj Flow Rate, veh/h	326	1032	255	63	1200	112	242	484	117	211	411	360
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, %	5	5	5	5	5	5	1	1	1	1	1	1
Cap, veh/h	323	2154	1173	108	2037	1138	245	710	170	264	471	560
Arrive On Green	0.11	0.69	0.69	0.07	0.66	0.66	0.15	0.28	0.25	0.16	0.28	0.28
Sat Flow, veh/h	3018	3104	1383	1556	3104	1384	1606	2545	611	1606	1687	1425
Grp Volume(v), veh/h	326	1032	255	63	1200	112	242	303	298	211	411	360
Grp Sat Flow(s),veh/h/ln	1509	1552	1383	1556	1552	1384	1606	1602	1554	1606	1687	1425
Q Serve(g_s), s	13.9	19.8	1.6	5.1	28.2	2.0	19.5	21.9	22.3	16.4	30.2	28.4
Cycle Q Clear(g_c), s	13.9	19.8	1.6	5.1	28.2	2.0	19.5	21.9	22.3	16.4	30.2	28.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.39	1.00		1.00
Lane Grp Cap(c), veh/h	323	2154	1173	108	2037	1138	245	447	433	264	471	560
V/C Ratio(X)	1.01	0.48	0.22	0.58	0.59	0.10	0.99	0.68	0.69	0.80	0.87	0.64
Avail Cap(c_a), veh/h	323	2154	1173	108	2037	1138	245	447	433	271	477	566
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.0	9.1	6.0	58.7	12.5	2.2	55.0	41.7	42.5	52.3	44.7	38.1
Incr Delay (d2), s/veh	52.7	0.8	0.4	5.4	1.3	0.2	54.2	3.4	3.8	14.1	15.4	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.6	6.2	2.1	2.1	9.2	0.4	11.5	8.9	8.9	7.6	14.5	9.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	110.7	9.9	6.4	64.1	13.8	2.4	109.2	45.1	46.3	66.3	60.1	39.9
LnGrp LOS	F	A	A	E	B	A	F	D	D	E	E	D
Approach Vol, veh/h		1613			1375			843			982	
Approach Delay, s/veh		29.7			15.1			63.9			54.0	
Approach LOS		C			B			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	88.7	22.5	38.0	10.0	93.7	22.4	38.0
Change Period (Y+Rc), s	4.0	5.5	5.5	* 5.5	4.0	5.5	4.0	5.5
Max Green Setting (Gmax), s	11.0	50.0	17.0	* 33	6.0	55.0	19.0	31.0
Max Q Clear Time (g_c+I1), s	15.9	30.2	21.5	32.2	7.1	21.8	18.4	24.3
Green Ext Time (p_c), s	0.0	3.2	0.0	0.3	0.0	2.8	0.0	0.8

Intersection Summary	
HCM 6th Ctrl Delay	36.5
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

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

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	1300	1310	0	10	10
Future Vol, veh/h	10	1300	1310	0	10	10
Conflicting Peds, #/hr	5	0	0	5	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	70	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	5	5	0	0	0
Mvmt Flow	11	1368	1379	0	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1384	0	-	0	2090	695
Stage 1	-	-	-	-	1384	-
Stage 2	-	-	-	-	706	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	501	-	-	-	46	389
Stage 1	-	-	-	-	201	-
Stage 2	-	-	-	-	456	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	499	-	-	-	45	387
Mov Cap-2 Maneuver	-	-	-	-	45	-
Stage 1	-	-	-	-	196	-
Stage 2	-	-	-	-	454	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	64.4
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	499	-	-	-	81
HCM Lane V/C Ratio	0.021	-	-	-	0.26
HCM Control Delay (s)	12.4	-	-	-	64.4
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0.1	-	-	-	0.9

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1300	10	10	1300	10	10
Future Vol, veh/h	1300	10	10	1300	10	10
Conflicting Peds, #/hr	0	5	5	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	0	0	5	0	0
Mvmt Flow	1368	11	11	1368	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1384	0	2079	689
Stage 1	-	-	-	-	1373	-
Stage 2	-	-	-	-	706	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	501	-	47	393
Stage 1	-	-	-	-	204	-
Stage 2	-	-	-	-	456	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	499	-	46	391
Mov Cap-2 Maneuver	-	-	-	-	46	-
Stage 1	-	-	-	-	203	-
Stage 2	-	-	-	-	446	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	63.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	82	-	-	499	-
HCM Lane V/C Ratio	0.257	-	-	0.021	-
HCM Control Delay (s)	63.4	-	-	12.4	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	0.9	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	1290	1290	10	10	20
Future Vol, veh/h	20	1290	1290	10	10	20
Conflicting Peds, #/hr	5	0	0	5	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	5	5	0	0	0
Mvmt Flow	21	1358	1358	11	11	21

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1374	0	-	0	2084	684
Stage 1	-	-	-	-	1363	-
Stage 2	-	-	-	-	721	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	506	-	-	-	47	396
Stage 1	-	-	-	-	207	-
Stage 2	-	-	-	-	448	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	504	-	-	-	45	394
Mov Cap-2 Maneuver	-	-	-	-	45	-
Stage 1	-	-	-	-	197	-
Stage 2	-	-	-	-	446	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	50.4
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	504	-	-	-	110
HCM Lane V/C Ratio	0.042	-	-	-	0.287
HCM Control Delay (s)	12.5	-	-	-	50.4
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0.1	-	-	-	1.1

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	1290	1290	0	10	10
Future Vol, veh/h	10	1290	1290	0	10	10
Conflicting Peds, #/hr	5	0	0	5	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	5	5	0	0	0
Mvmt Flow	11	1358	1358	0	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1363	0	-	0	2064	684
Stage 1	-	-	-	-	1363	-
Stage 2	-	-	-	-	701	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	511	-	-	-	48	396
Stage 1	-	-	-	-	207	-
Stage 2	-	-	-	-	459	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	509	-	-	-	46	394
Mov Cap-2 Maneuver	-	-	-	-	46	-
Stage 1	-	-	-	-	201	-
Stage 2	-	-	-	-	457	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	63.4
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	509	-	-	-	82
HCM Lane V/C Ratio	0.021	-	-	-	0.257
HCM Control Delay (s)	12.2	-	-	-	63.4
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0.1	-	-	-	0.9

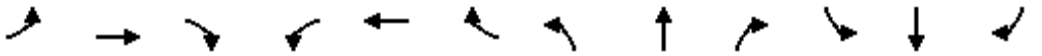
Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1290	10	10	1290	10	10
Future Vol, veh/h	1290	10	10	1290	10	10
Conflicting Peds, #/hr	0	5	5	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	125	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	0	0	5	0	0
Mvmt Flow	1358	11	11	1358	0	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1374	0	2064	684
Stage 1	-	-	-	-	1363	-
Stage 2	-	-	-	-	701	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	506	-	48	396
Stage 1	-	-	-	-	207	-
Stage 2	-	-	-	-	459	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	504	-	47	394
Mov Cap-2 Maneuver	-	-	-	-	47	-
Stage 1	-	-	-	-	206	-
Stage 2	-	-	-	-	449	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	59.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	86	-	-	504	-
HCM Lane V/C Ratio	0.239	-	-	0.021	-
HCM Control Delay (s)	59.5	-	-	12.3	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	0.9	-	-	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	1110	120	50	1100	50	60	110	60	50	120	140
Future Volume (veh/h)	70	1110	120	50	1100	50	60	110	60	50	120	140
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		1.00	0.99		0.99	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	1700	1634	1700	1700	1634	1700	1700	1700	1700	1700	1700	1700
Adj Flow Rate, veh/h	74	1168	104	53	1158	33	63	116	43	53	126	105
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, %	0	5	0	0	5	0	0	0	0	0	0	0
Cap, veh/h	143	1676	760	116	1624	751	322	343	127	391	246	205
Arrive On Green	0.09	0.54	0.54	0.07	0.52	0.52	0.29	0.29	0.25	0.29	0.29	0.29
Sat Flow, veh/h	1619	3104	1408	1619	3104	1435	1161	1179	437	1239	848	706
Grp Volume(v), veh/h	74	1168	104	53	1158	33	63	0	159	53	0	231
Grp Sat Flow(s),veh/h/ln	1619	1552	1408	1619	1552	1435	1161	0	1616	1239	0	1554
Q Serve(g_s), s	2.5	15.6	2.1	1.8	16.0	0.6	2.7	0.0	4.4	2.0	0.0	7.0
Cycle Q Clear(g_c), s	2.5	15.6	2.1	1.8	16.0	0.6	9.7	0.0	4.4	6.4	0.0	7.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.27	1.00		0.45
Lane Grp Cap(c), veh/h	143	1676	760	116	1624	751	322	0	470	391	0	452
V/C Ratio(X)	0.52	0.70	0.14	0.46	0.71	0.04	0.20	0.00	0.34	0.14	0.00	0.51
Avail Cap(c_a), veh/h	630	2382	1080	630	2382	1101	818	0	1160	920	0	1116
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.5	9.5	6.4	25.1	10.2	6.5	20.7	0.0	16.0	18.2	0.0	16.6
Incr Delay (d2), s/veh	1.1	0.5	0.1	1.0	0.6	0.0	0.4	0.0	0.6	0.2	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	3.7	0.5	0.6	3.9	0.1	0.7	0.0	1.6	0.5	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.6	10.1	6.5	26.1	10.8	6.6	21.1	0.0	16.6	18.5	0.0	17.9
LnGrp LOS	C	B	A	C	B	A	C	A	B	B	A	B
Approach Vol, veh/h		1346			1244			222			284	
Approach Delay, s/veh		10.7			11.3			17.9			18.0	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.1	32.7		18.5	6.1	31.7		18.5				
Change Period (Y+Rc), s	3.0	5.5		4.5	3.0	5.5		4.5				
Max Green Setting (Gmax), s	20.0	40.0		38.0	20.0	40.0		38.0				
Max Q Clear Time (g_c+I1), s	3.8	17.6		11.7	4.5	18.0		9.0				
Green Ext Time (p_c), s	0.0	8.0		1.7	0.0	8.3		2.4				

Intersection Summary			
HCM 6th Ctrl Delay		12.1	
HCM 6th LOS		B	

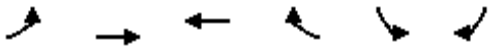
Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1210	10	10	1190	10	10
Future Vol, veh/h	1210	10	10	1190	10	10
Conflicting Peds, #/hr	0	5	5	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	140	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	0	0	5	0	0
Mvmt Flow	1274	11	11	1253	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1290	0	1928	642
Stage 1	-	-	-	-	1279	-
Stage 2	-	-	-	-	649	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	544	-	60	422
Stage 1	-	-	-	-	229	-
Stage 2	-	-	-	-	487	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	541	-	59	420
Mov Cap-2 Maneuver	-	-	-	-	59	-
Stage 1	-	-	-	-	228	-
Stage 2	-	-	-	-	477	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	48.7
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	103	-	-	541	-
HCM Lane V/C Ratio	0.204	-	-	0.019	-
HCM Control Delay (s)	48.7	-	-	11.8	-
HCM Lane LOS	E	-	-	B	-
HCM 95th %tile Q(veh)	0.7	-	-	0.1	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	70	1150	1160	110	120	40
Future Volume (veh/h)	70	1150	1160	110	120	40
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1700	1634	1634	1700	1700	1700
Adj Flow Rate, veh/h	74	1211	1221	96	84	87
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	5	5	0	0	0
Cap, veh/h	161	2256	1862	842	271	241
Arrive On Green	0.10	0.73	0.60	0.60	0.17	0.17
Sat Flow, veh/h	1619	3186	3186	1404	1619	1441
Grp Volume(v), veh/h	74	1211	1221	96	84	87
Grp Sat Flow(s),veh/h/ln	1619	1552	1552	1404	1619	1441
Q Serve(g_s), s	1.7	7.1	10.5	1.2	1.8	2.2
Cycle Q Clear(g_c), s	1.7	7.1	10.5	1.2	1.8	2.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	161	2256	1862	842	271	241
V/C Ratio(X)	0.46	0.54	0.66	0.11	0.31	0.36
Avail Cap(c_a), veh/h	876	3312	3312	1498	1499	1334
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.2	2.5	5.3	3.5	14.8	14.9
Incr Delay (d2), s/veh	0.8	0.2	0.4	0.1	0.9	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.1	0.8	0.1	0.6	0.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	17.9	2.7	5.7	3.5	15.7	16.2
LnGrp LOS	B	A	A	A	B	B
Approach Vol, veh/h		1285	1317		171	
Approach Delay, s/veh		3.6	5.6		16.0	
Approach LOS		A	A		B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	5.1	26.6		8.8		31.7
Change Period (Y+Rc), s	3.0	5.5		4.5		5.5
Max Green Setting (Gmax), s	20.0	40.0		35.0		40.0
Max Q Clear Time (g_c+I1), s	3.7	12.5		4.2		9.1
Green Ext Time (p_c), s	0.0	8.6		0.8		10.2

Intersection Summary	
HCM 6th Ctrl Delay	5.3
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1050	220	700	1060	210	310
Future Volume (vph)	1050	220	700	1060	210	310
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700
Total Lost time (s)	2.5	2.5	1.0	2.5	1.5	1.5
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3076	1354	1538	3076	1568	1403
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3076	1354	1538	3076	1568	1403
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1105	232	737	1116	221	326
RTOR Reduction (vph)	0	39	0	0	0	291
Lane Group Flow (vph)	1105	193	737	1116	221	35
Confl. Peds. (#/hr)		2			1	
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	5%	5%	5%	5%	3%	3%
Turn Type	NA	Perm	Prot	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases		2				
Actuated Green, G (s)	46.7	46.7	56.0	108.7	10.5	10.5
Effective Green, g (s)	51.7	51.7	61.0	113.7	15.5	15.5
Actuated g/C Ratio	0.36	0.36	0.42	0.78	0.11	0.11
Clearance Time (s)	7.5	7.5	6.0	7.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	2.0	2.0
Lane Grp Cap (vph)	1096	482	647	2412	167	149
v/s Ratio Prot	c0.36		c0.48	0.36	c0.14	0.02
v/s Ratio Perm		0.14				
v/c Ratio	1.01	0.40	1.14	0.46	1.32	0.23
Uniform Delay, d1	46.6	35.0	42.0	5.3	64.8	59.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	29.2	2.5	80.3	0.6	181.0	0.3
Delay (s)	75.9	37.5	122.3	5.9	245.7	59.6
Level of Service	E	D	F	A	F	E
Approach Delay (s)	69.2			52.2	134.8	
Approach LOS	E			D	F	

Intersection Summary			
HCM 2000 Control Delay	70.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	98.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	20.3

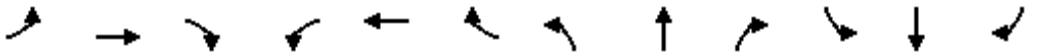
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	70	1250	40	10	1640	100	10	10	30	30	0	110
Future Vol, veh/h	70	1250	40	10	1640	100	10	10	30	30	0	110
Conflicting Peds, #/hr	5	0	5	5	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	115	-	100	140	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	5	5	0	0	5	5	0	0	0	3	3	3
Mvmt Flow	74	1316	42	11	1726	105	11	11	32	32	0	116

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1836	0	0	1363	0	0	2354	3327	663	2565	3264	868
Stage 1	-	-	-	-	-	-	1469	1469	-	1753	1753	-
Stage 2	-	-	-	-	-	-	885	1858	-	812	1511	-
Critical Hdwy	4.2	-	-	4.1	-	-	7.5	6.5	6.9	7.56	6.56	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.56	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.56	5.56	-
Follow-up Hdwy	2.25	-	-	2.2	-	-	3.5	4	3.3	3.53	4.03	3.33
Pot Cap-1 Maneuver	316	-	-	511	-	-	19	~ 8	409	~ 13	9	294
Stage 1	-	-	-	-	-	-	136	194	-	88	136	-
Stage 2	-	-	-	-	-	-	310	125	-	337	180	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	314	-	-	509	-	-	~ 9	~ 6	407	-	7	293
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 9	~ 6	-	-	7	-
Stage 1	-	-	-	-	-	-	103	147	-	67	132	-
Stage 2	-	-	-	-	-	-	183	122	-	221	137	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.1	$ 1309.1	
HCM LOS			F	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	18	314	-	-	509	-	-	-
HCM Lane V/C Ratio	2.924	0.235	-	-	0.021	-	-	-
HCM Control Delay (s)	$ 1309.1	19.9	-	-	12.2	-	-	-
HCM Lane LOS	F	C	-	-	B	-	-	-
HCM 95th %tile Q(veh)	7.1	0.9	-	-	0.1	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	400	810	100	20	560	500	150	190	40	1300	480	1040
Future Volume (veh/h)	400	810	100	20	560	500	150	190	40	1300	480	1040
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1634	1634	1634	1660	1660	1660	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	412	835	96	21	577	0	155	196	23	1366	459	1013
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, %	5	5	5	3	3	3	2	2	2	2	2	2
Cap, veh/h	596	994	114	106	724		167	301	35	2003	701	880
Arrive On Green	0.20	0.35	0.31	0.07	0.23	0.00	0.10	0.10	0.05	0.42	0.42	0.42
Sat Flow, veh/h	3018	2800	322	1581	3154	1407	1594	2865	332	4781	1673	1412
Grp Volume(v), veh/h	412	463	468	21	577	0	155	108	111	1366	459	1013
Grp Sat Flow(s),veh/h/ln	1509	1552	1570	1581	1577	1407	1594	1590	1607	1594	1673	1412
Q Serve(g_s), s	12.7	27.4	27.5	1.3	17.2	0.0	9.6	6.5	6.7	23.2	22.0	41.9
Cycle Q Clear(g_c), s	12.7	27.4	27.5	1.3	17.2	0.0	9.6	6.5	6.7	23.2	22.0	41.9
Prop In Lane	1.00		0.21	1.00		1.00	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	596	551	557	106	724		167	167	169	2003	701	880
V/C Ratio(X)	0.69	0.84	0.84	0.20	0.80		0.93	0.64	0.66	0.68	0.65	1.15
Avail Cap(c_a), veh/h	860	594	601	150	724		167	167	169	2003	701	880
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.3	29.6	30.1	44.1	36.3	0.0	44.4	43.0	43.5	23.6	23.3	18.9
Incr Delay (d2), s/veh	0.5	9.0	9.0	0.3	5.7	0.0	47.8	6.5	7.4	1.9	4.7	81.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	10.7	11.0	0.5	6.8	0.0	5.9	2.8	3.0	8.4	8.9	36.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.8	38.7	39.1	44.4	42.1	0.0	92.2	49.5	50.9	25.5	28.0	99.9
LnGrp LOS	D	D	D	D	D		F	D	D	C	C	F
Approach Vol, veh/h		1343			598	A		374			2838	
Approach Delay, s/veh		38.6			42.2			67.6			52.5	
Approach LOS		D			D			E			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	21.2	24.0		43.8	7.7	37.5		11.0				
Change Period (Y+Rc), s	5.0	5.5		6.0	5.5	* 6.5		5.5				
Max Green Setting (Gmax), s	25.0	14.8		32.7	5.0	* 34		5.5				
Max Q Clear Time (g_c+I1), s	15.7	19.2		43.9	3.3	29.5		11.6				
Green Ext Time (p_c), s	0.6	0.0		0.0	0.0	1.5		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			48.7									
HCM 6th LOS			D									

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

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

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	10	110	10	10	10	70	1010	10	10	2700	230
Future Volume (veh/h)	150	10	110	10	10	10	70	1010	10	10	2700	230
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		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1700	1700	1700	1700	1700	1700	1700	1673	1700	1700	1673	1700
Adj Flow Rate, veh/h	153	10	69	10	10	3	71	1031	10	10	2755	233
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, %	0	0	0	0	0	0	0	2	0	0	2	0
Cap, veh/h	168	8	348	30	24	4	111	3359	33	74	2087	174
Arrive On Green	0.15	0.18	0.18	0.15	0.18	0.18	0.07	0.72	0.73	0.05	0.70	0.70
Sat Flow, veh/h	729	48	1408	0	139	21	1619	4666	45	1619	2965	247
Grp Volume(v), veh/h	163	0	69	23	0	0	71	673	368	10	1456	1532
Grp Sat Flow(s),veh/h/ln	776	0	1408	160	0	0	1619	1523	1665	1619	1590	1622
Q Serve(g_s), s	0.0	0.0	6.8	0.0	0.0	0.0	7.5	13.9	13.9	1.0	123.2	123.2
Cycle Q Clear(g_c), s	27.0	0.0	6.8	27.0	0.0	0.0	7.5	13.9	13.9	1.0	123.2	123.2
Prop In Lane	0.94		1.00	0.43		0.13	1.00		0.03	1.00		0.15
Lane Grp Cap(c), veh/h	160	0	348	54	0	0	111	2193	1199	74	1119	1142
V/C Ratio(X)	1.02	0.00	0.20	0.42	0.00	0.00	0.64	0.31	0.31	0.14	1.30	1.34
Avail Cap(c_a), veh/h	160	0	348	54	0	0	111	2193	1199	83	1119	1142
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	75.7	0.0	52.3	62.8	0.0	0.0	79.4	8.8	8.8	80.2	25.9	25.9
Incr Delay (d2), s/veh	76.9	0.0	0.3	5.2	0.0	0.0	9.2	0.4	0.7	0.3	141.9	159.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.8	0.0	2.5	1.0	0.0	0.0	3.4	4.4	5.0	0.4	85.1	92.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	152.5	0.0	52.6	68.0	0.0	0.0	88.6	9.2	9.5	80.5	167.8	185.8
LnGrp LOS	F	A	D	E	A	A	F	A	A	F	F	F
Approach Vol, veh/h		232			23			1112			2998	
Approach Delay, s/veh		122.8			68.0			14.3			176.7	
Approach LOS		F			E			B			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.0	133.0		32.0	13.0	130.0		32.0
Change Period (Y+Rc), s	6.0	* 6		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	5.0	* 1.3E2		27.0	8.0	124.0		27.0
Max Q Clear Time (g_c+I1), s	3.0	15.9		29.0	9.5	125.2		29.0
Green Ext Time (p_c), s	0.0	2.1		0.0	0.0	0.0		0.0

Intersection Summary	
HCM 6th Ctrl Delay	131.9
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1170	150	800	370	60	1770
Future Volume (veh/h)	1170	150	800	370	60	1770
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	1194	102	816	325	61	1806
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	1187	689	1498	2167	142	1800
Arrive On Green	0.38	0.40	0.47	0.47	0.09	0.57
Sat Flow, veh/h	3092	1418	3263	2496	1594	3263
Grp Volume(v), veh/h	1194	102	816	325	61	1806
Grp Sat Flow(s),veh/h/ln	1546	1418	1590	1248	1594	1590
Q Serve(g_s), s	38.4	4.0	18.3	2.0	3.6	56.6
Cycle Q Clear(g_c), s	38.4	4.0	18.3	2.0	3.6	56.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	1187	689	1498	2167	142	1800
V/C Ratio(X)	1.01	0.15	0.54	0.15	0.43	1.00
Avail Cap(c_a), veh/h	1187	689	1498	2167	159	1800
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.8	14.2	18.8	1.0	43.1	21.7
Incr Delay (d2), s/veh	27.5	0.0	1.4	0.1	0.8	22.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.8	4.3	6.4	2.1	1.4	23.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	58.3	14.3	20.2	1.1	43.9	43.8
LnGrp LOS	F	B	C	A	D	F
Approach Vol, veh/h	1296		1141			1867
Approach Delay, s/veh	54.8		14.8			43.8
Approach LOS	D		B			D

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	9.9	49.1		41.0		59.0
Change Period (Y+Rc), s	5.0	6.0		5.3		6.0
Max Green Setting (Gmax), s	6.3	42.0		35.7		53.0
Max Q Clear Time (g_c+I1), s	5.6	20.3		40.4		58.6
Green Ext Time (p_c), s	0.0	4.2		0.0		0.0

Intersection Summary	
HCM 6th Ctrl Delay	39.4
HCM 6th LOS	D

Intersection	
Int Delay, s/veh	16.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	60	30	920	1770	60
Future Vol, veh/h	40	60	30	920	1770	60
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	200	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	41	61	31	939	1806	61

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2343	908	1872	0	-	0
Stage 1	1811	-	-	-	-	-
Stage 2	532	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	~ 31	282	326	-	-	-
Stage 1	118	-	-	-	-	-
Stage 2	559	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 28	281	324	-	-	-
Mov Cap-2 Maneuver	~ 28	-	-	-	-	-
Stage 1	106	-	-	-	-	-
Stage 2	556	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 474.9	0.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	324	-	61	-	-
HCM Lane V/C Ratio	0.094	-	1.673	-	-
HCM Control Delay (s)	17.3	-	$ 474.9	-	-
HCM Lane LOS	C	-	F	-	-
HCM 95th %tile Q(veh)	0.3	-	9.3	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	1090	0	0	2820
Future Vol, veh/h	0	0	1090	0	0	2820
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	0	0	1185	0	0	3065

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2718	593	0	0	1185	0
Stage 1	1185	-	-	-	-	-
Stage 2	1533	-	-	-	-	-
Critical Hdwy	6.25	7.1	-	-	5.3	-
Critical Hdwy Stg 1	6.6	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.65	3.9	-	-	3.1	-
Pot Cap-1 Maneuver	26	388	-	-	324	-
Stage 1	193	-	-	-	-	-
Stage 2	164	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	26	388	-	-	324	-
Mov Cap-2 Maneuver	26	-	-	-	-	-
Stage 1	193	-	-	-	-	-
Stage 2	164	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	324	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	1170	2940	0
Future Vol, veh/h	0	0	0	1170	2940	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	0	0	0	1272	3196	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	3705	1598	3196	0	-	0
Stage 1	3196	-	-	-	-	-
Stage 2	509	-	-	-	-	-
Critical Hdwy	6.25	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.65	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	6	97	98	-	-	-
Stage 1	19	-	-	-	-	-
Stage 2	541	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	6	97	98	-	-	-
Mov Cap-2 Maneuver	6	-	-	-	-	-
Stage 1	19	-	-	-	-	-
Stage 2	541	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	98	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	950	0	0	1830
Future Vol, veh/h	0	0	950	0	0	1830
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	125	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	0	0	1033	0	0	1989

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	517	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	509	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	509	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	0	-
HCM Lane LOS	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	-

MPAH Amendment Study - Villa Park Rd

Vistro File: N:\...\Villa Park_v6.vistro — Scenario 3 Future AM Peak Hour

Report File: N:\...\03_FYNoImprovementAM.pdf — 7/21/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Villa Park Rd & Wanda Rd	Signalized	ICU 2	WB Thru	0.836	-	D
7	Villa Park Rd & Center Dr	Signalized	ICU 2	EB Thru	0.585	-	A
9	Villa Park Rd & Lemon St	Signalized	ICU 2	WB Thru	0.450	-	A
10	Villa Park Rd & Hewes St	Signalized	ICU 2	WB Left	0.955	-	E
12	Santiago Canyon Rd & Cannon St	Signalized	ICU 2	SB Right	0.914	-	E
13	Taft Ave & Cannon St	Signalized	ICU 2	SB Thru	1.064	-	F
14	Serrano Ave & Cannon St	Signalized	ICU 2	SB Thru	0.910	-	E

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Villa Park Rd & Wanda Rd

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.836

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	2	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	175.00	100.00	100.00	225.00	100.00	300.00	150.00	100.00	175.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	230	460	130	200	390	380	310	980	310	60	1140	160
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	230	460	130	200	390	380	310	980	310	60	1140	160
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	58	115	33	50	98	95	78	245	78	15	285	40
Total Analysis Volume [veh/h]	230	460	130	200	390	380	310	980	310	60	1140	160
Pedestrian Volume [ped/h]	3			0			3			10		
Bicycle Volume [bicycles/h]	0			0			2			8		

Intersection Settings

Cycle Length [s]	130
Lost time [s]	7.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	4	1	6	6	5	2	2
Auxiliary Signal Groups						1,4			3,6			2,7
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.17	0.17	0.12	0.23	0.13	0.09	0.29	0.05	0.04	0.34	0.00
Intersection LOS	D											
Intersection V/C	0.836											

Intersection Level Of Service Report
Intersection 7: Villa Park Rd & Center Dr

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.585

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	150.00	100.00	100.00	140.00	100.00	100.00	160.00	100.00	100.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	60	110	60	50	120	140	70	1110	120	50	1100	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	110	60	50	120	140	70	1110	120	50	1100	50
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	28	15	13	30	35	18	278	30	13	275	13
Total Analysis Volume [veh/h]	60	110	60	50	120	140	70	1110	120	50	1100	50
Pedestrian Volume [ped/h]	1			4			9			1		
Bicycle Volume [bicycles/h]	3			0			1			0		

Intersection Settings

Cycle Length [s]	111
Lost time [s]	6.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.10	0.10	0.03	0.15	0.15	0.04	0.33	0.07	0.03	0.32	0.03
Intersection LOS	A											
Intersection V/C	0.585											

Intersection Level Of Service Report
Intersection 9: Villa Park Rd & Lemon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.450

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1
Entry Pocket Length [ft]	115.00	100.00	180.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

Volumes

Name						
Base Volume Input [veh/h]	120	40	70	1150	1160	110
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	120	40	70	1150	1160	110
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	10	18	288	290	28
Total Analysis Volume [veh/h]	120	40	70	1150	1160	110
Pedestrian Volume [ped/h]	5		5		0	
Bicycle Volume [bicycles/h]	2		2		0	

Intersection Settings

Cycle Length [s]	108
Lost time [s]	5.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	4	0	1	6	2	0
Auxiliary Signal Groups						
Lead / Lag	Lag	-	Lead	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.05	0.04	0.34	0.34	0.06
Intersection LOS	A					
Intersection V/C	0.450					

Intersection Level Of Service Report
Intersection 10: Villa Park Rd & Hewes St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	E
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.955

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	215.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	210	0	310	0	1	0	0	1050	220	700	1060	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	210	0	310	0	1	0	0	1050	220	700	1060	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	53	0	78	0	0	0	0	263	55	175	265	0
Total Analysis Volume [veh/h]	210	0	310	0	1	0	0	1050	220	700	1060	0
Pedestrian Volume [ped/h]	2			0			1			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Cycle Length [s]	130
Lost time [s]	7.00

Phasing & Timing

Control Type	Split	Permiss	Split	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	4	0	0	0	8	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.00	0.18	0.00	0.00	0.00	0.00	0.31	0.13	0.41	0.31	0.00
Intersection LOS	E											
Intersection V/C	0.955											

Generated with PTV VISTRO

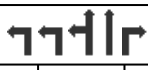
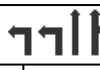
Version 2022 (SP 0-2)

Intersection Level Of Service Report

Intersection 12: Santiago Canyon Rd & Cannon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	E
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.914

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	2	0	1	2	0	0	1	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	375.00	100.00	250.00	325.00	100.00	100.00	150.00	100.00	450.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	150	190	40	1300	480	1040	400	810	100	20	560	500
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	150	190	40	1300	480	1040	400	810	100	20	560	500
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	48	10	325	120	260	100	203	25	5	140	125
Total Analysis Volume [veh/h]	150	190	40	1300	480	1040	400	810	100	20	560	500
Pedestrian Volume [ped/h]	0			0			6			0		
Bicycle Volume [bicycles/h]	3			0			0			1		

Intersection Settings

Cycle Length [s]	130
Lost time [s]	7.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna
Signal Group	0	8	0	0	4	4	1	6	0	5	2	0
Auxiliary Signal Groups						1,4						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lag	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.07	0.07	0.25	0.26	0.49	0.12	0.27	0.27	0.01	0.16	0.00
Intersection LOS	E											
Intersection V/C	0.914											

Intersection Level Of Service Report
Intersection 13: Taft Ave & Cannon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	1.064

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	225.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	70	1010	10	10	2700	230	150	10	110	10	10	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	1010	10	10	2700	230	150	10	110	10	10	10
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	253	3	3	675	58	38	3	28	3	3	3
Total Analysis Volume [veh/h]	70	1010	10	10	2700	230	150	10	110	10	10	10
Pedestrian Volume [ped/h]	5			0			5			0		
Bicycle Volume [bicycles/h]	2			0			2			0		

Intersection Settings

Cycle Length [s]	175
Lost time [s]	9.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	4	0	4	0
Auxiliary Signal Groups									4,5			
Lead / Lag	Lead	-	-	Lag	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.20	0.20	0.01	0.86	0.86	0.09	0.09	0.02	0.01	0.02	0.02
Intersection LOS	F											
Intersection V/C	1.064											

Intersection Level Of Service Report
Intersection 14: Serrano Ave & Cannon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	E
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.910

Intersection Setup

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	150.00	275.00	100.00	350.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name						
Base Volume Input [veh/h]	800	370	60	1770	1170	150
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	800	370	60	1770	1170	150
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	200	93	15	443	293	38
Total Analysis Volume [veh/h]	800	370	60	1770	1170	150
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

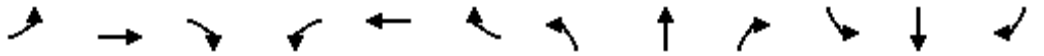
Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Split	Overlap
Signal Group	2	2	1	6	4	4
Auxiliary Signal Groups		2,4				1,4
Lead / Lag	-	-	Lead	-	Lag	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.24	0.00	0.04	0.52	0.34	0.05
Intersection LOS	E					
Intersection V/C	0.910					



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	430	1080	250	60	1010	330	150	540	60	150	380	290
Future Volume (veh/h)	430	1080	250	60	1010	330	150	540	60	150	380	290
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.98	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	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	448	1125	180	62	1052	298	156	562	57	156	396	263
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	556	1467	824	146	1186	713	206	785	79	204	450	639
Arrive On Green	0.18	0.46	0.46	0.09	0.37	0.37	0.13	0.27	0.24	0.13	0.27	0.27
Sat Flow, veh/h	3092	3180	1400	1594	3180	1418	1594	2908	294	1594	1673	1400
Grp Volume(v), veh/h	448	1125	180	62	1052	298	156	307	312	156	396	263
Grp Sat Flow(s),veh/h/ln	1546	1590	1400	1594	1590	1418	1594	1590	1612	1594	1673	1400
Q Serve(g_s), s	19.5	41.3	5.5	5.1	43.4	9.7	13.2	24.4	24.6	13.2	31.7	3.6
Cycle Q Clear(g_c), s	19.5	41.3	5.5	5.1	43.4	9.7	13.2	24.4	24.6	13.2	31.7	3.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.18	1.00		1.00
Lane Grp Cap(c), veh/h	556	1467	824	146	1186	713	206	429	435	204	450	639
V/C Ratio(X)	0.81	0.77	0.22	0.43	0.89	0.42	0.76	0.71	0.72	0.77	0.88	0.41
Avail Cap(c_a), veh/h	556	1467	824	146	1186	713	206	449	455	204	470	656
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.1	31.4	6.2	60.1	41.1	8.6	58.8	46.2	46.6	59.0	49.1	12.6
Incr Delay (d2), s/veh	7.9	3.9	0.6	0.7	10.0	1.8	13.4	4.2	4.3	14.4	16.2	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	8.1	16.1	2.1	2.1	18.2	2.9	6.0	10.0	10.3	6.1	15.2	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.9	35.3	6.8	60.9	51.1	10.4	72.2	50.4	50.9	73.5	65.2	12.7
LnGrp LOS	E	D	A	E	D	B	E	D	D	E	E	B
Approach Vol, veh/h		1753			1412			775			815	
Approach Delay, s/veh		39.4			43.0			55.0			49.9	
Approach LOS		D			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.7	54.5	19.0	39.8	13.7	67.5	19.0	39.8
Change Period (Y+Rc), s	4.0	5.5	4.0	5.5	4.0	5.5	4.0	5.5
Max Green Setting (Gmax), s	21.0	49.0	15.0	36.0	8.0	62.0	15.0	36.0
Max Q Clear Time (g_c+I1), s	21.5	45.4	15.2	33.7	7.1	43.3	15.2	26.6
Green Ext Time (p_c), s	0.0	1.3	0.0	0.6	0.0	2.9	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	44.8
HCM 6th LOS	D

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	1280	1420	0	0	10
Future Vol, veh/h	10	1280	1420	0	0	10
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	70	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	11	1347	1495	0	0	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1496	0	-	0	2192	749
Stage 1	-	-	-	-	1496	-
Stage 2	-	-	-	-	696	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	454	-	-	-	40	359
Stage 1	-	-	-	-	175	-
Stage 2	-	-	-	-	461	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	454	-	-	-	39	359
Mov Cap-2 Maneuver	-	-	-	-	39	-
Stage 1	-	-	-	-	171	-
Stage 2	-	-	-	-	461	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	15.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	454	-	-	-	359
HCM Lane V/C Ratio	0.023	-	-	-	0.029
HCM Control Delay (s)	13.1	-	-	-	15.3
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1270	10	10	1410	10	10
Future Vol, veh/h	1270	10	10	1410	10	10
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	1337	11	11	1484	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1349	0	2102	670
Stage 1	-	-	-	-	1338	-
Stage 2	-	-	-	-	764	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	517	-	46	404
Stage 1	-	-	-	-	213	-
Stage 2	-	-	-	-	426	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	517	-	45	404
Mov Cap-2 Maneuver	-	-	-	-	45	-
Stage 1	-	-	-	-	213	-
Stage 2	-	-	-	-	417	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	64.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	81	-	-	517	-
HCM Lane V/C Ratio	0.26	-	-	0.02	-
HCM Control Delay (s)	64.4	-	-	12.1	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	0.9	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	1260	1410	10	10	10
Future Vol, veh/h	20	1260	1410	10	10	10
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	21	1326	1484	11	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1496	0	-	0	2190	743
Stage 1	-	-	-	-	1485	-
Stage 2	-	-	-	-	705	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	454	-	-	-	40	362
Stage 1	-	-	-	-	178	-
Stage 2	-	-	-	-	456	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	454	-	-	-	38	362
Mov Cap-2 Maneuver	-	-	-	-	38	-
Stage 1	-	-	-	-	170	-
Stage 2	-	-	-	-	456	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	78.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	454	-	-	-	69
HCM Lane V/C Ratio	0.046	-	-	-	0.305
HCM Control Delay (s)	13.3	-	-	-	78.6
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0.1	-	-	-	1.1

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	1260	1410	10	0	10
Future Vol, veh/h	10	1260	1410	10	0	10
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	11	1326	1484	11	0	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1496	0	-	0	2170	743
Stage 1	-	-	-	-	1485	-
Stage 2	-	-	-	-	685	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	454	-	-	-	41	362
Stage 1	-	-	-	-	178	-
Stage 2	-	-	-	-	467	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	454	-	-	-	40	362
Mov Cap-2 Maneuver	-	-	-	-	40	-
Stage 1	-	-	-	-	174	-
Stage 2	-	-	-	-	467	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	15.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	454	-	-	-	362
HCM Lane V/C Ratio	0.023	-	-	-	0.029
HCM Control Delay (s)	13.1	-	-	-	15.2
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

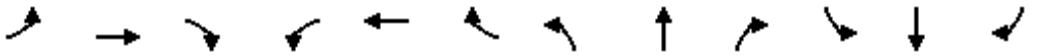
Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1250	10	10	1410	10	0
Future Vol, veh/h	1250	10	10	1410	10	0
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	125	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	1316	11	11	1484	11	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1328	0	2081	659
Stage 1	-	-	-	-	1317	-
Stage 2	-	-	-	-	764	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	527	-	47	411
Stage 1	-	-	-	-	219	-
Stage 2	-	-	-	-	426	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	526	-	46	411
Mov Cap-2 Maneuver	-	-	-	-	46	-
Stage 1	-	-	-	-	219	-
Stage 2	-	-	-	-	417	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	105.1
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	46	-	-	526	-
HCM Lane V/C Ratio	0.229	-	-	0.02	-
HCM Control Delay (s)	105.1	-	-	12	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	0.8	-	-	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	1140	20	20	1320	90	20	40	20	50	30	80
Future Volume (veh/h)	90	1140	20	20	1320	90	20	40	20	50	30	80
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		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1700	1673	1700	1700	1673	1700	1700	1700	1700	1700	1700	1700
Adj Flow Rate, veh/h	95	1200	16	21	1389	75	21	42	3	53	32	13
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, %	0	2	0	0	2	0	0	0	0	0	0	0
Cap, veh/h	180	2145	951	93	1973	893	328	230	16	329	168	68
Arrive On Green	0.11	0.67	0.67	0.06	0.62	0.62	0.15	0.15	0.09	0.15	0.15	0.15
Sat Flow, veh/h	1619	3180	1409	1619	3180	1440	1383	1568	112	1383	1142	464
Grp Volume(v), veh/h	95	1200	16	21	1389	75	21	0	45	53	0	45
Grp Sat Flow(s),veh/h/ln	1619	1590	1409	1619	1590	1440	1383	0	1680	1383	0	1606
Q Serve(g_s), s	2.5	8.9	0.2	0.6	13.3	0.9	0.6	0.0	1.1	1.6	0.0	1.1
Cycle Q Clear(g_c), s	2.5	8.9	0.2	0.6	13.3	0.9	1.7	0.0	1.1	2.7	0.0	1.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		0.29
Lane Grp Cap(c), veh/h	180	2145	951	93	1973	893	328	0	246	329	0	236
V/C Ratio(X)	0.53	0.56	0.02	0.23	0.70	0.08	0.06	0.00	0.18	0.16	0.00	0.19
Avail Cap(c_a), veh/h	211	2749	1218	175	2678	1213	1052	0	1126	1053	0	1076
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.0	3.9	2.4	20.4	5.8	3.4	17.7	0.0	17.0	18.1	0.0	17.0
Incr Delay (d2), s/veh	0.9	0.2	0.0	0.5	0.5	0.0	0.1	0.0	0.5	0.3	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.8	0.0	0.2	1.9	0.1	0.2	0.0	0.4	0.5	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.9	4.1	2.4	20.9	6.3	3.5	17.9	0.0	17.5	18.5	0.0	17.5
LnGrp LOS	B	A	A	C	A	A	B	A	B	B	A	B
Approach Vol, veh/h		1311			1485			66			98	
Approach Delay, s/veh		5.2			6.4			17.6			18.0	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	3.7	32.9		8.8	6.1	30.4		8.8				
Change Period (Y+Rc), s	3.0	5.5		4.5	3.0	5.5		4.5				
Max Green Setting (Gmax), s	3.0	36.0		28.0	4.0	35.0		28.0				
Max Q Clear Time (g_c+I1), s	2.6	10.9		3.7	4.5	15.3		4.7				
Green Ext Time (p_c), s	0.0	9.2		0.3	0.0	9.6		0.5				

Intersection Summary												
HCM 6th Ctrl Delay			6.5									
HCM 6th LOS			A									

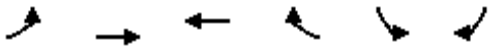
Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1200	10	10	1420	10	10
Future Vol, veh/h	1200	10	10	1420	10	10
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	140	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	1263	11	11	1495	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1275	0	2034	633
Stage 1	-	-	-	-	1264	-
Stage 2	-	-	-	-	770	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	551	-	51	427
Stage 1	-	-	-	-	233	-
Stage 2	-	-	-	-	423	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	550	-	50	427
Mov Cap-2 Maneuver	-	-	-	-	50	-
Stage 1	-	-	-	-	233	-
Stage 2	-	-	-	-	415	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	56.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	90	-	-	550	-
HCM Lane V/C Ratio	0.234	-	-	0.019	-
HCM Control Delay (s)	56.8	-	-	11.7	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	0.8	-	-	0.1	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	100	1110	1380	110	70	50
Future Volume (veh/h)	100	1110	1380	110	70	50
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.98	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1700	1673	1673	1700	1700	1700
Adj Flow Rate, veh/h	104	1156	1438	91	62	63
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	2	2	0	0	0
Cap, veh/h	192	2456	2000	886	213	190
Arrive On Green	0.12	0.77	0.63	0.63	0.13	0.13
Sat Flow, veh/h	1619	3263	3263	1409	1619	1441
Grp Volume(v), veh/h	104	1156	1438	91	62	63
Grp Sat Flow(s),veh/h/ln	1619	1590	1590	1409	1619	1441
Q Serve(g_s), s	2.7	5.8	13.7	1.1	1.5	1.8
Cycle Q Clear(g_c), s	2.7	5.8	13.7	1.1	1.5	1.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	192	2456	2000	886	213	190
V/C Ratio(X)	0.54	0.47	0.72	0.10	0.29	0.33
Avail Cap(c_a), veh/h	213	3207	2710	1201	1102	981
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.6	1.8	5.6	3.3	17.6	17.7
Incr Delay (d2), s/veh	0.9	0.1	0.6	0.1	1.1	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	1.3	0.1	0.6	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	19.5	2.0	6.2	3.3	18.6	19.1
LnGrp LOS	B	A	A	A	B	B
Approach Vol, veh/h		1260	1529		125	
Approach Delay, s/veh		3.4	6.1		18.9	
Approach LOS		A	A		B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	6.4	30.5		7.9		36.9
Change Period (Y+Rc), s	3.0	5.5		4.5		5.5
Max Green Setting (Gmax), s	4.0	35.0		28.0		42.0
Max Q Clear Time (g_c+I1), s	4.7	15.7		3.8		7.8
Green Ext Time (p_c), s	0.0	9.3		0.5		9.8

Intersection Summary	
HCM 6th Ctrl Delay	5.5
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1040	140	310	1340	150	600
Future Volume (vph)	1040	140	310	1340	150	600
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700
Total Lost time (s)	2.5	2.5	1.0	2.5	1.5	1.5
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3167	1398	1583	3167	1568	1403
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3167	1398	1583	3167	1568	1403
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1095	147	326	1411	158	632
RTOR Reduction (vph)	0	19	0	0	0	555
Lane Group Flow (vph)	1095	128	326	1411	158	77
Confl. Bikes (#/hr)		3				
Heavy Vehicles (%)	2%	2%	2%	2%	3%	3%
Turn Type	NA	Perm	Prot	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases		2				
Actuated Green, G (s)	70.5	70.5	33.0	109.5	11.5	11.5
Effective Green, g (s)	75.5	75.5	38.0	114.5	16.5	16.5
Actuated g/C Ratio	0.56	0.56	0.28	0.85	0.12	0.12
Clearance Time (s)	7.5	7.5	6.0	7.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	2.0	2.0
Lane Grp Cap (vph)	1771	781	445	2686	191	171
v/s Ratio Prot	c0.35		c0.21	0.45	c0.10	0.06
v/s Ratio Perm		0.09				
v/c Ratio	0.62	0.16	0.73	0.53	0.83	0.45
Uniform Delay, d1	20.0	14.4	43.9	2.8	57.9	55.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.6	0.5	6.1	0.7	23.4	0.7
Delay (s)	21.7	14.9	50.0	3.5	81.3	55.7
Level of Service	C	B	D	A	F	E
Approach Delay (s)	20.9			12.3	60.9	
Approach LOS	C			B	E	

Intersection Summary			
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	5.7

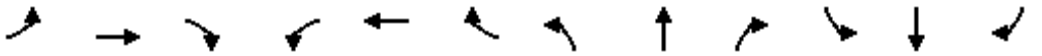
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	1600	30	10	1620	20	10	0	10	10	0	20
Future Vol, veh/h	10	1600	30	10	1620	20	10	0	10	10	0	20
Conflicting Peds, #/hr	1	0	1	1	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	115	-	100	140	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	0	0	2	2	0	0	0	3	3	3
Mvmt Flow	11	1684	32	11	1705	21	11	0	11	11	0	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1727	0	0	1717	0	0	2582	3456	843	2592	3467	854
Stage 1	-	-	-	-	-	-	1707	1707	-	1728	1728	-
Stage 2	-	-	-	-	-	-	875	1749	-	864	1739	-
Critical Hdwy	4.14	-	-	4.1	-	-	7.5	6.5	6.9	7.56	6.56	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.56	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.56	5.56	-
Follow-up Hdwy	2.22	-	-	2.2	-	-	3.5	4	3.3	3.53	4.03	3.33
Pot Cap-1 Maneuver	362	-	-	374	-	-	13	7	311	12	6	300
Stage 1	-	-	-	-	-	-	97	148	-	91	140	-
Stage 2	-	-	-	-	-	-	315	141	-	313	138	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	362	-	-	374	-	-	12	7	311	11	6	300
Mov Cap-2 Maneuver	-	-	-	-	-	-	12	7	-	11	6	-
Stage 1	-	-	-	-	-	-	94	143	-	88	136	-
Stage 2	-	-	-	-	-	-	284	137	-	293	134	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	$ 397.1	$ 356.1
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	23	362	-	-	374	-	-	31
HCM Lane V/C Ratio	0.915	0.029	-	-	0.028	-	-	1.019
HCM Control Delay (s)	$ 397.1	15.2	-	-	14.9	-	-	$ 356.1
HCM Lane LOS	F	C	-	-	B	-	-	F
HCM 95th %tile Q(veh)	2.7	0.1	-	-	0.1	-	-	3.5

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1000	540	80	20	1040	1530	80	460	20	500	250	530
Future Volume (veh/h)	1000	540	80	20	1040	1530	80	460	20	500	250	530
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1687	1687	1687	1687	1687	1687
Adj Flow Rate, veh/h	1042	562	77	21	1083	0	83	479	19	456	351	466
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	1	1	1	1	1	1
Cap, veh/h	1078	2115	289	79	1424		285	557	22	632	663	796
Arrive On Green	0.35	0.75	0.74	0.05	0.45	0.00	0.18	0.18	0.15	0.20	0.20	0.20
Sat Flow, veh/h	3092	2805	383	1594	3180	1418	1606	3140	124	3213	3373	1409
Grp Volume(v), veh/h	1042	318	321	21	1083	0	83	244	254	456	351	466
Grp Sat Flow(s),veh/h/ln	1546	1590	1598	1594	1590	1418	1606	1602	1662	1606	1687	1409
Q Serve(g_s), s	49.7	9.2	9.4	1.9	42.8	0.0	6.7	22.2	22.3	19.9	14.0	29.5
Cycle Q Clear(g_c), s	49.7	9.2	9.4	1.9	42.8	0.0	6.7	22.2	22.3	19.9	14.0	29.5
Prop In Lane	1.00		0.24	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	1078	1199	1205	79	1424		285	284	295	632	663	796
V/C Ratio(X)	0.97	0.27	0.27	0.27	0.76		0.29	0.86	0.86	0.72	0.53	0.59
Avail Cap(c_a), veh/h	1078	1199	1205	101	1424		285	284	295	632	663	796
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.0	5.7	5.8	68.7	34.7	0.0	53.5	59.9	60.1	56.4	54.0	21.7
Incr Delay (d2), s/veh	19.6	0.5	0.5	0.7	3.9	0.0	0.2	21.3	21.2	3.5	0.4	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	21.3	2.7	2.8	0.8	16.5	0.0	2.7	10.6	11.0	8.3	5.9	10.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.6	6.2	6.3	69.3	38.5	0.0	53.7	81.2	81.2	59.9	54.4	22.4
LnGrp LOS	E	A	A	E	D		D	F	F	E	D	C
Approach Vol, veh/h		1681			1104	A		581			1273	
Approach Delay, s/veh		44.3			39.1			77.3			44.7	
Approach LOS		D			D			E			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	55.0	71.0		31.0	7.9	118.1		28.0				
Change Period (Y+Rc), s	5.0	* 6.5		6.0	5.0	6.5		5.5				
Max Green Setting (Gmax), s	50.0	* 31		25.0	5.0	74.5		22.5				
Max Q Clear Time (g_c+I1), s	51.7	44.8		31.5	3.9	11.4		24.3				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	2.1		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		47.3	
HCM 6th LOS		D	

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

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

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	270	10	50	10	10	10	140	2840	10	10	1220	200
Future Volume (veh/h)	270	10	50	10	10	10	140	2840	10	10	1220	200
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		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1700	1700	1700	1700	1700	1700	1700	1687	1700	1700	1687	1700
Adj Flow Rate, veh/h	276	10	20	10	10	3	143	2898	10	10	1245	196
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, %	0	0	0	0	0	0	0	1	0	0	1	0
Cap, veh/h	225	6	521	34	28	4	203	3117	11	62	1594	249
Arrive On Green	0.22	0.24	0.24	0.22	0.24	0.24	0.13	0.66	0.66	0.08	1.00	1.00
Sat Flow, veh/h	732	27	1419	0	114	17	1619	4737	16	1619	2767	433
Grp Volume(v), veh/h	286	0	20	23	0	0	143	1877	1031	10	717	724
Grp Sat Flow(s),veh/h/ln	758	0	1419	131	0	0	1619	1535	1684	1619	1602	1597
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	12.7	80.7	81.1	0.9	0.0	0.0
Cycle Q Clear(g_c), s	32.9	0.0	0.0	32.9	0.0	0.0	12.7	80.7	81.1	0.9	0.0	0.0
Prop In Lane	0.97		1.00	0.43		0.13	1.00		0.01	1.00		0.27
Lane Grp Cap(c), veh/h	213	0	521	63	0	0	203	2020	1108	62	923	920
V/C Ratio(X)	1.34	0.00	0.04	0.36	0.00	0.00	0.70	0.93	0.93	0.16	0.78	0.79
Avail Cap(c_a), veh/h	213	0	521	63	0	0	214	2020	1108	97	923	920
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.8	0.0	30.6	47.5	0.0	0.0	62.9	22.6	22.6	67.1	0.0	0.0
Incr Delay (d2), s/veh	181.1	0.0	0.0	3.5	0.0	0.0	7.8	9.1	14.8	0.5	6.4	6.7
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	19.2	0.0	0.5	0.8	0.0	0.0	5.6	28.4	33.0	0.4	1.6	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	241.8	0.0	30.7	50.9	0.0	0.0	70.8	31.7	37.4	67.5	6.4	6.7
LnGrp LOS	F	A	C	D	A	A	E	C	D	E	A	A
Approach Vol, veh/h		306			23			3051			1451	
Approach Delay, s/veh		228.0			50.9			35.5			7.0	
Approach LOS		F			D			D			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.7	105.3		38.0	21.0	91.0		38.0
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	* 6		5.0
Max Green Setting (Gmax), s	5.0	96.0		33.0	16.0	* 85		33.0
Max Q Clear Time (g_c+I1), s	2.9	83.1		34.9	14.7	2.0		34.9
Green Ext Time (p_c), s	0.0	7.2		0.0	0.0	3.1		0.0

Intersection Summary		
HCM 6th Ctrl Delay		39.2
HCM 6th LOS		D

Notes

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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	540	80	1540	1580	80	890
Future Volume (veh/h)	540	80	1540	1580	80	890
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1687	1687	1687	1687	1687	1687
Adj Flow Rate, veh/h	551	63	1571	1557	82	908
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1
Cap, veh/h	661	512	1880	2057	232	2364
Arrive On Green	0.21	0.21	0.98	1.00	0.14	0.74
Sat Flow, veh/h	3116	1429	3289	2516	1606	3289
Grp Volume(v), veh/h	551	63	1571	1557	82	908
Grp Sat Flow(s),veh/h/ln	1558	1429	1602	1258	1606	1602
Q Serve(g_s), s	25.4	0.0	8.2	90.8	6.9	15.6
Cycle Q Clear(g_c), s	25.4	0.0	8.2	90.8	6.9	15.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	661	512	1880	2057	232	2364
V/C Ratio(X)	0.83	0.12	0.84	0.76	0.35	0.38
Avail Cap(c_a), veh/h	883	613	1880	2057	232	2364
HCM Platoon Ratio	1.00	1.00	1.67	1.67	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.5	32.3	0.7	0.0	57.9	7.2
Incr Delay (d2), s/veh	4.0	0.0	4.6	2.7	0.3	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.2	2.6	1.7	0.8	2.8	4.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	60.5	32.4	5.3	2.7	58.2	7.7
LnGrp LOS	E	C	A	A	E	A
Approach Vol, veh/h	614		3128			990
Approach Delay, s/veh	57.6		4.0			11.9
Approach LOS	E		A			B

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	23.7	93.0		33.3		116.7
Change Period (Y+Rc), s	6.0	* 6		5.3		6.0
Max Green Setting (Gmax), s	8.3	* 87		38.7		100.0
Max Q Clear Time (g_c+I1), s	19.9	92.8		27.4		17.6
Green Ext Time (p_c), s	0.0	0.0		0.7		4.2

Intersection Summary	
HCM 6th Ctrl Delay	12.6
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

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

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	30	40	1580	940	30
Future Vol, veh/h	30	30	40	1580	940	30
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	200	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	32	32	42	1663	989	32

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1906	496	1022	0	-	0
Stage 1	990	-	-	-	-	-
Stage 2	916	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	62	525	687	-	-	-
Stage 1	325	-	-	-	-	-
Stage 2	355	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	58	525	686	-	-	-
Mov Cap-2 Maneuver	58	-	-	-	-	-
Stage 1	305	-	-	-	-	-
Stage 2	355	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	82.7	0.3	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	686	-	104	-	-
HCM Lane V/C Ratio	0.061	-	0.607	-	-
HCM Control Delay (s)	10.6	-	82.7	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.2	-	2.9	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	2990	0	0	1280
Future Vol, veh/h	0	0	2990	0	0	1280
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	3250	0	0	1391

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	3946	1625	0	0	3250	0
Stage 1	3250	-	-	-	-	-
Stage 2	696	-	-	-	-	-
Critical Hdwy	6.25	7.1	-	-	5.3	-
Critical Hdwy Stg 1	6.6	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.65	3.9	-	-	3.1	-
Pot Cap-1 Maneuver	4	80	-	-	29	-
Stage 1	9	-	-	-	-	-
Stage 2	448	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	4	80	-	-	29	-
Mov Cap-2 Maneuver	4	-	-	-	-	-
Stage 1	9	-	-	-	-	-
Stage 2	448	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	29	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	3120	1430	0
Future Vol, veh/h	0	0	0	3120	1430	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	0	3391	1554	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2910	777	1554	0	-	0
Stage 1	1554	-	-	-	-	-
Stage 2	1356	-	-	-	-	-
Critical Hdwy	6.25	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.65	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	20	344	432	-	-	-
Stage 1	160	-	-	-	-	-
Stage 2	189	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	20	344	432	-	-	-
Mov Cap-2 Maneuver	20	-	-	-	-	-
Stage 1	160	-	-	-	-	-
Stage 2	189	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	432	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	1620	0	0	970
Future Vol, veh/h	0	0	1620	0	0	970
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	125	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	1761	0	0	1054

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	881	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	294	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	294	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	0	-
HCM Lane LOS	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	-

MPAH Amendment Study - Villa Park Rd

Vistro File: N:\...\Villa Park_v6.vistro — Scenario 4 Future PM Peak Hour

Report File: N:\...\04_FYNoImprovementPM.pdf — 7/21/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Villa Park Rd & Wanda Rd	Signalized	ICU 2	EB Thru	0.774	-	C
7	Villa Park Rd & Center Dr	Signalized	ICU 2	WB Thru	0.547	-	A
9	Villa Park Rd & Lemon St	Signalized	ICU 2	WB Thru	0.524	-	A
10	Villa Park Rd & Hewes St	Signalized	ICU 2	WB Thru	0.889	-	D
12	Santiago Canyon Rd & Cannon St	Signalized	ICU 2	WB Thru	0.935	-	E
13	Taft Ave & Cannon St	Signalized	ICU 2	NB Thru	0.783	-	C
14	Serrano Ave & Cannon St	Signalized	ICU 2	NB Thru	0.696	-	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Villa Park Rd & Wanda Rd

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.774

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	2	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	175.00	100.00	100.00	225.00	100.00	300.00	150.00	100.00	175.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	150	540	60	150	380	290	430	1080	250	60	1010	330
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	150	540	60	150	380	290	430	1080	250	60	1010	330
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	135	15	38	95	73	108	270	63	15	253	83
Total Analysis Volume [veh/h]	150	540	60	150	380	290	430	1080	250	60	1010	330
Pedestrian Volume [ped/h]	0			0			0			1		
Bicycle Volume [bicycles/h]	1			0			1			11		

Intersection Settings

Cycle Length [s]	140
Lost time [s]	7.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	4	1	6	6	5	2	2
Auxiliary Signal Groups						1,4			3,6			2,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lag	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.18	0.18	0.09	0.22	0.04	0.13	0.32	0.06	0.04	0.30	0.11
Intersection LOS	C											
Intersection V/C	0.774											

Intersection Level Of Service Report
Intersection 7: Villa Park Rd & Center Dr

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.547

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	150.00	100.00	100.00	140.00	100.00	100.00	160.00	100.00	100.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	20	40	20	50	30	80	90	1140	20	20	1320	90
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	40	20	50	30	80	90	1140	20	20	1320	90
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	10	5	13	8	20	23	285	5	5	330	23
Total Analysis Volume [veh/h]	20	40	20	50	30	80	90	1140	20	20	1320	90
Pedestrian Volume [ped/h]	0			1			0			0		
Bicycle Volume [bicycles/h]	3			0			5			0		

Intersection Settings

Cycle Length [s]	111
Lost time [s]	6.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.04	0.04	0.03	0.06	0.06	0.05	0.34	0.01	0.01	0.39	0.05
Intersection LOS	A											
Intersection V/C	0.547											

Intersection Level Of Service Report
Intersection 9: Villa Park Rd & Lemon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.524

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1
Entry Pocket Length [ft]	115.00	100.00	180.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

Volumes

Name						
Base Volume Input [veh/h]	70	50	100	1110	1380	110
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	50	100	1110	1380	110
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	13	25	278	345	28
Total Analysis Volume [veh/h]	70	50	100	1110	1380	110
Pedestrian Volume [ped/h]	1		1		0	
Bicycle Volume [bicycles/h]	2		2		0	

Intersection Settings

Cycle Length [s]	108
Lost time [s]	5.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	4	0	1	6	2	0
Auxiliary Signal Groups						
Lead / Lag	Lag	-	Lead	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.04	0.06	0.33	0.41	0.06
Intersection LOS	A					
Intersection V/C	0.524					

Intersection Level Of Service Report
Intersection 10: Villa Park Rd & Hewes St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.889

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	215.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	150	0	600	0	6	0	0	1040	140	310	1340	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	150	0	600	0	6	0	0	1040	140	310	1340	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	0	150	0	2	0	0	260	35	78	335	0
Total Analysis Volume [veh/h]	150	0	600	0	6	0	0	1040	140	310	1340	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			0			6			0		

Intersection Settings

Cycle Length [s]	140
Lost time [s]	7.00

Phasing & Timing

Control Type	Split	Permiss	Split	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	4	0	0	0	8	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.00	0.35	0.00	0.00	0.00	0.00	0.31	0.08	0.18	0.39	0.00
Intersection LOS	D											
Intersection V/C	0.889											

Generated with PTV VISTRO

Version 2022 (SP 0-2)

Intersection Level Of Service Report

Intersection 12: Santiago Canyon Rd & Cannon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	E
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.935

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	2	0	1	2	0	0	1	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	375.00	100.00	250.00	325.00	100.00	100.00	150.00	100.00	450.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	80	460	20	500	250	530	1000	540	80	20	1040	1530
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	460	20	500	250	530	1000	540	80	20	1040	1530
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	115	5	125	63	133	250	135	20	5	260	383
Total Analysis Volume [veh/h]	80	460	20	500	250	530	1000	540	80	20	1040	1530
Pedestrian Volume [ped/h]	1			0			1			0		
Bicycle Volume [bicycles/h]	3			3			1			1		

Intersection Settings

Cycle Length [s]	140
Lost time [s]	7.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna
Signal Group	0	8	0	0	4	4	1	6	0	5	2	0
Auxiliary Signal Groups						1,4						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.14	0.14	0.15	0.07	0.02	0.29	0.18	0.18	0.01	0.31	0.00
Intersection LOS	E											
Intersection V/C	0.935											

Intersection Level Of Service Report
Intersection 13: Taft Ave & Cannon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.783

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	225.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	140	2840	10	10	1220	200	270	10	50	10	10	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	140	2840	10	10	1220	200	270	10	50	10	10	10
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	710	3	3	305	50	68	3	13	3	3	3
Total Analysis Volume [veh/h]	140	2840	10	10	1220	200	270	10	50	10	10	10
Pedestrian Volume [ped/h]	1			0			1			0		
Bicycle Volume [bicycles/h]	2			0			2			0		

Intersection Settings

Cycle Length [s]	150
Lost time [s]	8.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	4	0	4	0
Auxiliary Signal Groups									4,5			
Lead / Lag	Lag	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.56	0.56	0.01	0.42	0.42	0.16	0.16	0.00	0.01	0.02	0.02
Intersection LOS	C											
Intersection V/C	0.783											

Intersection Level Of Service Report
Intersection 14: Serrano Ave & Cannon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.696

Intersection Setup

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	150.00	275.00	100.00	350.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name						
Base Volume Input [veh/h]	1540	1580	80	890	540	80
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1540	1580	80	890	540	80
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	385	395	20	223	135	20
Total Analysis Volume [veh/h]	1540	1580	80	890	540	80
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	150
Lost time [s]	8.00

Phasing & Timing

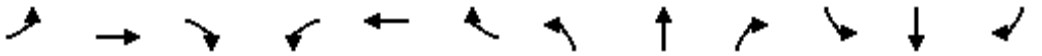
Control Type	Permissive	Overlap	Protected	Permissive	Split	Overlap
Signal Group	2	2	1	6	4	4
Auxiliary Signal Groups		2,4				1,4
Lead / Lag	-	-	Lag	-	Lag	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.45	0.31	0.05	0.26	0.16	0.00
Intersection LOS	B					
Intersection V/C	0.696					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1050	220	700	1060	210	310
Future Volume (vph)	1050	220	700	1060	210	310
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700
Total Lost time (s)	2.5	2.5	1.0	2.5	1.5	1.5
Lane Util. Factor	0.95	1.00	0.97	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3076	1354	2984	3076	1568	1403
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3076	1354	2984	3076	1568	1403
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1105	232	737	1116	221	326
RTOR Reduction (vph)	0	36	0	0	0	287
Lane Group Flow (vph)	1105	196	737	1116	221	39
Confl. Peds. (#/hr)		2			1	
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	5%	5%	5%	5%	3%	3%
Turn Type	NA	Perm	Prot	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases		2				
Actuated Green, G (s)	64.5	64.5	36.2	106.7	12.5	12.5
Effective Green, g (s)	69.5	69.5	41.2	111.7	17.5	17.5
Actuated g/C Ratio	0.48	0.48	0.28	0.77	0.12	0.12
Clearance Time (s)	7.5	7.5	6.0	7.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	2.0	2.0
Lane Grp Cap (vph)	1474	648	847	2369	189	169
v/s Ratio Prot	c0.36		c0.25	0.36	c0.14	0.03
v/s Ratio Perm		0.14				
v/c Ratio	0.75	0.30	0.87	0.47	1.17	0.23
Uniform Delay, d1	30.7	23.0	49.4	6.0	63.8	57.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.5	1.2	9.7	0.7	118.5	0.3
Delay (s)	34.2	24.2	59.0	6.7	182.2	57.9
Level of Service	C	C	E	A	F	E
Approach Delay (s)	32.5			27.5	108.2	
Approach LOS	C			C	F	

Intersection Summary			
HCM 2000 Control Delay	41.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



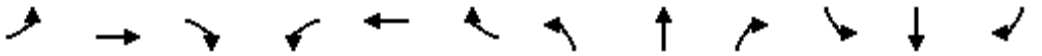
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	1250	40	10	1640	100	10	10	30	30	0	110
Future Volume (veh/h)	70	1250	40	10	1640	100	10	10	30	30	0	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1634	1634	1700	1700	1634	1634	1700	1700	1700	1660	1660	1660
Adj Flow Rate, veh/h	74	1316	42	11	1726	105	11	11	32	32	0	116
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, %	5	5	0	0	5	5	0	0	0	3	3	3
Cap, veh/h	91	1847	835	110	2661	162	64	57	113	70	11	135
Arrive On Green	0.06	0.60	0.60	0.09	0.82	0.82	0.12	0.12	0.12	0.12	0.00	0.12
Sat Flow, veh/h	1556	3104	1404	1619	4298	261	167	468	924	215	90	1107
Grp Volume(v), veh/h	74	1316	42	11	1193	638	54	0	0	148	0	0
Grp Sat Flow(s),veh/h/ln	1556	1552	1404	1619	1487	1585	1559	0	0	1412	0	0
Q Serve(g_s), s	4.7	29.8	1.2	0.6	15.2	15.3	0.0	0.0	0.0	6.8	0.0	0.0
Cycle Q Clear(g_c), s	4.7	29.8	1.2	0.6	15.2	15.3	3.2	0.0	0.0	10.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.16	0.20		0.59	0.22		0.78
Lane Grp Cap(c), veh/h	91	1847	835	110	1841	982	234	0	0	216	0	0
V/C Ratio(X)	0.81	0.71	0.05	0.10	0.65	0.65	0.23	0.00	0.00	0.69	0.00	0.00
Avail Cap(c_a), veh/h	171	1847	835	110	1841	982	282	0	0	262	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.71	0.71	0.71	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	46.5	14.2	8.5	42.7	4.7	4.7	39.9	0.0	0.0	43.0	0.0	0.0
Incr Delay (d2), s/veh	15.3	2.4	0.1	0.3	1.3	2.4	0.2	0.0	0.0	3.5	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	2.1	9.1	0.3	0.2	2.6	3.1	1.2	0.0	0.0	3.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.8	16.6	8.6	42.9	6.0	7.1	40.1	0.0	0.0	46.5	0.0	0.0
LnGrp LOS	E	B	A	D	A	A	D	A	A	D	A	A
Approach Vol, veh/h		1432			1842			54			148	
Approach Delay, s/veh		18.7			6.6			40.1			46.5	
Approach LOS		B			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.3	67.0		18.7	11.9	69.4		18.7				
Change Period (Y+Rc), s	7.5	* 7.5		6.5	6.0	7.5		6.5				
Max Green Setting (Gmax), s	5.0	* 60		15.5	11.0	53.5		15.5				
Max Q Clear Time (g_c+I1), s	2.6	31.8		5.2	6.7	17.3		12.3				
Green Ext Time (p_c), s	0.0	10.4		0.1	0.0	16.2		0.1				

Intersection Summary			
HCM 6th Ctrl Delay		13.8	
HCM 6th LOS		B	

Notes

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	400	810	100	20	560	500	150	190	40	1300	480	1040
Future Volume (veh/h)	400	810	100	20	560	500	150	190	40	1300	480	1040
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1634	1634	1634	1660	1660	1660	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	412	835	95	21	577	0	155	196	23	1340	495	916
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, %	5	5	5	3	3	3	2	2	2	2	2	2
Cap, veh/h	574	863	98	106	775		239	377	44	1440	757	1601
Arrive On Green	0.19	0.31	0.31	0.07	0.17	0.00	0.15	0.13	0.08	0.47	0.45	0.45
Sat Flow, veh/h	3018	2804	319	1581	4532	1407	1594	2866	332	3092	1673	2486
Grp Volume(v), veh/h	412	462	468	21	577	0	155	108	111	1340	495	916
Grp Sat Flow(s),veh/h/ln	1509	1552	1571	1581	1511	1407	1594	1590	1608	1546	1673	1243
Q Serve(g_s), s	12.8	29.4	29.4	1.3	12.1	0.0	9.2	6.3	6.5	40.9	23.0	7.0
Cycle Q Clear(g_c), s	12.8	29.4	29.4	1.3	12.1	0.0	9.2	6.3	6.5	40.9	23.0	7.0
Prop In Lane	1.00		0.20	1.00		1.00	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	574	478	484	106	775		239	209	211	1440	757	1601
V/C Ratio(X)	0.72	0.97	0.97	0.20	0.74		0.65	0.51	0.53	0.93	0.65	0.57
Avail Cap(c_a), veh/h	574	478	484	150	775		349	209	211	1500	757	1601
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.0	34.1	34.1	44.1	39.4	0.0	40.0	40.5	41.0	25.2	21.3	2.7
Incr Delay (d2), s/veh	3.7	32.5	32.3	0.3	3.5	0.0	1.1	1.0	1.2	10.1	4.4	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	4.8	14.5	14.6	0.5	4.5	0.0	3.6	2.5	2.6	15.4	9.1	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.7	66.7	66.4	44.4	42.9	0.0	41.1	41.4	42.3	35.3	25.7	4.2
LnGrp LOS	D	E	E	D	D		D	D	D	D	C	A
Approach Vol, veh/h		1342			598	A		374			2751	
Approach Delay, s/veh		58.9			42.9			41.5			23.2	
Approach LOS		E			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.5	18.0	16.1	47.2	7.2	32.3	49.1	14.2
Change Period (Y+Rc), s	6.5	* 5.5	5.0	6.0	5.0	6.5	5.0	* 6
Max Green Setting (Gmax), s	15.0	* 13	18.0	33.0	5.0	21.5	46.0	* 5.5
Max Q Clear Time (g_c+I1), s	15.8	14.1	11.2	25.0	3.3	31.4	42.9	8.5
Green Ext Time (p_c), s	0.0	0.0	0.1	2.9	0.0	0.0	1.2	0.0

Intersection Summary	
HCM 6th Ctrl Delay	36.4
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

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

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

MPAH Amendment Study - Villa Park Rd

Vistro File: N:\...\Villa Park_v6.vistro
Scenario 17 Future AM Peak Hour - Recommendations

Report File: N:\...\05_FYBAM.pdf
7/21/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
10	Villa Park Rd & Hewes St	Signalized	ICU 2	WB Thru	0.733	-	C
11	Villa Park Rd & Linda Vista St	Signalized	ICU 2	EB Thru	0.495	-	A
12	Santiago Canyon Rd & Cannon St	Signalized	ICU 2	SB Left	0.768	-	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 10: Villa Park Rd & Hewes St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.733

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	215.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	210	0	310	0	1	0	0	1050	220	700	1060	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	210	0	310	0	1	0	0	1050	220	700	1060	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	53	0	78	0	0	0	0	263	55	175	265	0
Total Analysis Volume [veh/h]	210	0	310	0	1	0	0	1050	220	700	1060	0
Pedestrian Volume [ped/h]	2			0			1			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Cycle Length [s]	145
Lost time [s]	7.00

Phasing & Timing

Control Type	Split	Permiss	Split	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	4	0	0	0	8	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.00	0.18	0.00	0.00	0.00	0.00	0.31	0.13	0.21	0.31	0.00
Intersection LOS	C											
Intersection V/C	0.733											

Intersection Level Of Service Report
Intersection 11: Villa Park Rd & Linda Vista St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.495

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	115.00	100.00	100.00	140.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	10	10	30	30	0	110	70	1250	40	10	1640	100
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	10	30	30	0	110	70	1250	40	10	1640	100
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	3	8	8	0	28	18	313	10	3	410	25
Total Analysis Volume [veh/h]	10	10	30	30	0	110	70	1250	40	10	1640	100
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lag	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.03	0.03	0.02	0.00	0.08	0.04	0.37	0.02	0.01	0.34	0.34
Intersection LOS	A											
Intersection V/C	0.495											

Intersection Level Of Service Report
Intersection 12: Santiago Canyon Rd & Cannon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.768

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	2	0	1	2	0	0	1	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	375.00	100.00	250.00	325.00	100.00	100.00	150.00	100.00	450.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	150	190	40	1300	480	1040	400	810	100	20	560	500
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	150	190	40	1300	480	1040	400	810	100	20	560	500
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	48	10	325	120	260	100	203	25	5	140	125
Total Analysis Volume [veh/h]	150	190	40	1300	480	1040	400	810	100	20	560	500
Pedestrian Volume [ped/h]	0			0			6			0		
Bicycle Volume [bicycles/h]	3			0			0			1		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna
Signal Group	3	8	0	7	4	4	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lead	-	-

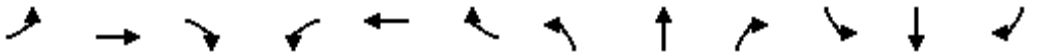
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.07	0.07	0.38	0.28	0.31	0.12	0.27	0.27	0.01	0.11	0.00
Intersection LOS	C											
Intersection V/C	0.768											

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1040	140	310	1340	150	600
Future Volume (vph)	1040	140	310	1340	150	600
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700
Total Lost time (s)	2.5	2.5	1.0	2.5	1.5	1.5
Lane Util. Factor	0.95	1.00	0.97	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3167	1398	3072	3167	1568	1403
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3167	1398	3072	3167	1568	1403
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1095	147	326	1411	158	632
RTOR Reduction (vph)	0	20	0	0	0	550
Lane Group Flow (vph)	1095	127	326	1411	158	82
Confl. Bikes (#/hr)		3				
Heavy Vehicles (%)	2%	2%	2%	2%	3%	3%
Turn Type	NA	Perm	Prot	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases		2				
Actuated Green, G (s)	68.4	68.4	8.0	82.4	8.6	8.6
Effective Green, g (s)	73.4	73.4	13.0	87.4	13.6	13.6
Actuated g/C Ratio	0.70	0.70	0.12	0.83	0.13	0.13
Clearance Time (s)	7.5	7.5	6.0	7.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	2.0	2.0
Lane Grp Cap (vph)	2213	977	380	2636	203	181
v/s Ratio Prot	0.35		c0.11	c0.45	c0.10	0.06
v/s Ratio Perm		0.09				
v/c Ratio	0.49	0.13	0.86	0.54	0.78	0.45
Uniform Delay, d1	7.3	5.2	45.1	2.7	44.2	42.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	0.3	17.1	0.8	15.6	0.7
Delay (s)	8.1	5.5	62.2	3.4	59.9	42.9
Level of Service	A	A	E	A	E	D
Approach Delay (s)	7.8			14.5	46.3	
Approach LOS	A			B	D	

Intersection Summary			
HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



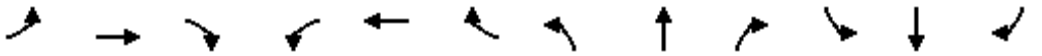
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	1600	30	10	1620	20	10	0	10	10	0	20
Future Volume (veh/h)	10	1600	30	10	1620	20	10	0	10	10	0	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1700	1700	1673	1673	1700	1700	1700	1660	1660	1660
Adj Flow Rate, veh/h	11	1684	32	11	1705	21	11	0	11	11	0	21
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	0	0	2	2	0	0	0	3	3	3
Cap, veh/h	232	2435	1080	21	2887	36	74	12	41	58	9	51
Arrive On Green	0.15	0.77	0.77	0.03	1.00	1.00	0.05	0.00	0.05	0.05	0.00	0.05
Sat Flow, veh/h	1594	3180	1410	1619	4650	57	529	216	745	321	170	938
Grp Volume(v), veh/h	11	1684	32	11	1117	609	22	0	0	32	0	0
Grp Sat Flow(s),veh/h/ln	1594	1590	1410	1619	1523	1662	1490	0	0	1430	0	0
Q Serve(g_s), s	0.7	31.6	0.7	0.8	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0
Cycle Q Clear(g_c), s	0.7	31.6	0.7	0.8	0.0	0.0	1.6	0.0	0.0	2.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.03	0.50		0.50	0.34		0.66
Lane Grp Cap(c), veh/h	232	2435	1080	21	1891	1032	125	0	0	117	0	0
V/C Ratio(X)	0.05	0.69	0.03	0.53	0.59	0.59	0.18	0.00	0.00	0.27	0.00	0.00
Avail Cap(c_a), veh/h	232	2435	1080	67	1891	1032	291	0	0	280	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.53	0.53	0.53	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	44.1	7.0	3.4	58.1	0.0	0.0	54.4	0.0	0.0	54.9	0.0	0.0
Incr Delay (d2), s/veh	0.1	1.6	0.1	10.7	0.7	1.3	0.2	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	0.3	7.8	0.1	0.4	0.2	0.4	0.6	0.0	0.0	1.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.2	8.6	3.4	68.8	0.7	1.3	54.7	0.0	0.0	55.3	0.0	0.0
LnGrp LOS	D	A	A	E	A	A	D	A	A	E	A	A
Approach Vol, veh/h		1727			1737			22			32	
Approach Delay, s/veh		8.8			1.4			54.7			55.3	
Approach LOS		A			A			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.5	99.4		13.1	24.9	82.0		13.1				
Change Period (Y+Rc), s	6.0	7.5		6.5	7.5	* 7.5		6.5				
Max Green Setting (Gmax), s	5.0	74.5		20.5	5.0	* 75		20.5				
Max Q Clear Time (g_c+I1), s	2.8	33.6		3.6	2.7	2.0		4.5				
Green Ext Time (p_c), s	0.0	17.3		0.0	0.0	17.2		0.1				

Intersection Summary		
HCM 6th Ctrl Delay		5.8
HCM 6th LOS		A

Notes

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1000	540	80	20	1040	1530	80	460	20	500	250	530
Future Volume (veh/h)	1000	540	80	20	1040	1530	80	460	20	500	250	530
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1687	1687	1687	1687	1687	1687
Adj Flow Rate, veh/h	1042	562	75	21	1083	0	83	479	19	521	260	492
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	1	1	1	1	1	1
Cap, veh/h	1145	1595	212	93	1129		153	497	20	493	388	1552
Arrive On Green	0.37	0.57	0.56	0.06	0.25	0.00	0.09	0.16	0.12	0.16	0.23	0.23
Sat Flow, veh/h	3092	2815	375	1594	4569	1418	1606	3140	124	3116	1687	2480
Grp Volume(v), veh/h	1042	317	320	21	1083	0	83	244	254	521	260	492
Grp Sat Flow(s),veh/h/ln	1546	1590	1600	1594	1523	1418	1606	1602	1662	1558	1687	1240
Q Serve(g_s), s	38.4	12.9	13.0	1.5	28.1	0.0	5.9	18.1	18.2	19.0	16.8	11.3
Cycle Q Clear(g_c), s	38.4	12.9	13.0	1.5	28.1	0.0	5.9	18.1	18.2	19.0	16.8	11.3
Prop In Lane	1.00		0.23	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	1145	901	906	93	1129		153	254	263	493	388	1552
V/C Ratio(X)	0.91	0.35	0.35	0.23	0.96		0.54	0.96	0.97	1.06	0.67	0.32
Avail Cap(c_a), veh/h	1397	901	906	126	1129		153	254	263	493	388	1552
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.9	14.1	14.1	53.9	44.6	0.0	51.8	50.1	50.3	50.5	42.1	10.8
Incr Delay (d2), s/veh	7.2	1.1	1.1	0.5	18.6	0.0	2.2	45.5	45.4	56.1	3.6	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	14.7	4.5	4.6	0.6	12.0	0.0	2.4	10.3	10.7	11.0	7.2	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.1	15.2	15.2	54.3	63.2	0.0	54.1	95.6	95.8	106.6	45.7	10.8
LnGrp LOS	D	B	B	D	E		D	F	F	F	D	B
Approach Vol, veh/h		1679			1104	A		581			1273	
Approach Delay, s/veh		32.5			63.0			89.8			57.1	
Approach LOS		C			E			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	47.2	31.8	12.0	29.0	7.5	71.5	21.0	20.0
Change Period (Y+Rc), s	5.0	* 6.5	5.0	6.0	5.0	6.5	6.0	* 5.5
Max Green Setting (Gmax), s	52.0	* 18	7.0	22.0	5.0	63.5	15.0	* 15
Max Q Clear Time (g_c+I1), s	40.4	30.1	7.9	18.8	3.5	15.0	21.0	20.2
Green Ext Time (p_c), s	1.8	0.0	0.0	0.8	0.0	2.1	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	53.7
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

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

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

MPAH Amendment Study - Villa Park Rd

Vistro File: N:\...\Villa Park_v6.vistro
Scenario 18 Future PM Peak Hour - Recommendation

Report File: N:\...\05_FYBPM.pdf
7/21/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
10	Villa Park Rd & Hewes St	Signalized	ICU 2	WB Thru	0.791	-	C
11	Villa Park Rd & Linda Vista St	Signalized	ICU 2	EB Thru	0.526	-	A
12	Santiago Canyon Rd & Cannon St	Signalized	ICU 2	EB Left	0.828	-	D

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 10: Villa Park Rd & Hewes St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.791

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	215.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	150	0	600	0	6	0	0	1040	140	310	1340	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	150	0	600	0	6	0	0	1040	140	310	1340	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	0	150	0	2	0	0	260	35	78	335	0
Total Analysis Volume [veh/h]	150	0	600	0	6	0	0	1040	140	310	1340	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			0			6			0		

Intersection Settings

Cycle Length [s]	105
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Permiss	Split	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	4	0	0	0	8	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.00	0.35	0.00	0.00	0.00	0.00	0.31	0.08	0.09	0.39	0.00
Intersection LOS	C											
Intersection V/C	0.791											

Intersection Level Of Service Report
Intersection 11: Villa Park Rd & Linda Vista St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.526

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	115.00	100.00	100.00	140.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	10	0	10	10	0	20	10	1600	30	10	1620	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	0	10	10	0	20	10	1600	30	10	1620	20
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	0	3	3	0	5	3	400	8	3	405	5
Total Analysis Volume [veh/h]	10	0	10	10	0	20	10	1600	30	10	1620	20
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	120
Lost time [s]	6.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lag	-	-	Lead	-	-

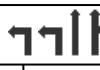
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.01	0.00	0.02	0.01	0.47	0.02	0.01	0.32	0.32
Intersection LOS	A											
Intersection V/C	0.526											

Intersection Level Of Service Report
Intersection 12: Santiago Canyon Rd & Cannon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.828

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	2	0	1	2	0	0	1	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	375.00	100.00	250.00	325.00	100.00	100.00	150.00	100.00	450.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	80	460	20	500	250	530	1000	540	80	20	1040	1530
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	460	20	500	250	530	1000	540	80	20	1040	1530
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	115	5	125	63	133	250	135	20	5	260	383
Total Analysis Volume [veh/h]	80	460	20	500	250	530	1000	540	80	20	1040	1530
Pedestrian Volume [ped/h]	1			0			1			0		
Bicycle Volume [bicycles/h]	3			3			1			1		

Intersection Settings

Cycle Length [s]	120
Lost time [s]	6.00

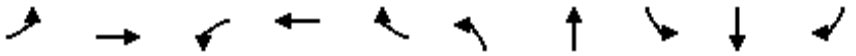
Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna
Signal Group	3	8	0	7	4	4	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.14	0.14	0.15	0.15	0.16	0.29	0.18	0.18	0.01	0.20	0.00
Intersection LOS	D											
Intersection V/C	0.828											

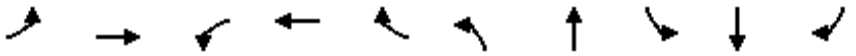
Attachment D: Intersection Queueing Analysis Worksheets



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	375	884	16	484	377	143	149	894	769	736
v/c Ratio	0.66	0.83	0.11	0.75	0.27	0.60	0.31	0.82	0.69	0.79
Control Delay	46.1	53.4	53.0	56.5	0.5	61.4	39.3	43.7	38.1	14.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.1	53.4	53.0	56.5	0.5	61.4	39.3	43.7	38.1	14.5
Queue Length 50th (ft)	168	395	13	200	0	113	46	409	326	161
Queue Length 95th (ft)	m214	#526	35	262	0	180	77	#600	441	288
Internal Link Dist (ft)		700		272			165		561	
Turn Bay Length (ft)	325		150			80		375		250
Base Capacity (vph)	654	1059	206	687	1403	289	581	1095	1120	970
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.83	0.08	0.70	0.27	0.49	0.26	0.82	0.69	0.76

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	735	447	14	1038	1539	73	343	315	324	456
v/c Ratio	0.88	0.25	0.10	0.92	1.09	0.34	0.79	0.62	0.62	0.59
Control Delay	50.7	11.3	57.8	56.4	56.3	59.7	72.4	57.4	57.1	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.7	11.3	57.8	56.4	56.3	59.7	72.4	57.4	57.1	11.1
Queue Length 50th (ft)	325	91	12	476	~231	61	160	157	161	110
Queue Length 95th (ft)	408	189	34	#741	#495	113	#227	194	198	137
Internal Link Dist (ft)		700		272			165		561	
Turn Bay Length (ft)	325		150			80		375		250
Base Capacity (vph)	875	1809	193	1133	1417	217	433	746	771	791
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.25	0.07	0.92	1.09	0.34	0.79	0.42	0.42	0.58

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

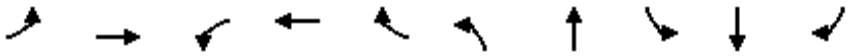
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1105	232	737	1116	221	326
v/c Ratio	0.94	0.42	1.14	0.45	1.32	0.74
Control Delay	55.7	29.6	119.0	7.1	228.7	16.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.7	29.6	119.0	7.1	228.7	16.9
Queue Length 50th (ft)	475	106	~810	86	~269	0
Queue Length 95th (ft)	#1009	#307	#1059	405	#441	105
Internal Link Dist (ft)	2348			454	338	
Turn Bay Length (ft)		100	215			
Base Capacity (vph)	1181	556	647	2496	167	441
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.42	1.14	0.45	1.32	0.74

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	412	938	21	577	515	155	237	911	924	1072
v/c Ratio	0.48	0.70	0.14	0.95	0.37	0.93	0.70	0.91	0.90	1.08
Control Delay	32.0	26.5	44.0	67.7	0.7	100.6	51.3	44.4	42.7	66.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.0	26.5	44.0	67.7	0.7	100.6	51.3	44.4	42.7	66.3
Queue Length 50th (ft)	111	223	13	193	0	100	71	316	318	~361
Queue Length 95th (ft)	158	354	36	#302	0	#223	#119	#455	#455	#1009
Internal Link Dist (ft)		700		272			165		561	
Turn Bay Length (ft)	325		150			80		375		250
Base Capacity (vph)	850	1347	148	605	1403	166	340	1002	1030	990
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.70	0.14	0.95	0.37	0.93	0.70	0.91	0.90	1.08

Intersection Summary

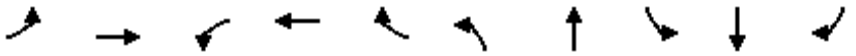
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1095	147	326	1411	158	632
v/c Ratio	0.62	0.18	0.73	0.53	0.83	0.87
Control Delay	23.1	12.2	53.4	3.6	90.1	17.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.1	12.2	53.4	3.6	90.1	17.9
Queue Length 50th (ft)	329	42	259	135	137	0
Queue Length 95th (ft)	464	92	337	163	#261	#205
Internal Link Dist (ft)	2348			454	338	
Turn Bay Length (ft)		100	215			
Base Capacity (vph)	1772	799	551	2686	191	726
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.18	0.59	0.53	0.83	0.87

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	1042	646	21	1083	1594	83	500	386	395	552
v/c Ratio	0.97	0.38	0.21	1.43	1.12	0.29	0.89	0.76	0.75	0.61
Control Delay	69.6	20.2	72.0	239.3	72.4	56.9	78.2	40.8	40.2	20.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.6	20.2	72.0	239.3	72.4	56.9	78.2	40.8	40.2	20.2
Queue Length 50th (ft)	517	194	20	~770	~359	71	253	176	180	452
Queue Length 95th (ft)	#665	243	50	#909	#623	125	#350	m247	m251	593
Internal Link Dist (ft)		700		272			165		561	
Turn Bay Length (ft)	325		150			80		375		250
Base Capacity (vph)	1071	1719	100	760	1417	283	565	540	559	906
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.38	0.21	1.43	1.12	0.29	0.88	0.71	0.71	0.61

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

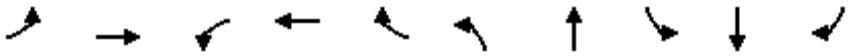
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1105	232	737	1116	221	326
v/c Ratio	0.71	0.32	0.87	0.45	1.17	0.72
Control Delay	32.1	19.3	61.2	7.8	172.0	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.1	19.3	61.2	7.8	172.0	15.4
Queue Length 50th (ft)	368	77	339	99	~248	0
Queue Length 95th (ft)	#823	220	422	420	#420	103
Internal Link Dist (ft)	2348			454	338	
Turn Bay Length (ft)		100	215			
Base Capacity (vph)	1558	720	864	2454	189	455
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.32	0.85	0.45	1.17	0.72

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	412	938	21	577	515	155	237	1340	495	1072
v/c Ratio	0.74	0.96	0.14	0.75	0.37	0.56	0.62	0.92	0.71	0.62
Control Delay	47.5	55.4	44.0	46.3	0.7	44.9	46.6	35.9	32.3	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.5	55.4	44.0	46.3	0.7	44.9	46.6	35.9	32.3	4.6
Queue Length 50th (ft)	128	281	13	129	0	91	71	387	259	36
Queue Length 95th (ft)	181	#500	36	171	0	149	#119	#540	#447	75
Internal Link Dist (ft)		700		272			165		561	
Turn Bay Length (ft)	325		150			80		375		250
Base Capacity (vph)	566	977	148	770	1403	346	385	1489	697	1734
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.96	0.14	0.75	0.37	0.45	0.62	0.90	0.71	0.62

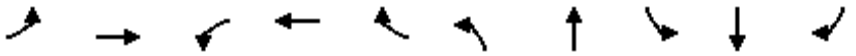
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1095	147	326	1411	158	632
v/c Ratio	0.49	0.15	0.86	0.54	0.78	0.86
Control Delay	8.2	3.3	67.3	3.5	70.4	17.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.2	3.3	67.3	3.5	70.4	17.2
Queue Length 50th (ft)	156	16	112	108	104	0
Queue Length 95th (ft)	199	35	#188	136	#210	#191
Internal Link Dist (ft)	2348			454	338	
Turn Bay Length (ft)		100	215			
Base Capacity (vph)	2213	996	380	2636	203	731
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.15	0.86	0.54	0.78	0.86

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	1042	646	21	1083	1594	83	500	521	260	552
v/c Ratio	0.84	0.34	0.17	1.04	1.12	0.56	0.99	1.06	0.64	0.32
Control Delay	38.8	12.6	55.0	83.6	72.6	67.1	88.0	106.0	50.2	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.8	12.6	55.0	83.6	72.6	67.1	88.0	106.0	50.2	5.4
Queue Length 50th (ft)	362	107	15	~343	~285	62	204	~228	187	57
Queue Length 95th (ft)	421	177	42	#488	#551	117	#321	#339	283	74
Internal Link Dist (ft)		700		272			165		561	
Turn Bay Length (ft)	325		150			80		375		250
Base Capacity (vph)	1387	1880	125	1043	1417	151	505	491	407	1859
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.34	0.17	1.04	1.12	0.55	0.99	1.06	0.64	0.30

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Attachment E: Traffic Signal Warrants

FEHR PEERS

Intersection	2	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Kathleen Ln	Peak Hour	AM

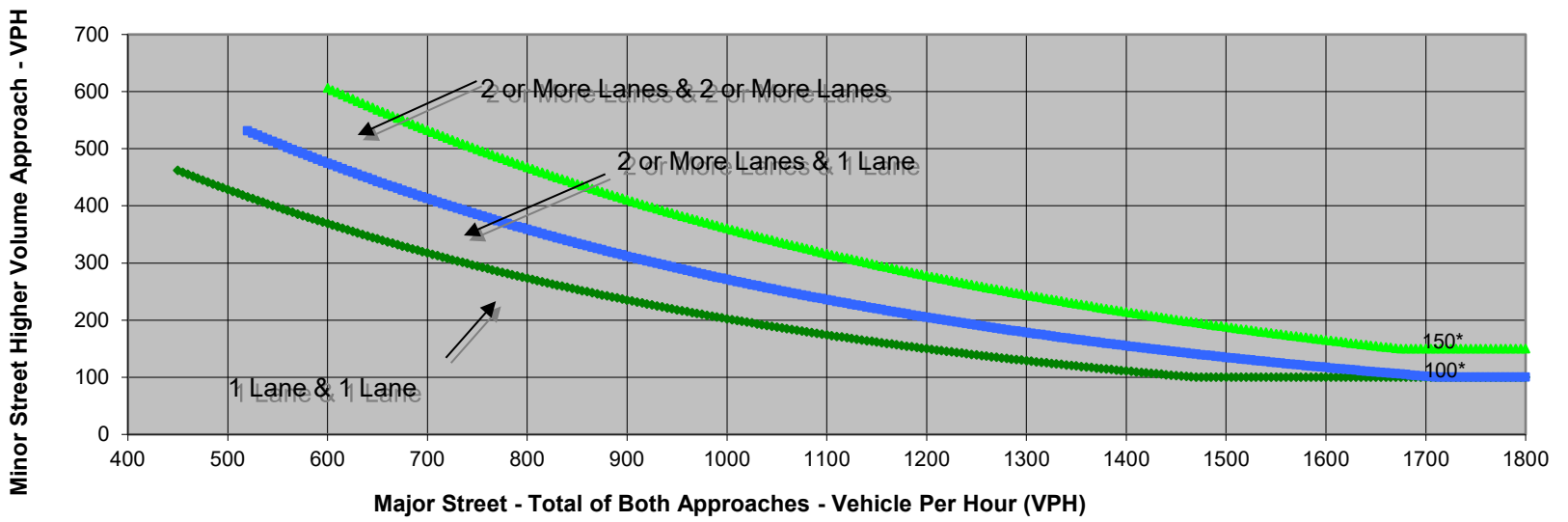
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	1	8	0
Through	0	0	1249	1134
Right	0	9	0	0
Total	0	10	1,257	1,134

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	E Trenton Ave	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,391**	**10**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	3	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Morrow Cir	Peak Hour	AM

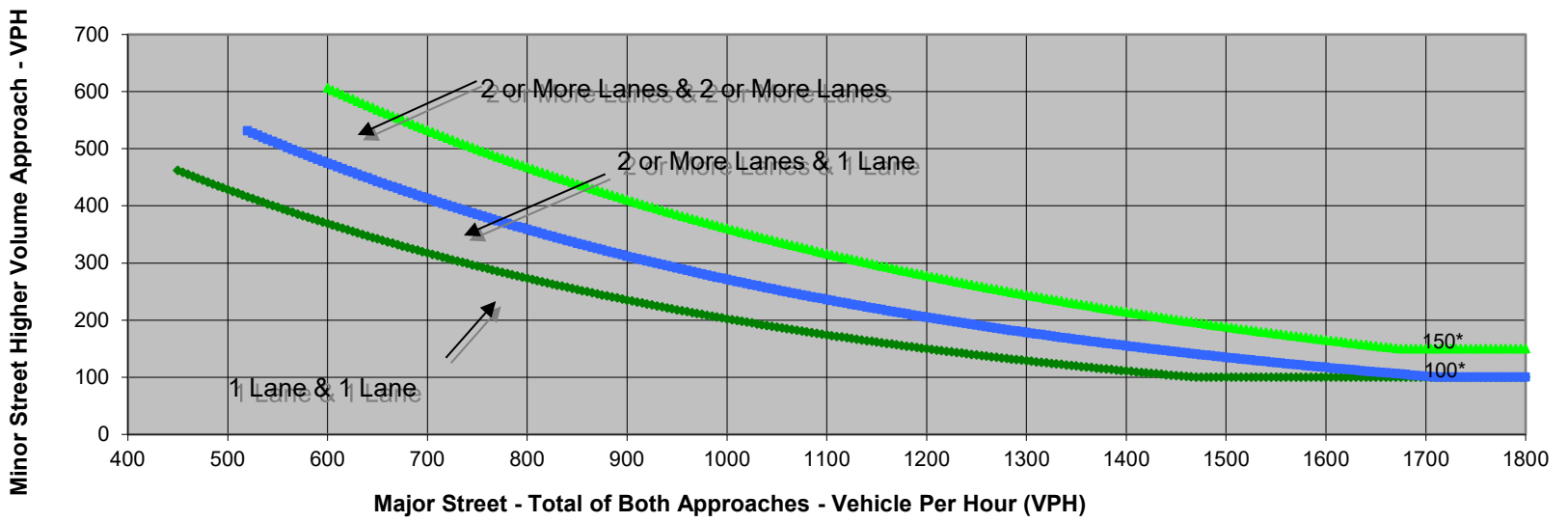
Turn Movement Volumes

	NB	SB	EB	WB
Left	4	0	0	2
Through	0	0	1245	1130
Right	7	0	5	0
Total	11	0	1,250	1,132

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Morrow Cir	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,382**	**11**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	4	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Prado Woods Dr	Peak Hour	AM

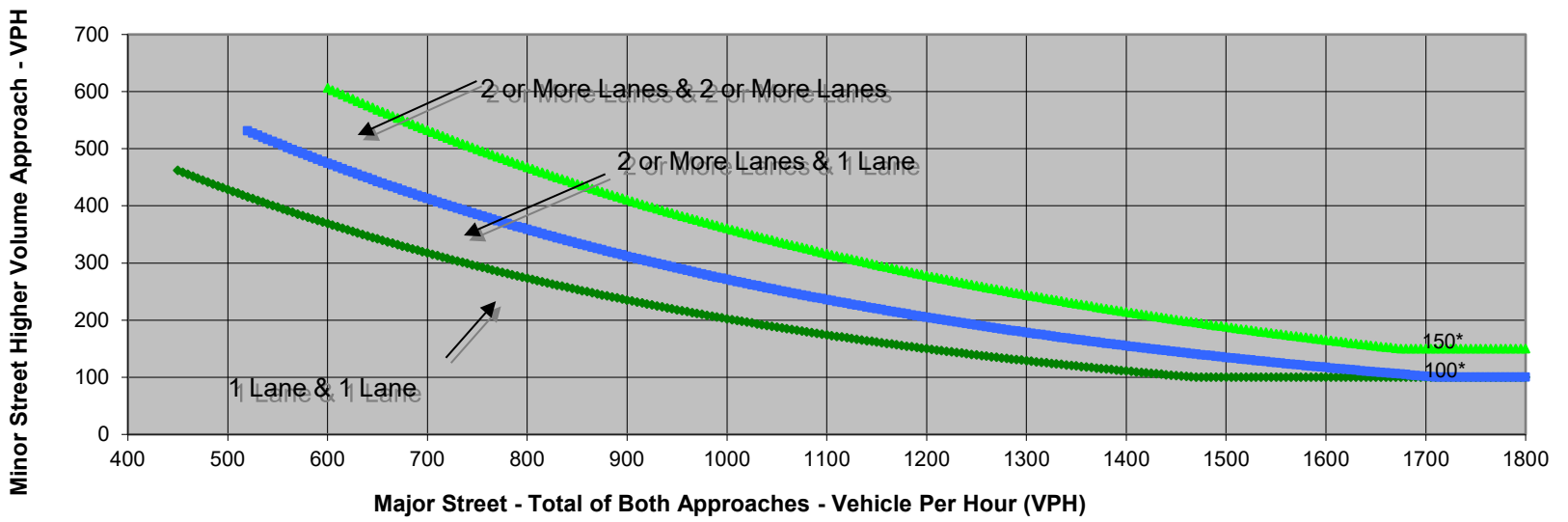
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	4	14	0
Through	0	0	1238	1119
Right	0	13	0	3
Total	0	17	1,252	1,122

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Prado Woods Dr	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,374**	**17**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	5	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Kenwick Dr	Peak Hour	AM

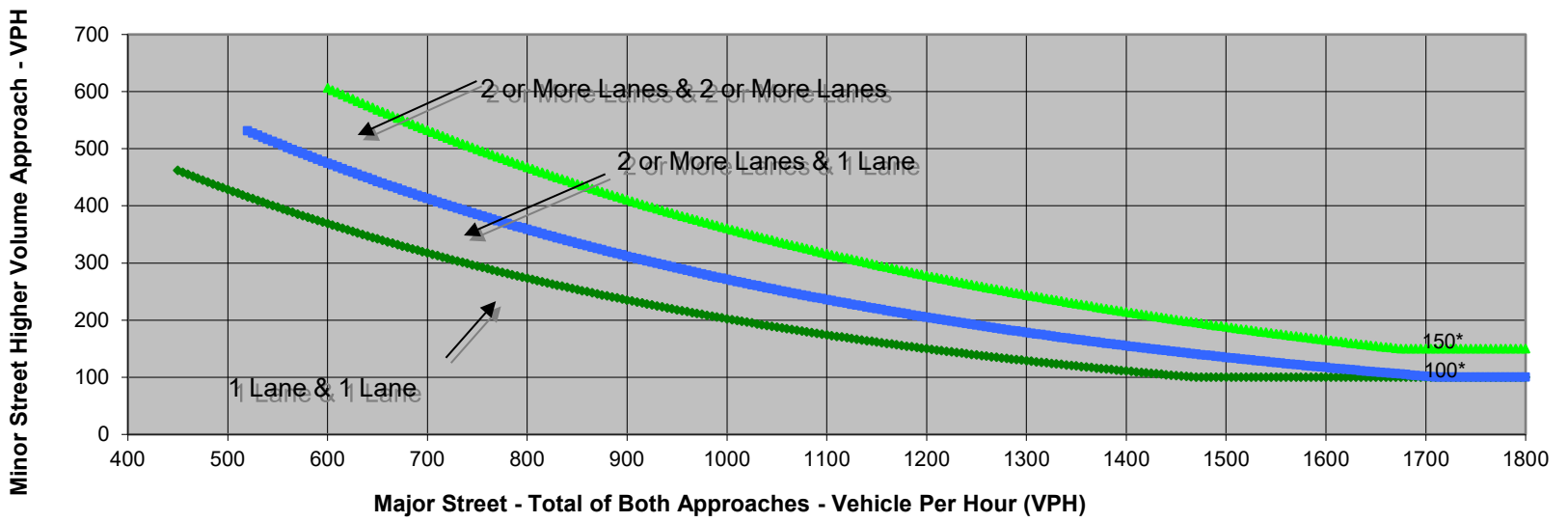
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	3	4	0
Through	0	0	1238	1115
Right	0	7	0	0
Total	0	10	1,242	1,115

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Kenwick Dr	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,357**	**10**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	6	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Radec Ct	Peak Hour	AM

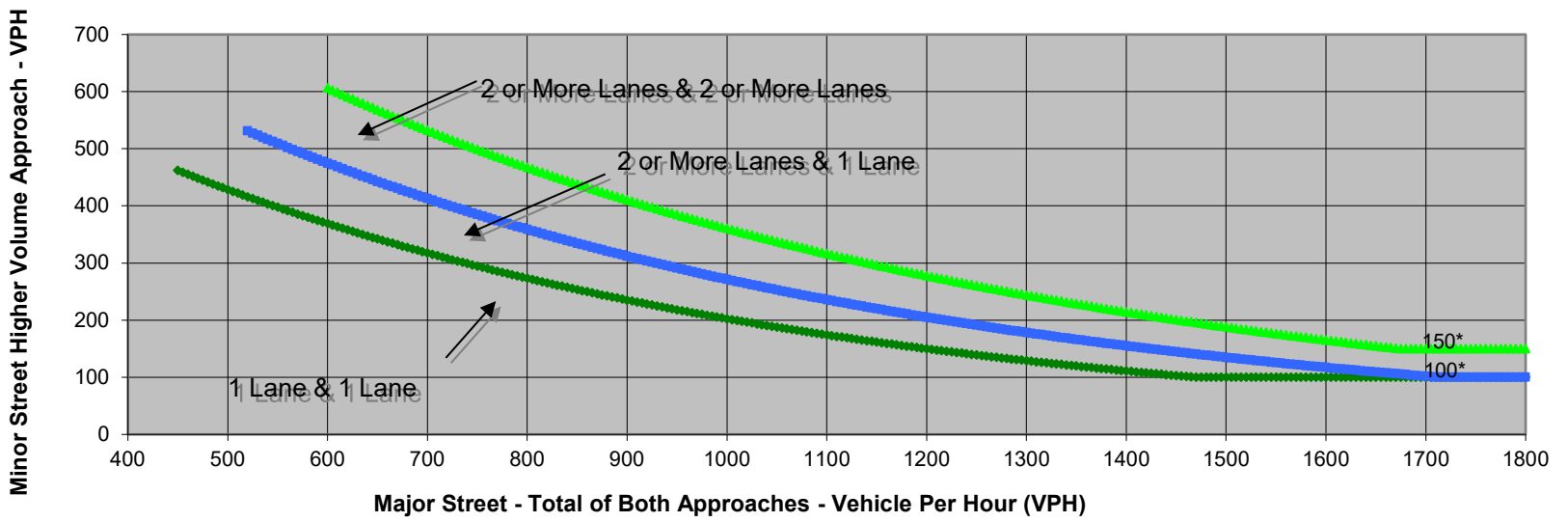
Turn Movement Volumes

	NB	SB	EB	WB
Left	1	0	0	1
Through	0	0	1240	1115
Right	2	0	1	0
Total	3	0	1,241	1,116

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Radec Ct	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,357**	**3**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	8	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Park Villa Ln	Peak Hour	AM

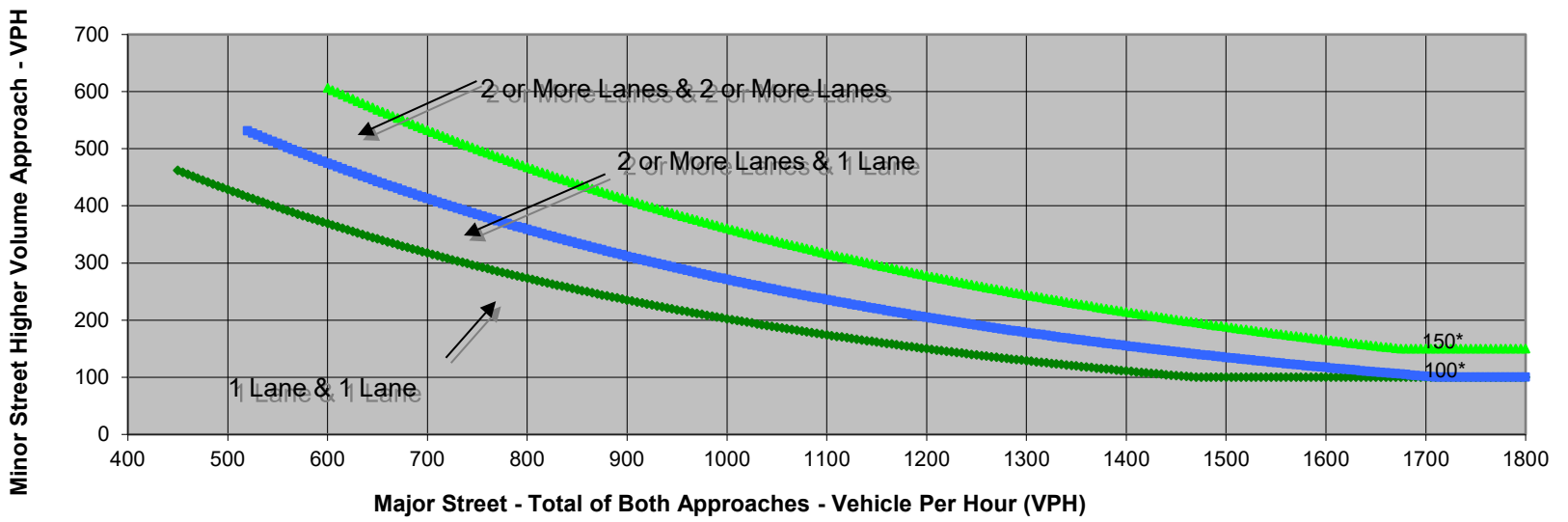
Turn Movement Volumes

	NB	SB	EB	WB
Left	2	0	0	5
Through	0	0	1160	1010
Right	2	0	6	0
Total	4	0	1,166	1,015

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Park Villa Ln	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,181**	**4**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	11	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	N Linda Vista St	Peak Hour	AM

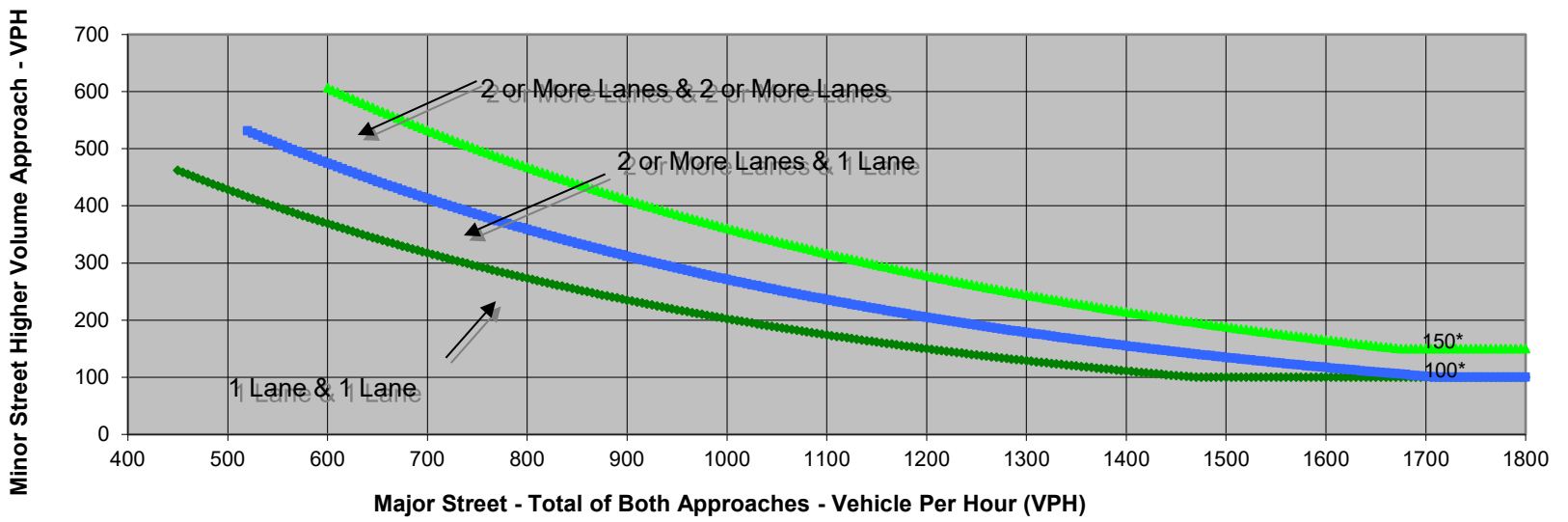
Turn Movement Volumes

	NB	SB	EB	WB
Left	9	27	68	5
Through	1	0	1173	1218
Right	21	103	39	99
Total	31	130	1,280	1,322

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	N Linda Vista St	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,602**	**130**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	15	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Loma St	Scenario	Future Year (2045) Conditions
Minor Street	Cannon St	Peak Hour	AM

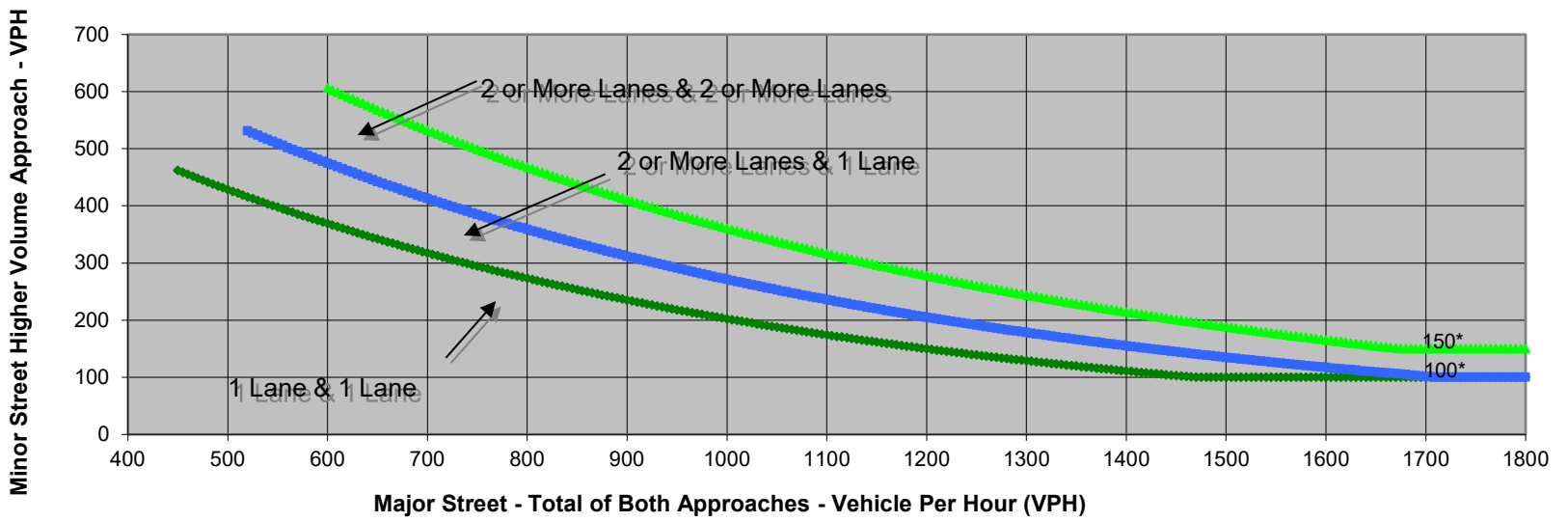
Turn Movement Volumes

	NB	SB	EB	WB
Left	28	0	34	0
Through	678	1419	0	0
Right	0	43	45	0
Total	706	1,462	79	0

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Mesa Dr	Cannon St	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,168**	**79**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	2	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Kathleen Ln	Peak Hour	PM

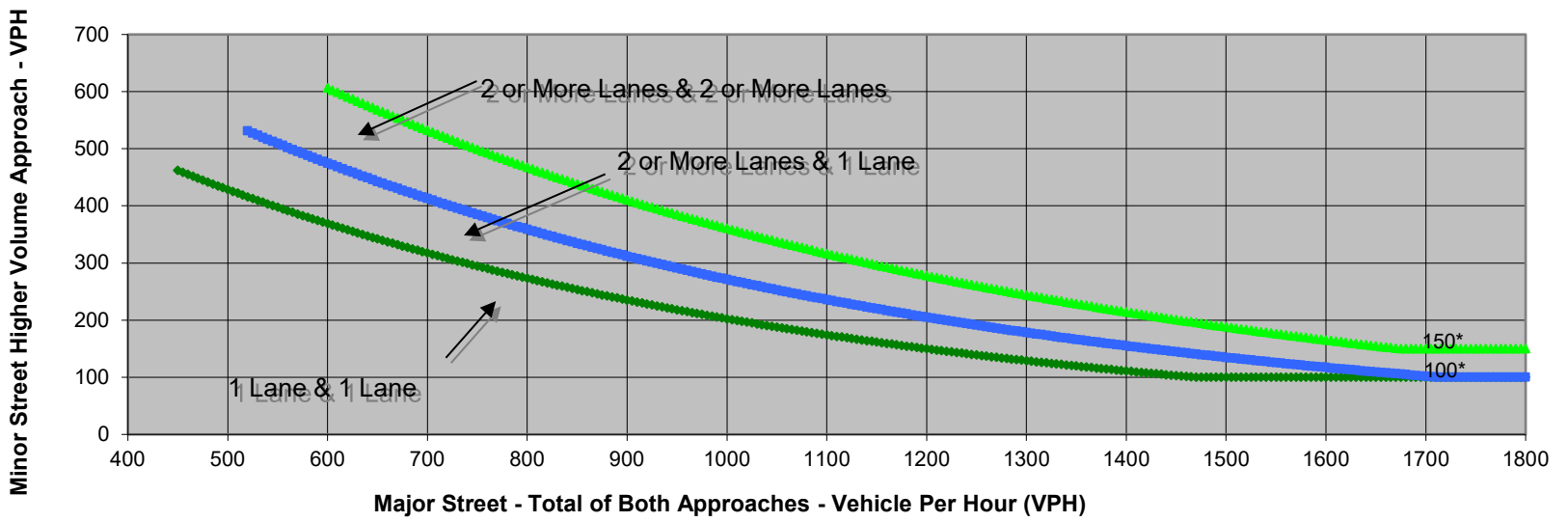
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	4	0
Through	0	0	1065	1347
Right	0	2	0	0
Total	0	2	1,069	1,347

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	E Trenton Ave	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,416**	**2**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	3	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Morrow Cir	Peak Hour	PM

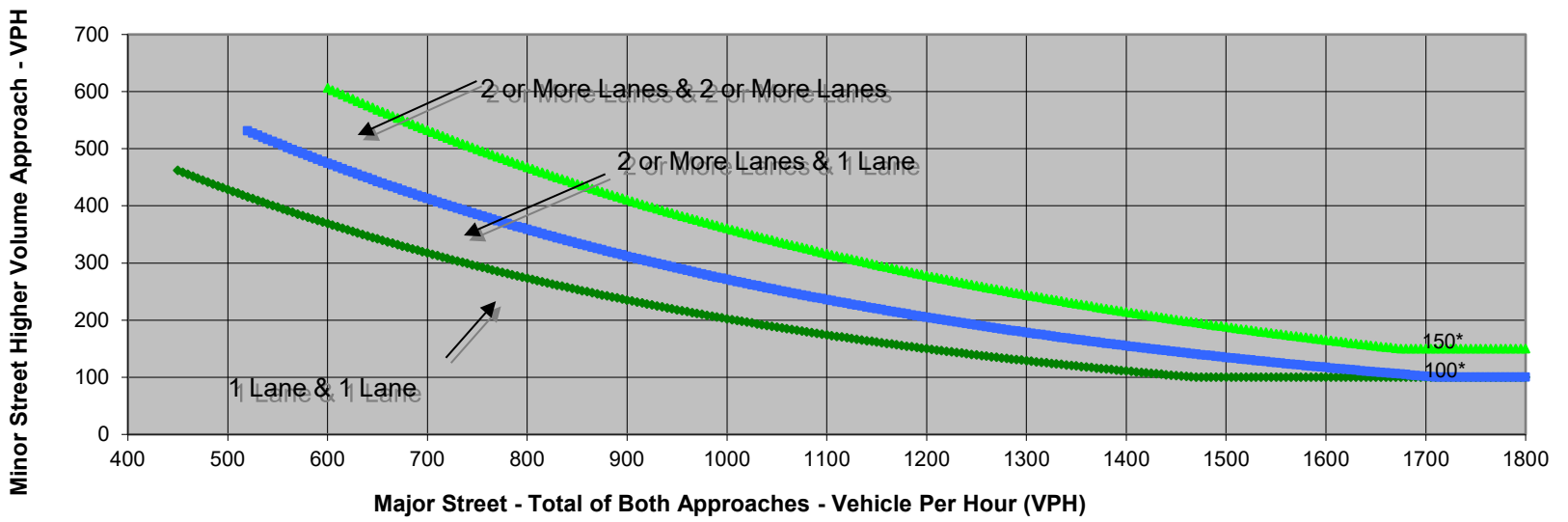
Turn Movement Volumes

	NB	SB	EB	WB
Left	4	0	0	2
Through	0	0	1064	1343
Right	1	0	1	0
Total	5	0	1,065	1,345

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Morrow Cir	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,410**	**5**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	4	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Prado Woods Dr	Peak Hour	PM

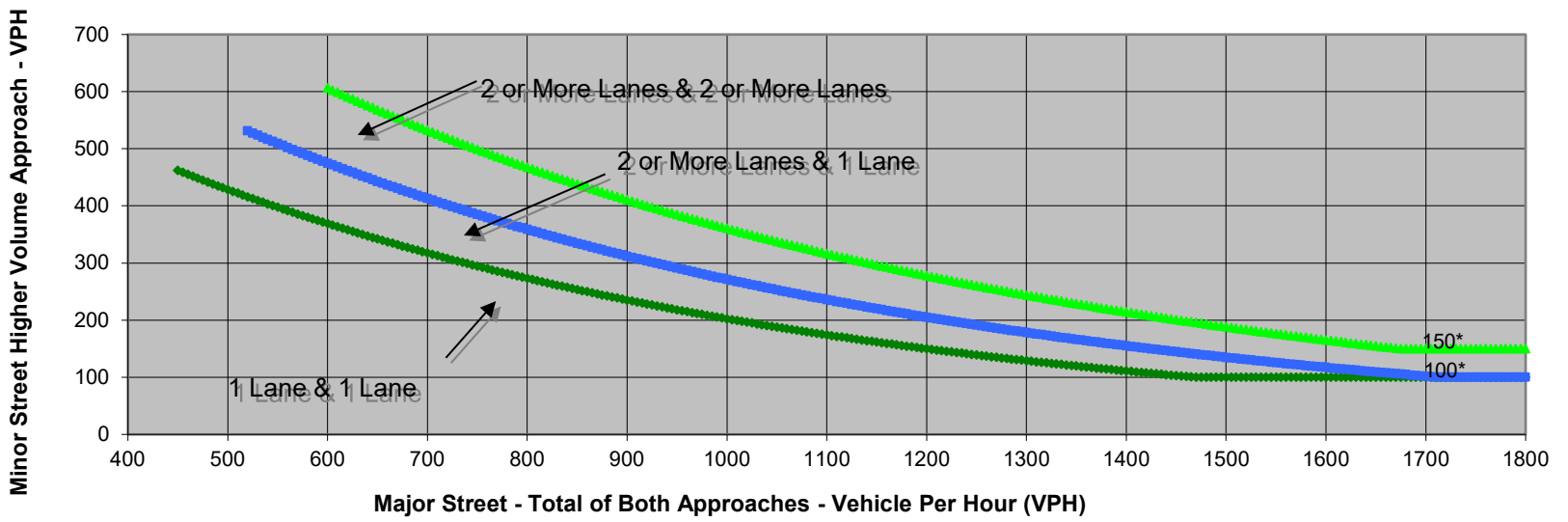
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	2	18	0
Through	0	0	1047	1341
Right	0	4	0	4
Total	0	6	1,065	1,345

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Prado Woods Dr	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,410**	**6**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR EX PEERS

Intersection	5	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Kenwick Dr	Peak Hour	PM

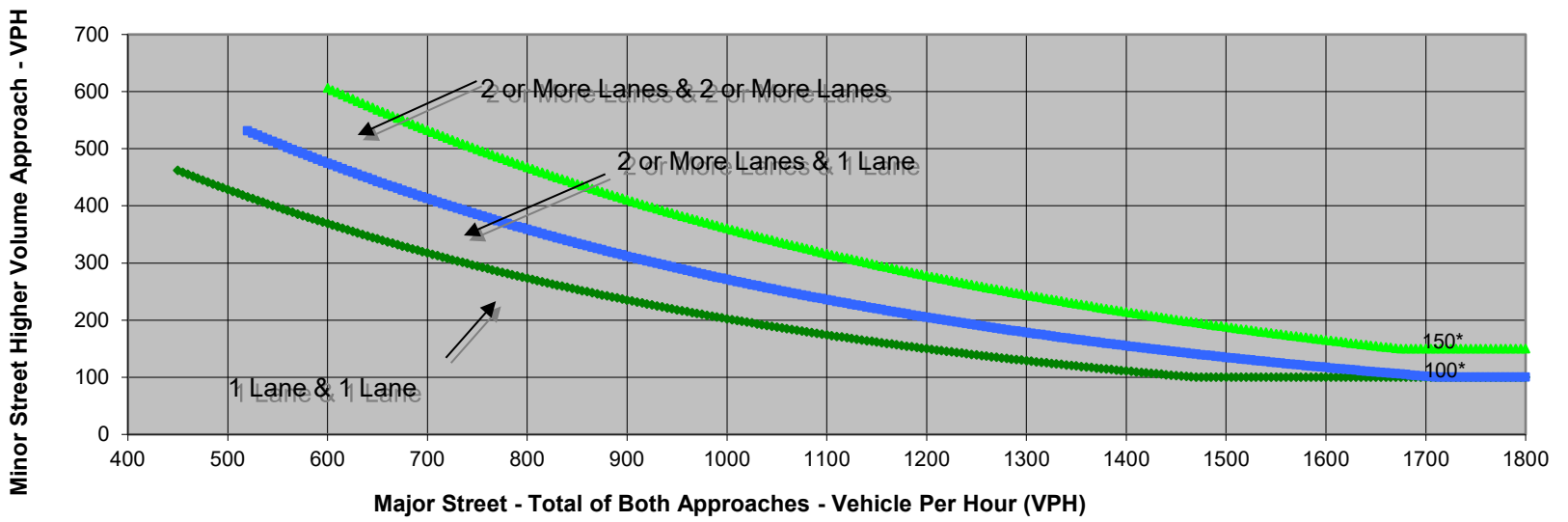
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	6	0
Through	0	0	1043	1337
Right	0	8	0	3
Total	0	8	1,049	1,340

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Kenwick Dr	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,389**	**8**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	6	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Radec Ct	Peak Hour	PM

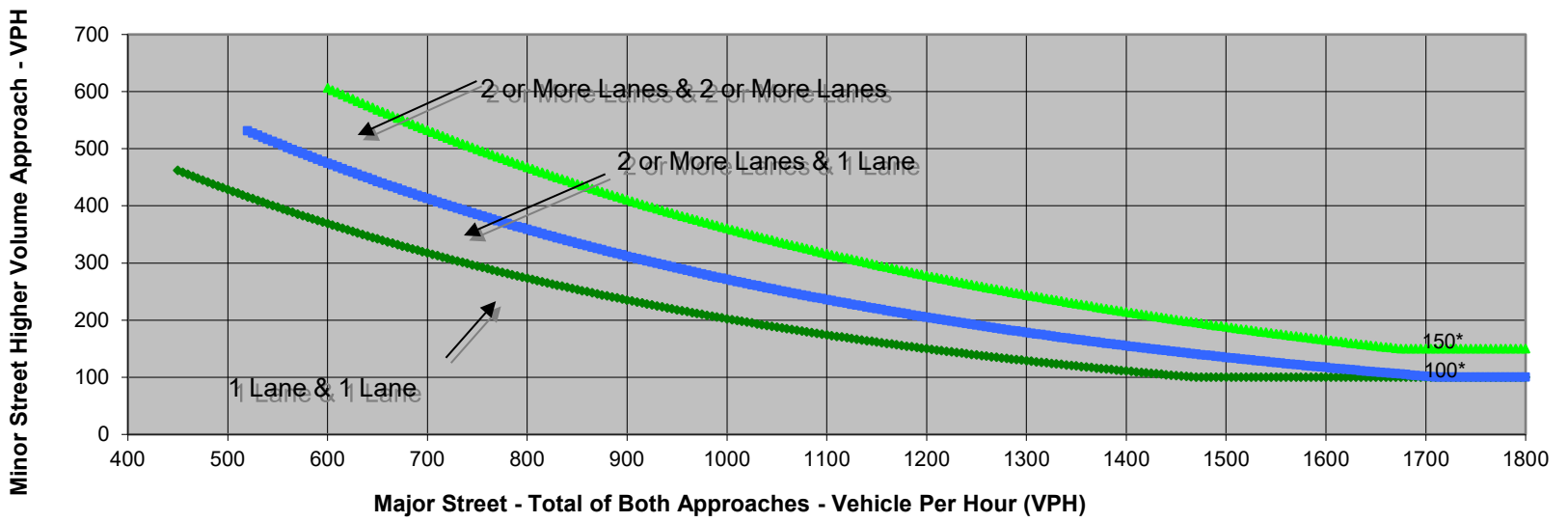
Turn Movement Volumes

	NB	SB	EB	WB
Left	1	0	0	1
Through	0	0	1041	1339
Right	0	0	2	0
Total	1	0	1,043	1,340

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Radec Ct	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,383**	**1**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	8	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Park Villa Ln	Peak Hour	PM

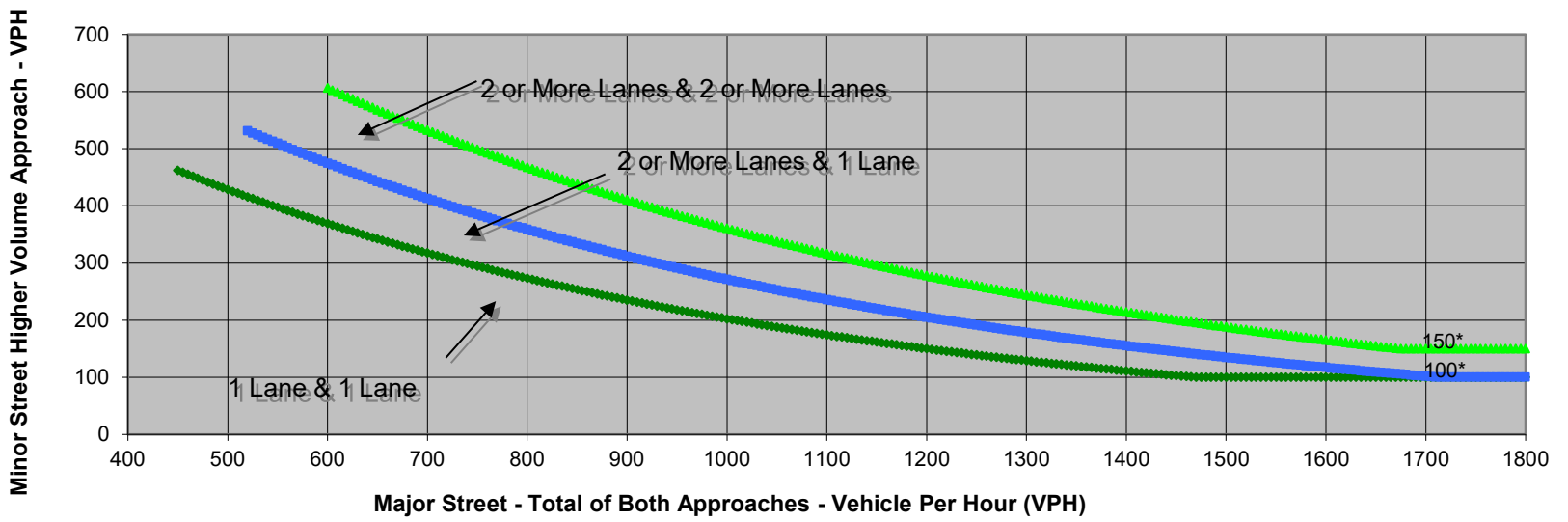
Turn Movement Volumes

	NB	SB	EB	WB
Left	6	0	0	3
Through	0	0	1005	1352
Right	2	0	5	0
Total	8	0	1,010	1,355

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Park Villa Ln	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,365**	**8**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	11	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	N Linda Vista St	Peak Hour	PM

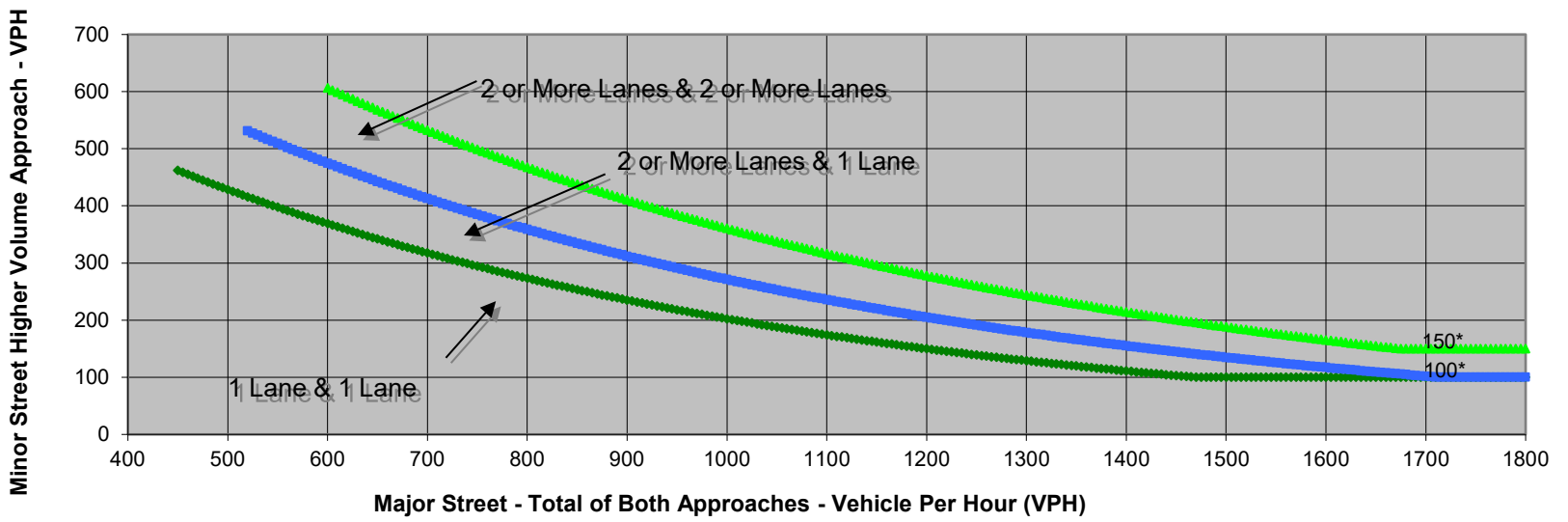
Turn Movement Volumes

	NB	SB	EB	WB
Left	6	9	8	2
Through	0	0	1120	1489
Right	6	19	22	13
Total	12	28	1,150	1,504

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	N Linda Vista St	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,654**	**28**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	15	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Loma St	Scenario	Future Year (2045) Conditions
Minor Street	Cannon St	Peak Hour	PM

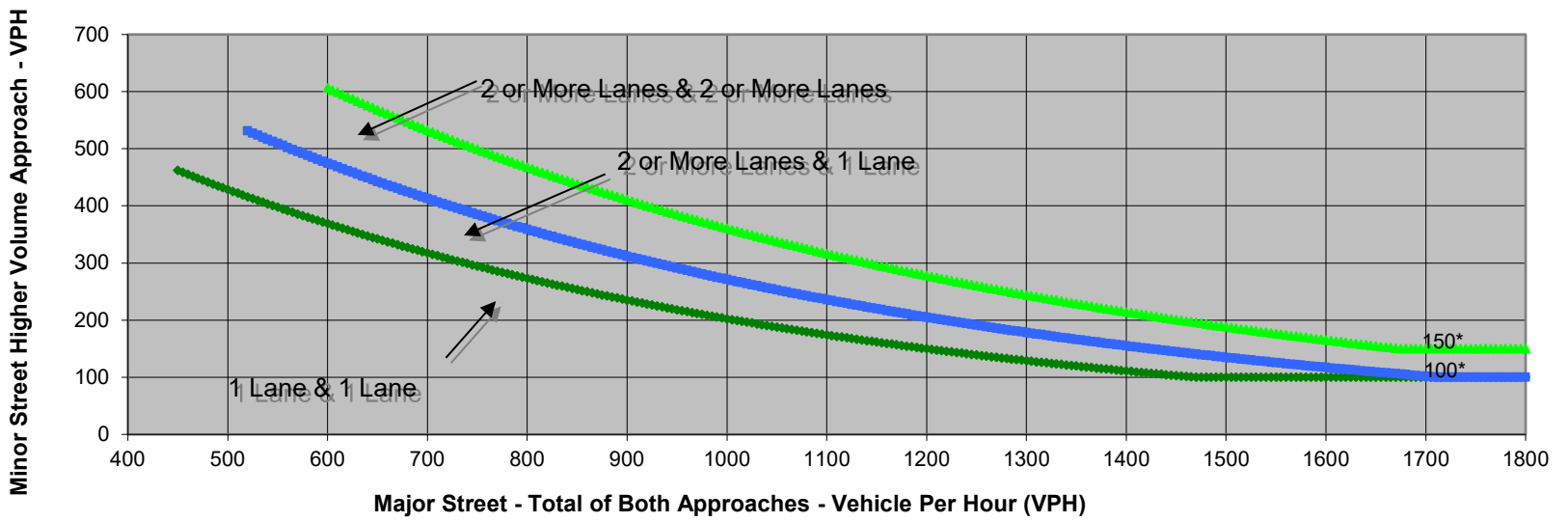
Turn Movement Volumes

	NB	SB	EB	WB
Left	38	0	25	0
Through	1269	751	0	0
Right	0	29	28	0
Total	1,307	780	53	0

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Mesa Dr	Cannon St	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,087**	**53**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	2	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Kathleen Ln	Peak Hour	AM

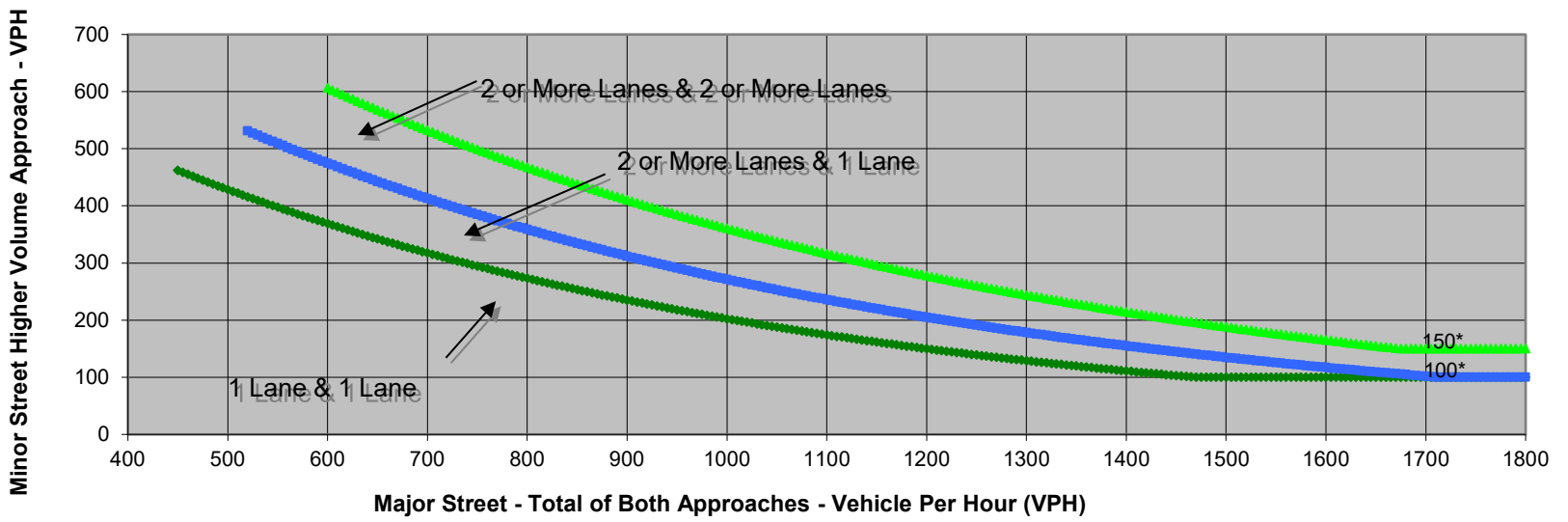
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	10	10	0
Through	0	0	1300	1310
Right	0	10	0	0
Total	0	20	1,310	1,310

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	E Trenton Ave	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,620**	**20**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	3	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Morrow Cir	Peak Hour	AM

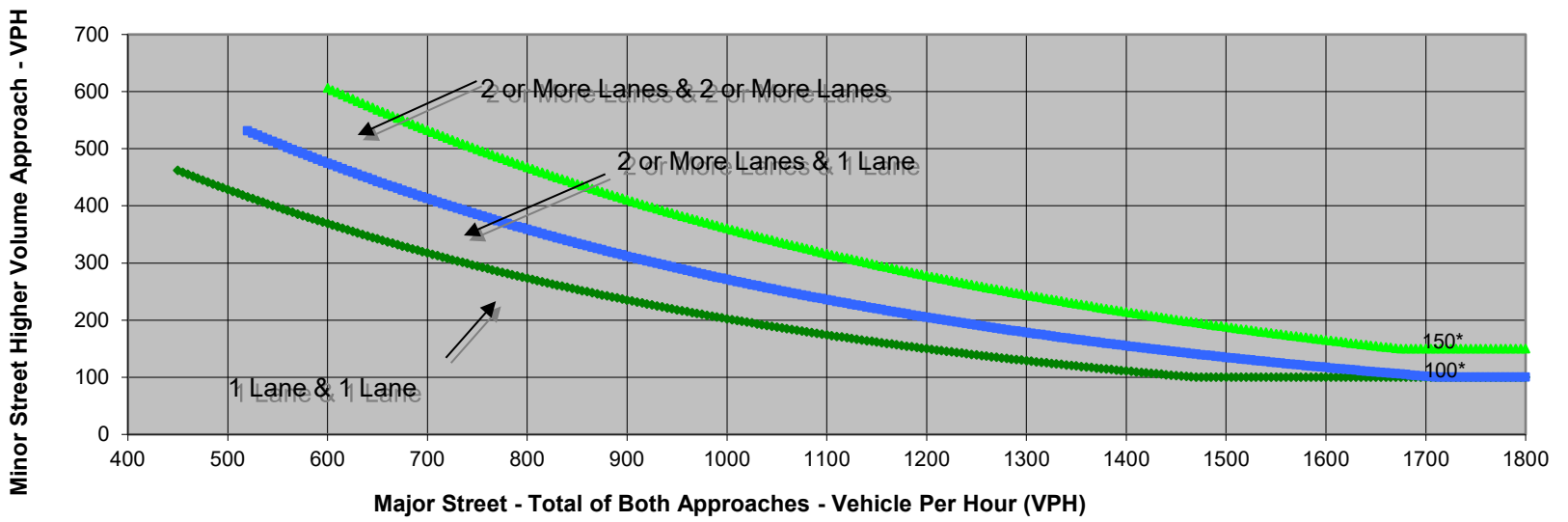
Turn Movement Volumes

	NB	SB	EB	WB
Left	10	0	0	10
Through	0	0	1300	1300
Right	10	0	10	0
Total	20	0	1,310	1,310

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Morrow Cir	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,620**	**20**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	4	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Prado Woods Dr	Peak Hour	AM

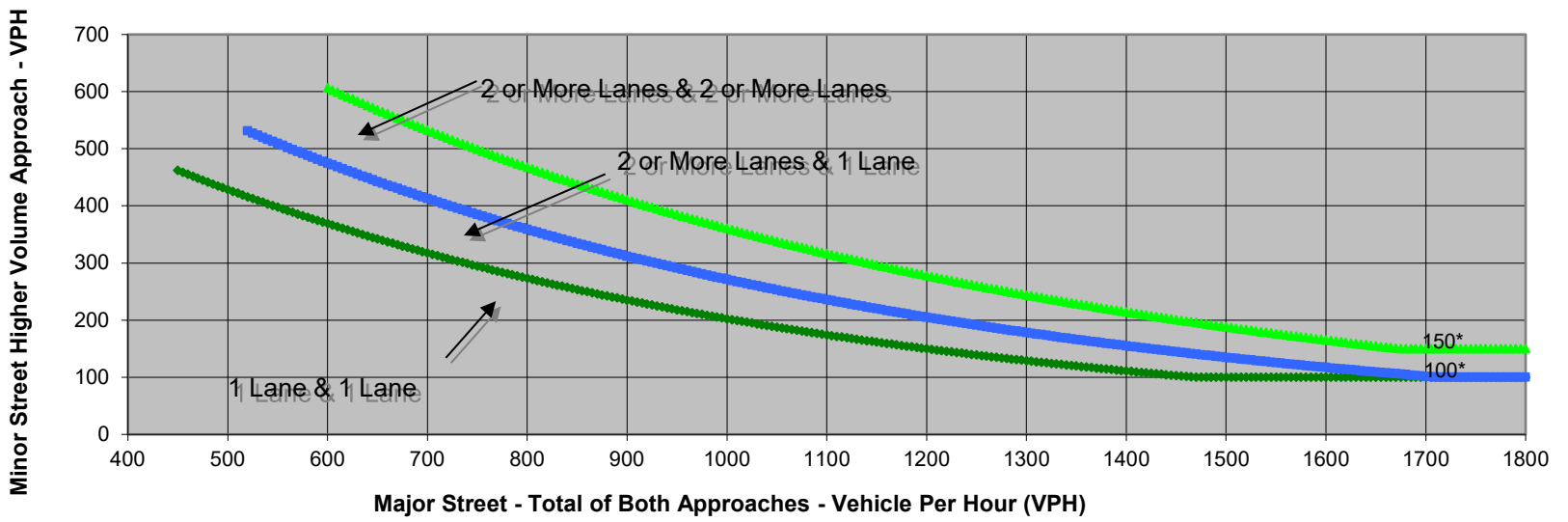
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	10	20	0
Through	0	0	1290	1290
Right	0	20	0	10
Total	0	30	1,310	1,300

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Prado Woods Dr	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,610**	**30**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	5	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Kenwick Dr	Peak Hour	AM

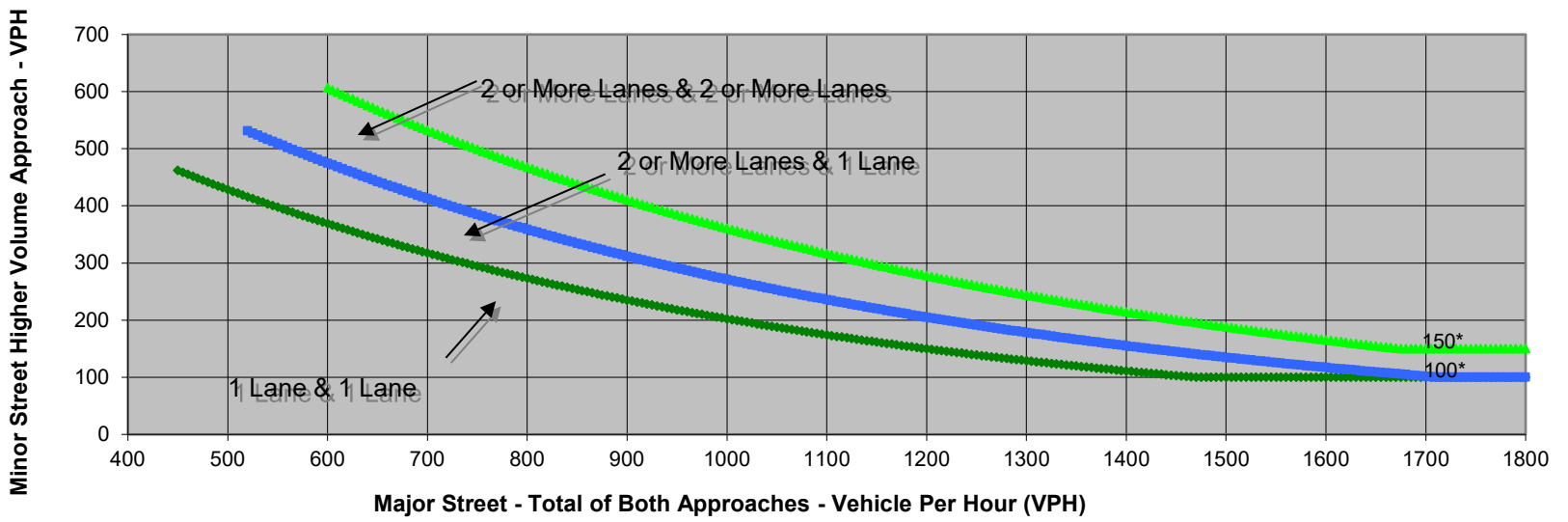
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	10	10	0
Through	0	0	1290	1290
Right	0	10	0	0
Total	0	20	1,300	1,290

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Kenwick Dr	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,590**	**20**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	6	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Radec Ct	Peak Hour	AM

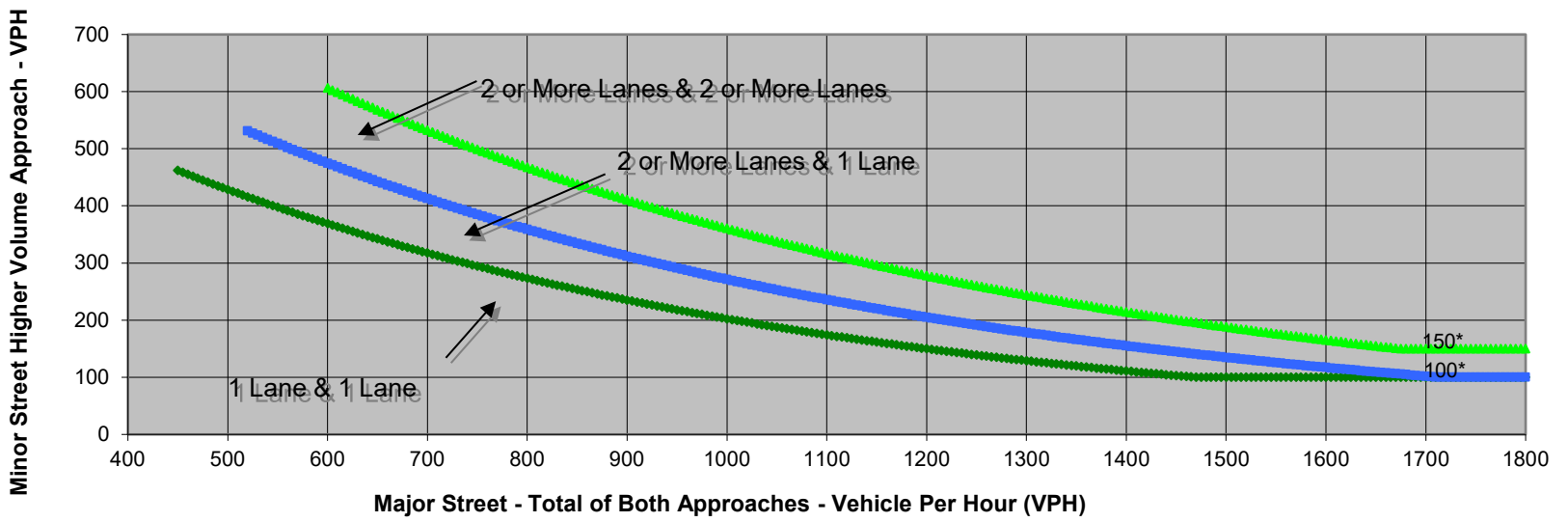
Turn Movement Volumes

	NB	SB	EB	WB
Left	10	0	0	10
Through	0	0	1290	1290
Right	10	0	10	0
Total	20	0	1,300	1,300

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Radec Ct	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,600**	**20**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	8	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Park Villa Ln	Peak Hour	AM

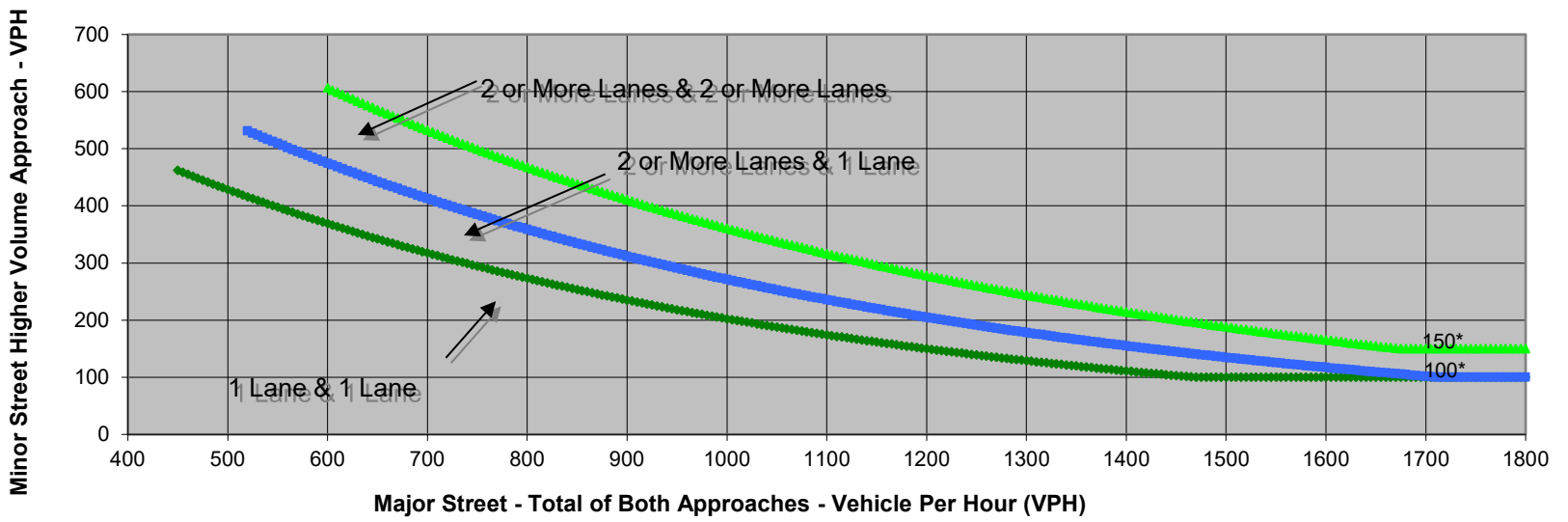
Turn Movement Volumes

	NB	SB	EB	WB
Left	10	0	0	10
Through	0	0	1210	1190
Right	10	0	10	0
Total	20	0	1,220	1,200

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Park Villa Ln	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,420**	**20**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	11	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	N Linda Vista St	Peak Hour	AM

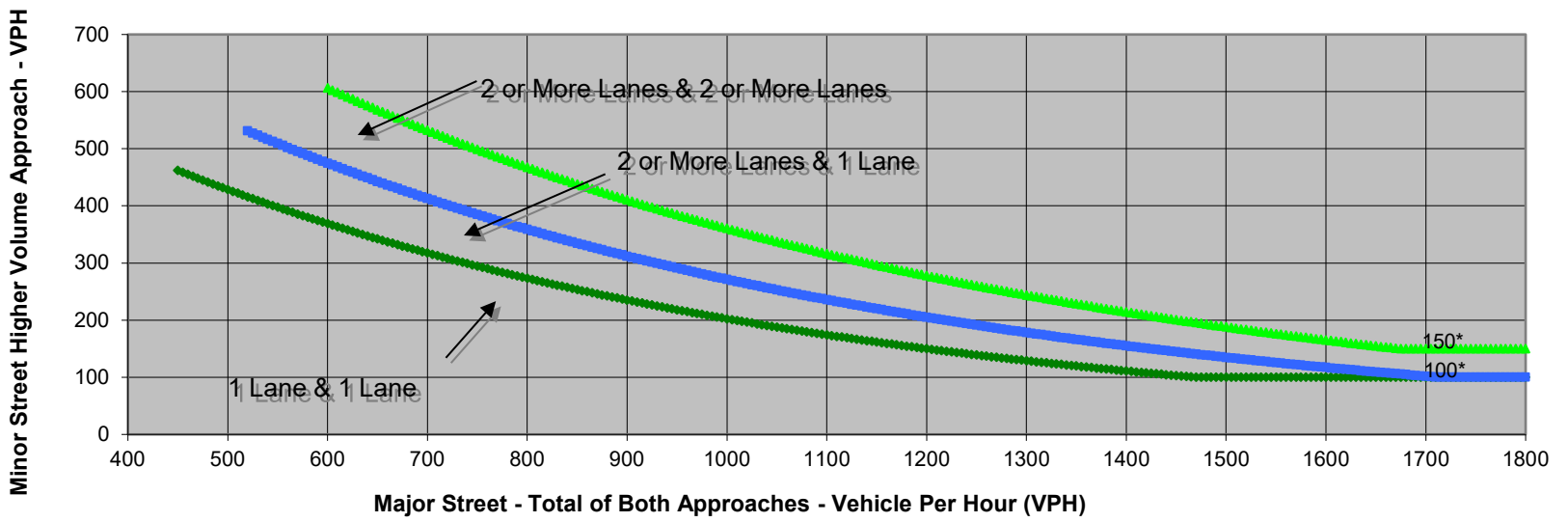
Turn Movement Volumes

	NB	SB	EB	WB
Left	10	30	70	10
Through	10	0	1250	1640
Right	30	110	40	100
Total	50	140	1,360	1,750

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	N Linda Vista St	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**3,110**	**140**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	15	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Loma St	Scenario	Future Year (2045) Conditions
Minor Street	Cannon St	Peak Hour	AM

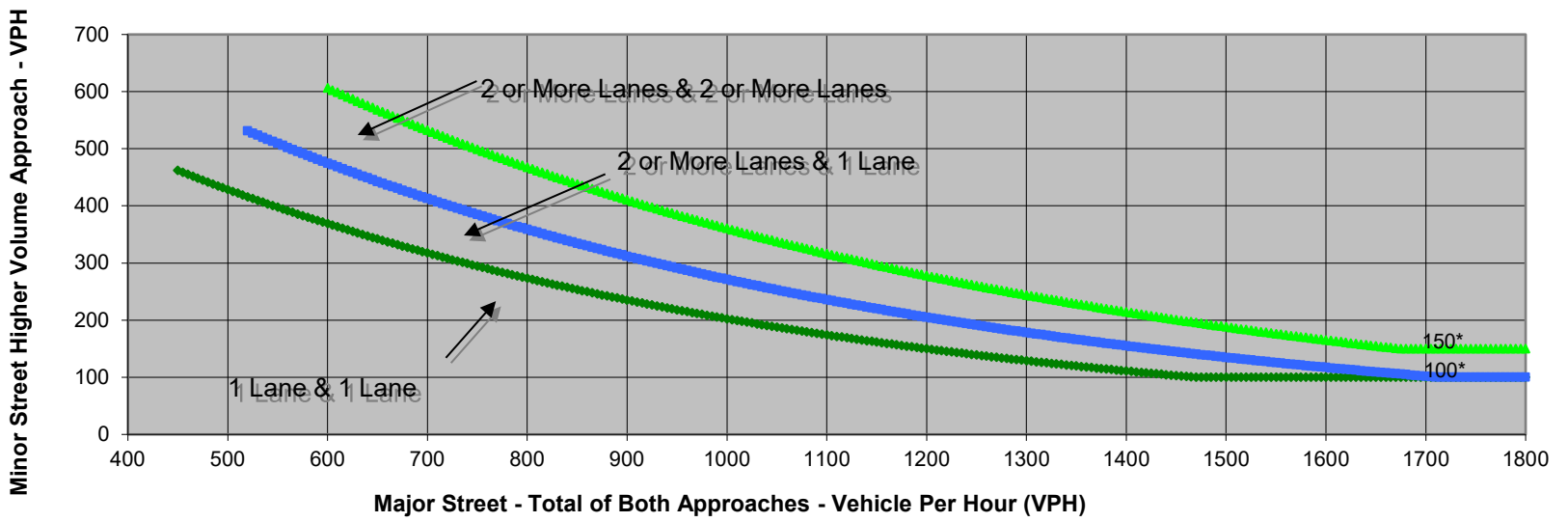
Turn Movement Volumes

	NB	SB	EB	WB
Left	30	0	40	0
Through	920	1770	0	0
Right	0	60	60	0
Total	950	1,830	100	0

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Mesa Dr	Cannon St	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,780**	**100**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	2	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Kathleen Ln	Peak Hour	PM

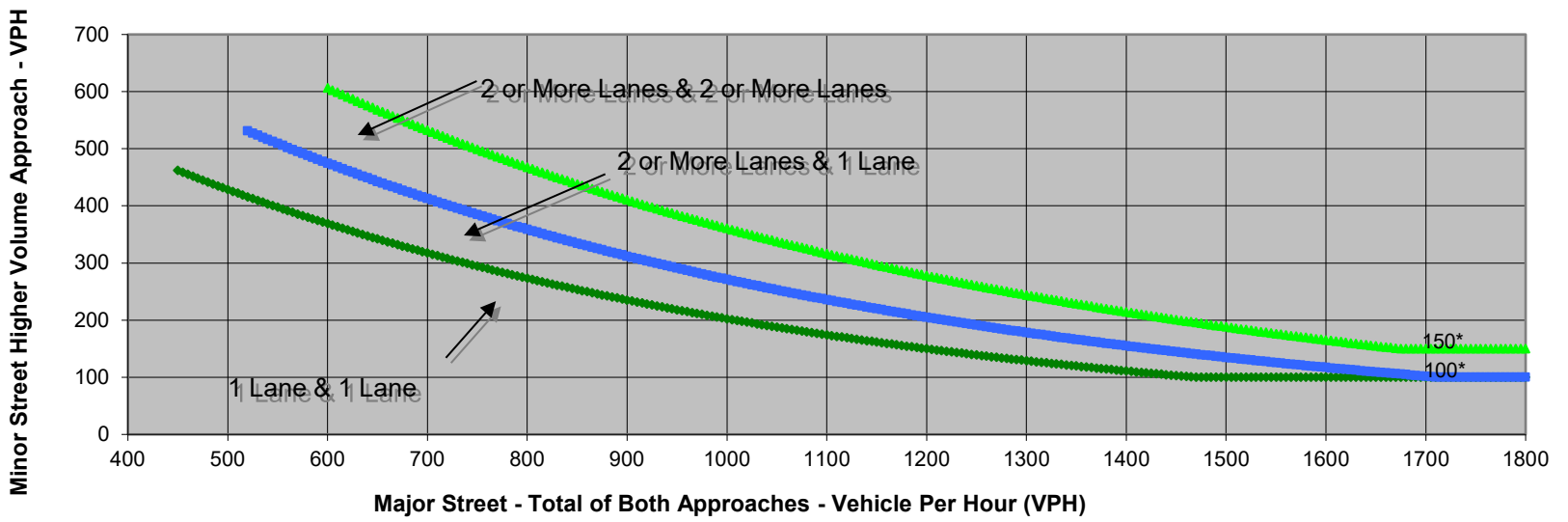
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	10	0
Through	0	0	1280	1420
Right	0	10	0	0
Total	0	10	1,290	1,420

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	E Trenton Ave	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,710**	**10**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	3	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Morrow Cir	Peak Hour	PM

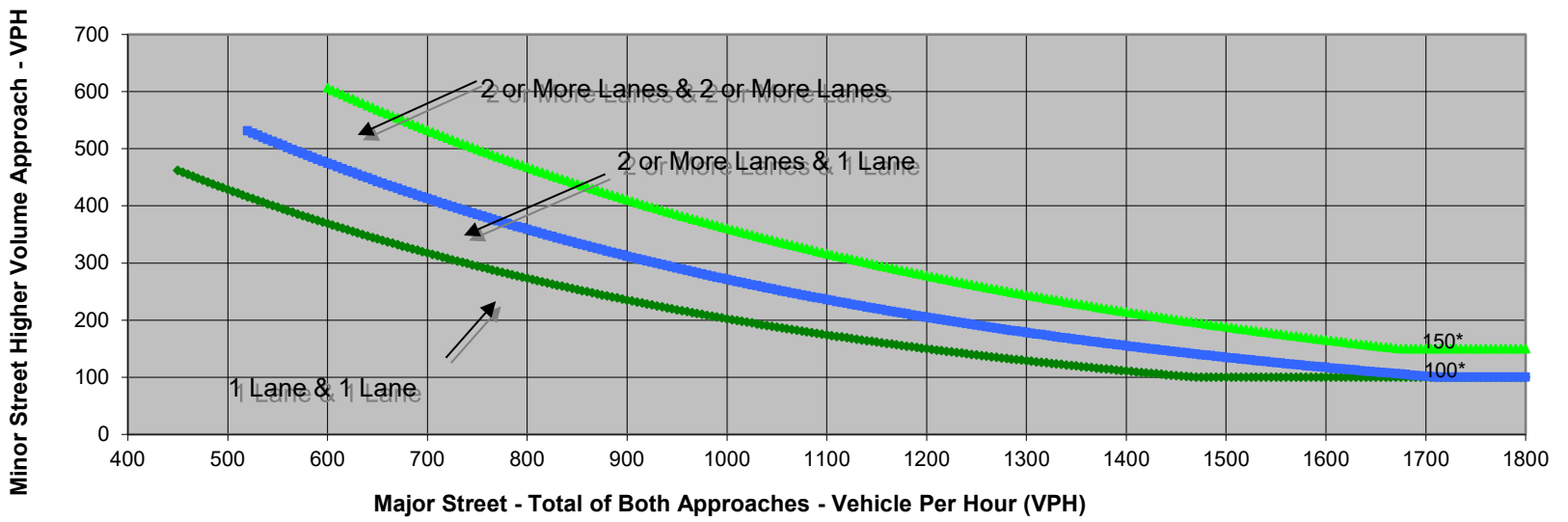
Turn Movement Volumes

	NB	SB	EB	WB
Left	10	0	0	10
Through	0	0	1270	1410
Right	10	0	10	0
Total	20	0	1,280	1,420

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Morrow Cir	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,700**	**20**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	4	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Prado Woods Dr	Peak Hour	PM

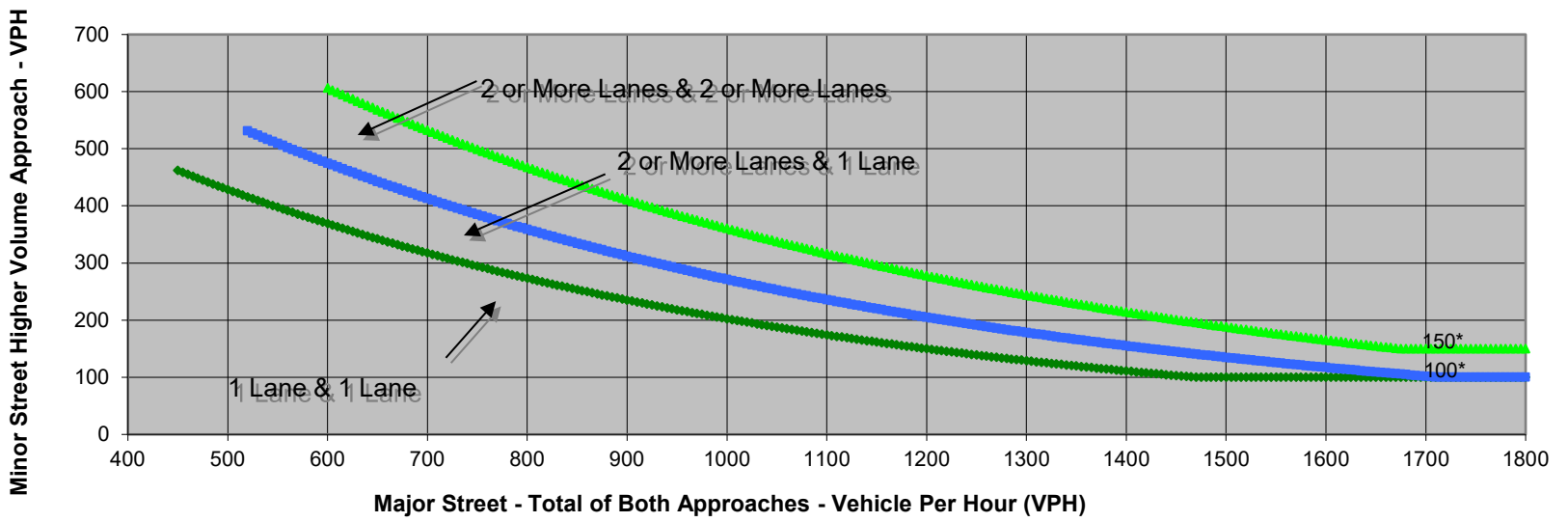
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	10	20	0
Through	0	0	1260	1410
Right	0	10	0	10
Total	0	20	1,280	1,420

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Prado Woods Dr	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,700**	**20**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	5	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Kenwick Dr	Peak Hour	PM

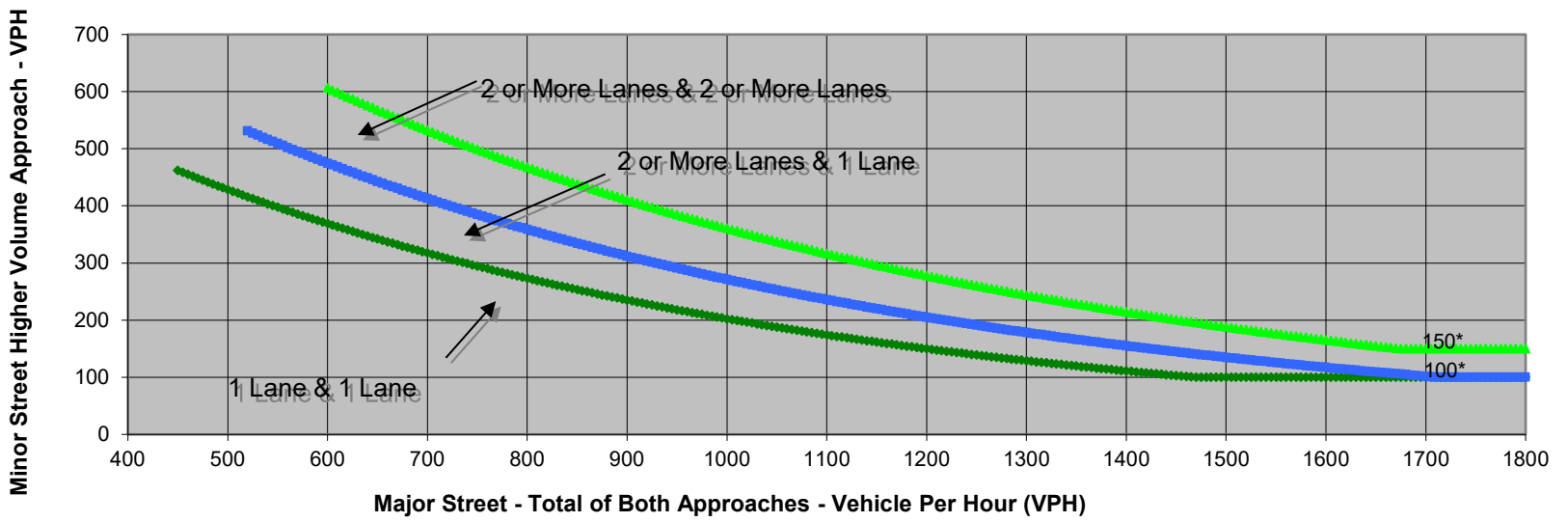
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	10	0
Through	0	0	1260	1410
Right	0	10	0	10
Total	0	10	1,270	1,420

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Kenwick Dr	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,690**	**10**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	6	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Radec Ct	Peak Hour	PM

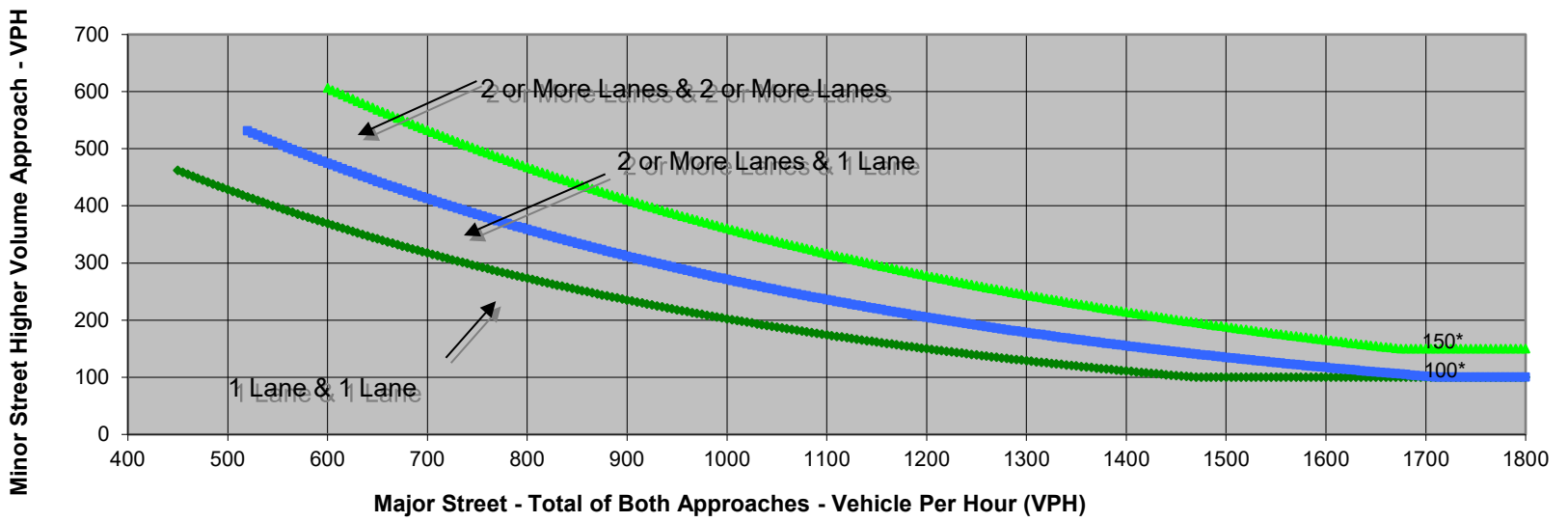
Turn Movement Volumes

	NB	SB	EB	WB
Left	10	0	0	10
Through	0	0	1250	1410
Right	0	0	10	0
Total	10	0	1,260	1,420

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Radec Ct	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,680**	**10**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	8	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Park Villa Ln	Peak Hour	PM

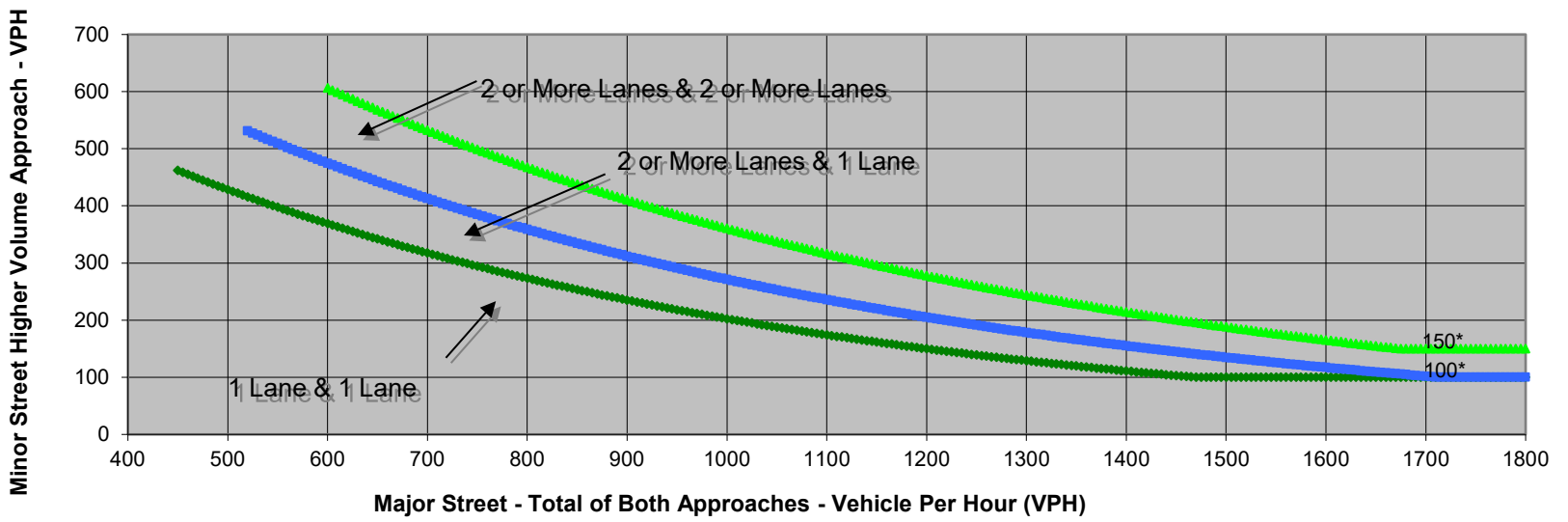
Turn Movement Volumes

	NB	SB	EB	WB
Left	10	0	0	10
Through	0	0	1200	1420
Right	10	0	10	0
Total	20	0	1,210	1,430

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Park Villa Ln	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,640**	**20**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	11	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	N Linda Vista St	Peak Hour	PM

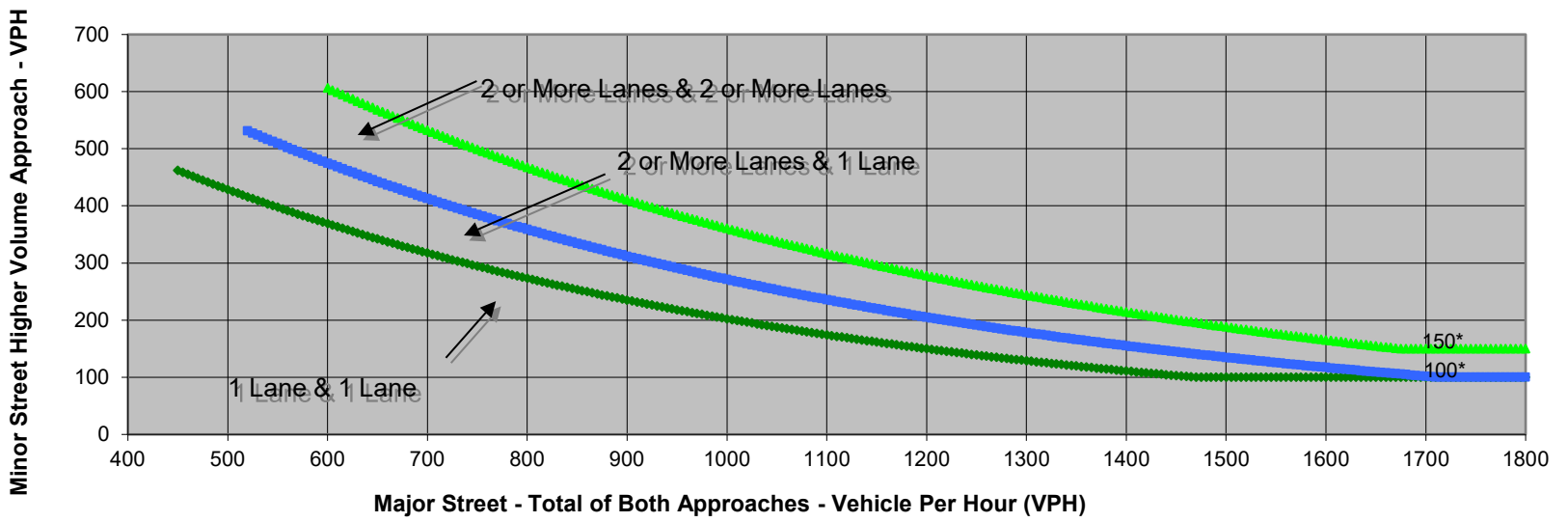
Turn Movement Volumes

	NB	SB	EB	WB
Left	10	10	10	10
Through	0	0	1600	1620
Right	10	20	30	20
Total	20	30	1,640	1,650

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	N Linda Vista St	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**3,290**	**30**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	15	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Loma St	Scenario	Future Year (2045) Conditions
Minor Street	Cannon St	Peak Hour	PM

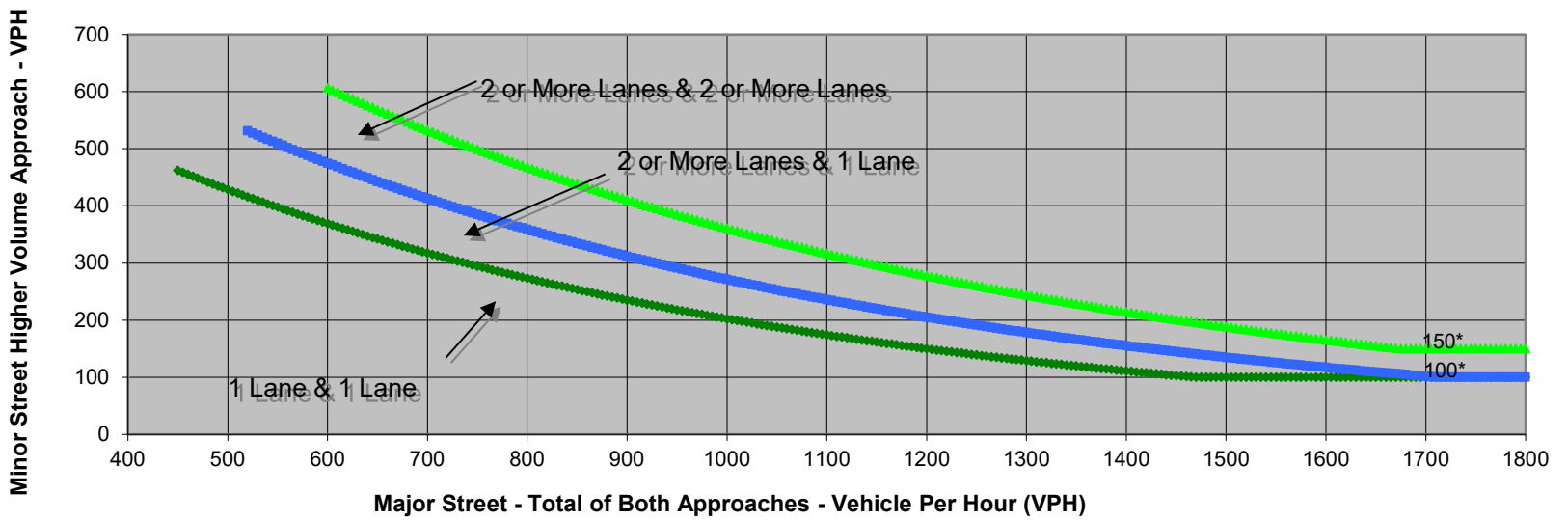
Turn Movement Volumes

	NB	SB	EB	WB
Left	40	0	30	0
Through	1580	940	0	0
Right	0	30	30	0
Total	1,620	970	60	0

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Mesa Dr	Cannon St	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,590**	**60**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Attachment F: Collision Data

BerkeleySafeTREC

Crash Details for: Case ID 8717340

Crash Information

County	Orange
City	Orange
Date & Time (M/D/Y)	09/14/2018 15:19
Location (Intersection)	Villa Park Rd & N Wanda Rd
Dist. & Dir. from Intersection	At Intersection
State Highway	No
Geocoded Location	33.8104591, -117.8219681

Type of Crash	A - Head-On
Motor Vehicle Involved With	G - Bicycle
Crash Severity	3 - Injury (Other Visible)
PCF Violation Category	09 - Automobile Right of Way
Weather	A - Clear
Alcohol Involved	No

Pedestrian Accident	No	**Bicycle Accident**	Yes
Motorcycle Accident	No	**Truck Accident**	No

Map View

Street View

Parties: 2

Party Number	Party Type	Statewide Vehicle Type	At Fault	Party Direction	Movement Preceding Collision
1	4 - Bicyclist	L - Bicycle	Yes	South	B - Proceeding Straight
2	1 - Driver (including Hit and Run)	D - Pickup or Panel Truck	No	West	B - Proceeding Straight

Victims: 2

Party Number	Victim Role	Victim Gender	Victim Age	Victim Degree of Injury
1	4 - Bicyclist	M - Male	12	6 - Suspected Minor Injury
2	2 - Passenger	M - Male	58	0 - No Injury

BerkeleySafeTREC

Crash Details for: Case ID 8784782

Crash Information

County	Orange
City	Orange
Date & Time (M/D/Y)	01/09/2019 14:06
Location (Intersection)	East Katella Av & Wanda Rd
Dist. & Dir. from Intersection	At Intersection
State Highway	No
Geocoded Location	33.8104591, -117.8219681

Type of Crash	H - Other
Motor Vehicle Involved With	G - Bicycle
Crash Severity	4 - Injury (Complaint of Pain)
PCF Violation Category	09 - Automobile Right of Way
Weather	A - Clear
Alcohol Involved	No

Pedestrian Accident	No	**Bicycle Accident**	Yes
Motorcycle Accident	No	**Truck Accident**	No

Map View

Street View

Parties: 2

Party Number	Party Type	Statewide Vehicle Type	At Fault	Party Direction	Movement Preceding Collision
1	4 - Bicyclist	L - Bicycle	No	West	D - Making Right Turn
2	1 - Driver (including Hit and Run)	D - Pickup or Panel Truck	Yes	West	B - Proceeding Straight

Victims: 1

Party Number	Victim Role	Victim Gender	Victim Age	Victim Degree of Injury
1	4 - Bicyclist	M - Male	84	7 - Possible Injury

BerkeleySafeTREC

Crash Details for: Case ID 8874276

Crash Information

County	Orange
City	Orange
Date & Time (M/D/Y)	05/14/2019 06:36
Location (Intersection)	Katella Av & Wanda St
Dist. & Dir. from Intersection	At Intersection
State Highway	No
Geocoded Location	33.8104591, -117.8219681

Type of Crash	D - Broadside
Motor Vehicle Involved With	G - Bicycle
Crash Severity	3 - Injury (Other Visible)
PCF Violation Category	12 - Traffic Signals and Signs
Weather	A - Clear
Alcohol Involved	No

Pedestrian Accident	No	**Bicycle Accident**	Yes
Motorcycle Accident	No	**Truck Accident**	No

Map View

Street View

Parties: 2

Party Number	Party Type	Statewide Vehicle Type	At Fault	Party Direction	Movement Preceding Collision
1	1 - Driver (including Hit and Run)	A - Passenger Car/Station Wagon	Yes	West	B - Proceeding Straight
2	4 - Bicyclist	L - Bicycle	No	North	B - Proceeding Straight

Victims: 1

Party Number	Victim Role	Victim Gender	Victim Age	Victim Degree of Injury
2	4 - Bicyclist	M - Male	16	6 - Suspected Minor Injury

BerkeleySafeTREC

Crash Details for: Case ID 82028363

Crash Information

County	Orange
City	Orange
Date & Time (M/D/Y)	08/06/2022 05:30
Location (Intersection)	Santiago Canyon Rd & Cannon St
Dist. & Dir. from Intersection	225.00 ft West
State Highway	No
Geocoded Location	33.8111458, -117.7961502

Type of Crash	G - Vehicle/Pedestrian
Motor Vehicle Involved With	B - Pedestrian
Crash Severity	3 - Injury (Other Visible)
PCF Violation Category	21 - Unsafe Starting or Backing
Weather	A - Clear
Alcohol Involved	Yes

Pedestrian Accident	Yes	**Bicycle Accident**	No
Motorcycle Accident	No	**Truck Accident**	No

Map View

Street View

Parties: 2

Party Number	Party Type	Statewide Vehicle Type	At Fault	Party Direction	Movement Preceding Collision
1	1 - Driver (including Hit and Run)	A - Passenger Car/Station Wagon	Yes	West	G - Backing
2	2 - Pedestrian	N - Pedestrian	No	East	A - Stopped

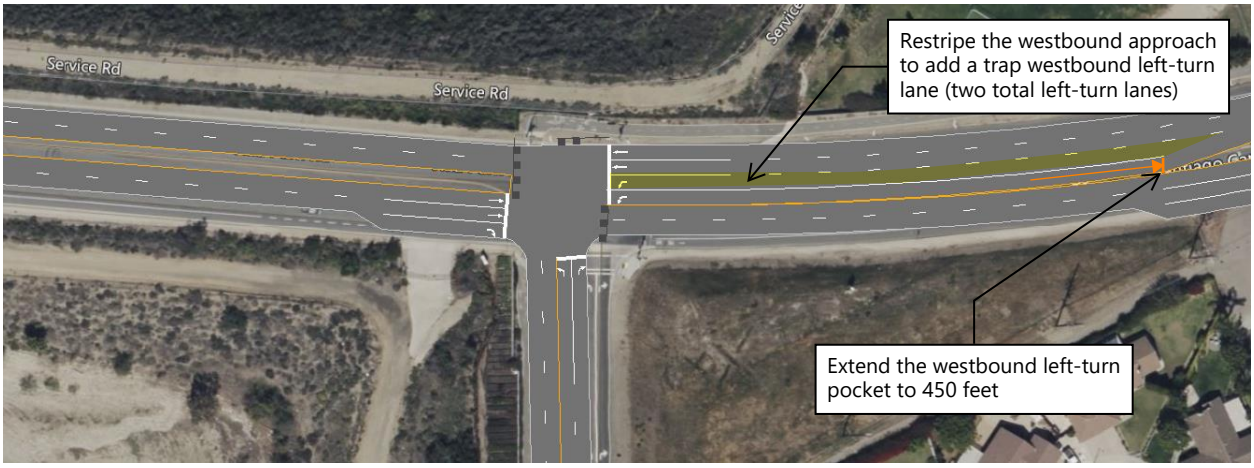
Victims: 1

Party Number	Victim Role	Victim Gender	Victim Age	Victim Degree of Injury
2	3 - Pedestrian	M - Male	21	6 - Suspected Minor Injury

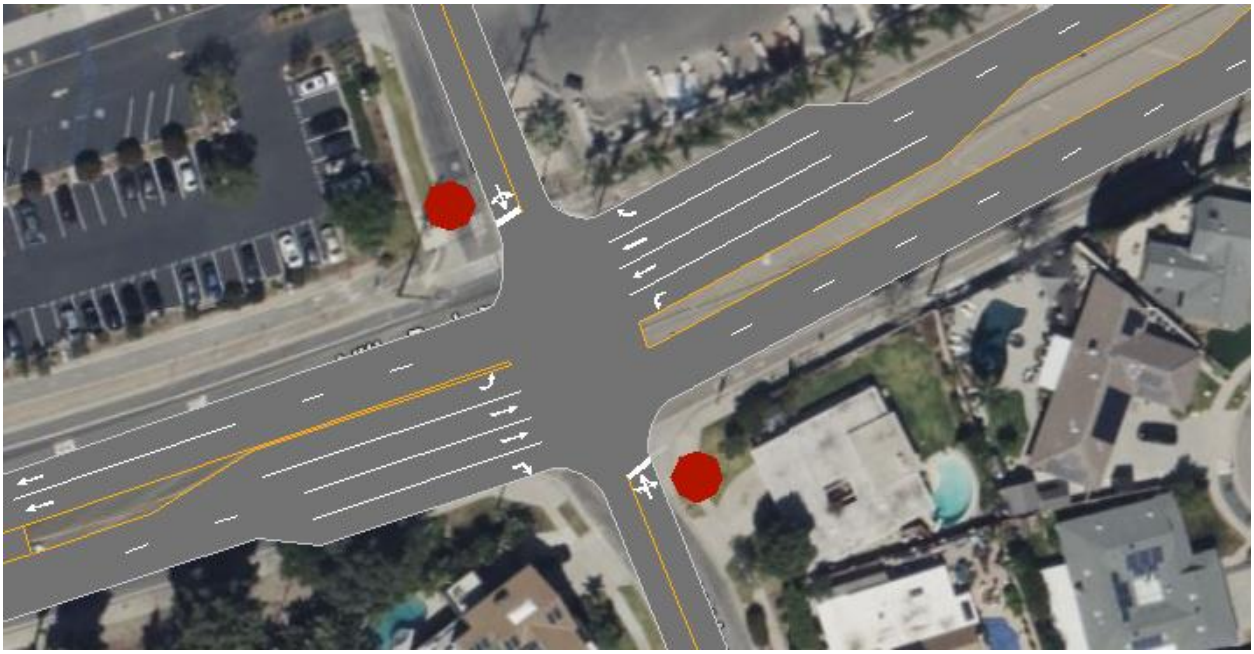
Attachment G: Intersection Improvements

Intersection # 10: Hewes Street and Villa Park Road No Improvements

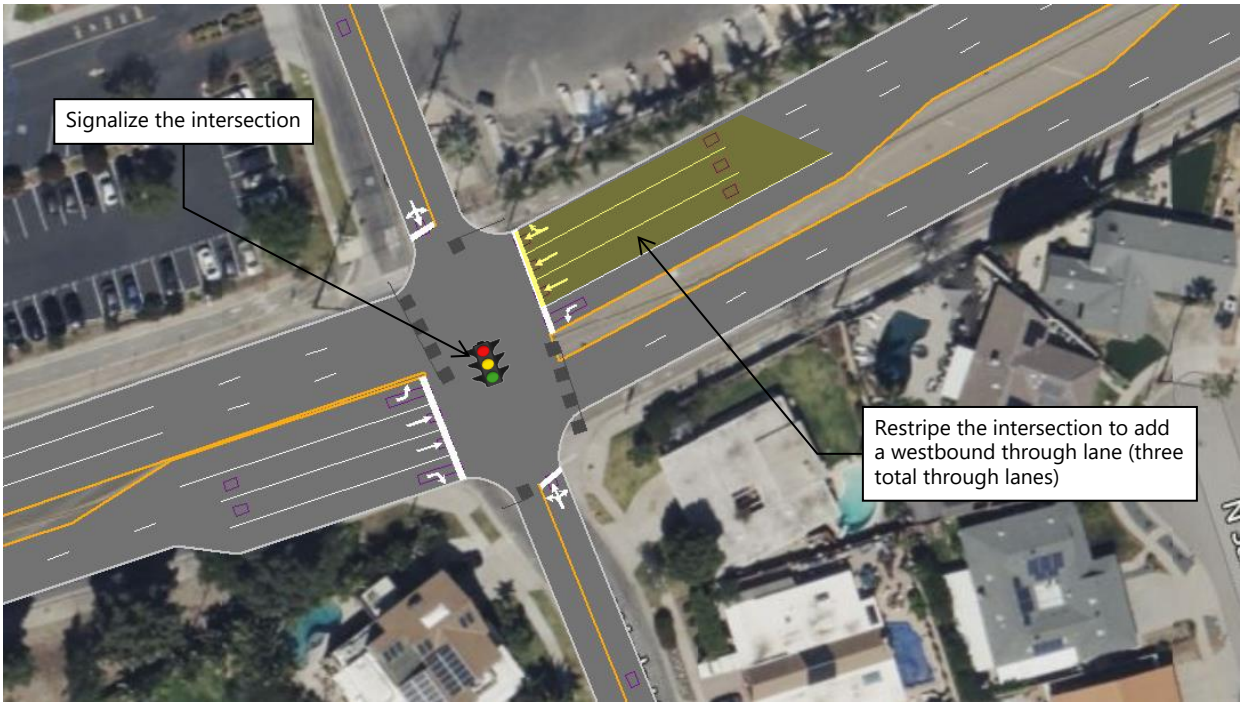
Intersection # 10: Hewes Street and Villa Park Road with Improvements



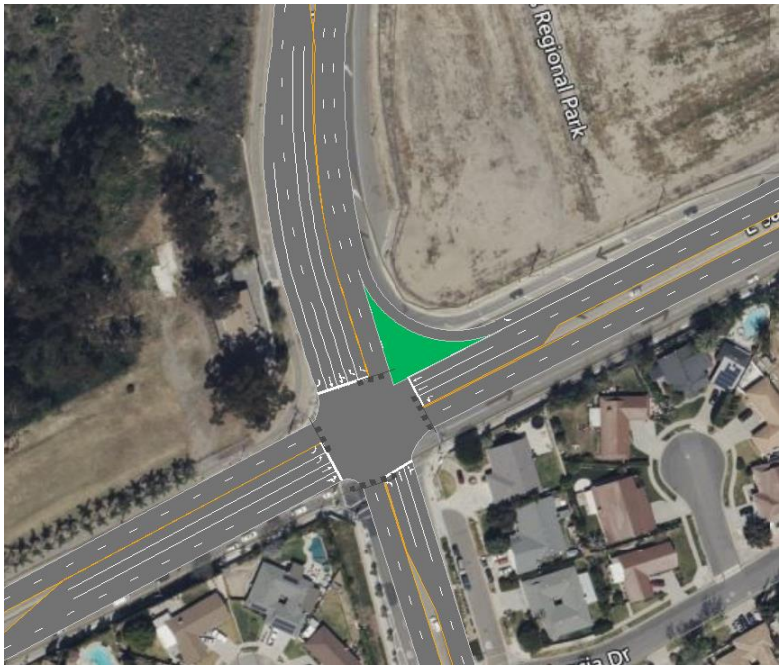
Intersection #11: Linda Vista Street and Villa Park Road No Improvements



Intersection #11: Linda Vista Street and Villa Park Road with Improvements



Intersection #12: Cannon Street and Santiago Canyon Road No Improvements



Intersection #12: Cannon Street and Santiago Canyon Road with Improvements